SHASTA RANCH MINING AND RECLAMATION PLAN

DRAFT ENVIRONMENTAL IMPACT REPORT

SCH NO. 2005102134

JULY 2006

Prepared for:

SHASTA COUNTY
1855 PLACER STREET
REDDING, CA 96001

Prepared by:

PMC
PACIFIC MUNICIPAL CONSULTANTS

DRAFT
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FOR THE
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Prepared for:

SHASTA COUNTY
1855 PLACER STREET
REDDING, CA 96001
Tel: 530/ 225-5532
Fax: 530/ 225-5807

Prepared by:

PACIFIC MUNICIPAL CONSULTANTS
508 Chestnut Street, Suite A
Mt. Shasta, CA 96067
Tel: 530/926-4059
Fax: 530/926-4279

June 2006

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This Draft Environmental Impact Report (EIR) was prepared by the County of Shasta (County) as environmental documentation pursuant to the California Environmental Quality Act (CEQA) of 1970 (as amended) to evaluate the Shasta Ranch Mining and Reclamation Plan, a proposed surface mining and reclamation project. The proposed project site is located to the east of the community of Anderson along the Sacramento River, and east of Balls Ferry Road between Riverland Drive to the north and Blue Jay Lane to the south [Sections 53, 55, 56, 59, 60 of the P.B. Reading Grant]. (See **Figure 3.0-1, Regional Map,** and **Figure 3.0-2, Project Location.**) The proponent of the project is Shasta Ranch LLC. The County is the Lead Agency as defined CEQA.

1.1 PROJECT BACKGROUND

In April 2005, Tullis Inc. (applicant), filed applications for a Conditional Use Permit (UP 05-010) and Reclamation Plan (RP 05-001) for a gravel operation on 268 acres mining aggregate material (proposed project). The proposed project encompasses approximately 947 acres, of which 268 acres are proposed for mining of aggregate material. The mined aggregate (gravel) would be crushed, screened, washed, stockpiled and loaded for off-site transport. Approximately 3.43 million cubic yards of overburden and 6.06 million cubic yards of soil and gravel would be excavated. The project would generate traffic at an average rate of 64 round-trip truckloads per day and a maximum of 120 round-trip truckloads per day. The project would operate for approximately 29 years until the year 2035. There are three phases proposed, each phase lasting approximately 8-10 years. Upon completion of all mining activities and reclamation of the site, the proposed use of the property would be agriculture, aquatic ponds and open space preserves.

1.2 LEGAL AUTHORITY AND PURPOSE

The County, as lead agency, has prepared this EIR to provide the public, responsible agencies and trustee agencies with information about the potential environmental effects of implementing the proposed project. As described in CEQA Guidelines Section 15121(a), an EIR is a public information document that assesses potential environmental effects of the proposed project, and identifies mitigation measures and alternatives to the proposed project that could reduce or avoid significant adverse environmental impacts. Public agencies are charged with the duty to consider and minimize significant environmental impacts of proposed development where feasible, and have an obligation to balance a variety of public objectives, including economic, environmental, and social factors.

CEQA requires the preparation of an environmental impact report prior to approving any “project” which may have a significant effect on the environment. For the purposes of CEQA, the term “project” refers to the whole of an action, which has a potential for resulting in a direct physical change or a reasonably foreseeable indirect physical change in the environment (CEQA Guidelines Section 15378[a]). With respect to approval of the Conditional Use Permit 05-010 and the Reclamation Plan 05-001

Shasta Ranch Mining and Reclamation Plan (SRMRP), The County has determined the SRMRP is a "project" within the definition of CEQA, which has the potential for resulting in significant environmental effects.

1.3 SCOPE AND CONTENT

The County solicited comments through distribution of the NOP/IS. Comments received in response to the NOP/IS process are incorporated in the DEIR, where appropriate. (See Notice of Preparation/Initial Study (NOP/IS), **Appendix 3.0-1**). The DEIR includes analysis of the following issue areas:

- Aesthetics
- Agriculture Resources (Addressed under "Land Use and Planning")
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources (Addressed under Geology and Soils)
- Noise
- Transportation and Circulation
- Public Services and Utility Systems

Other areas were determined to have no impact, based on the analytical conclusions resulting from initial study research, NOP comments, and observations of the site. The areas deemed to have no impact are:

- Population and Housing
- Public Services (Public roads are addressed under "Transportation and Circulation")
- Recreation

1.4 ORGANIZATION OF THE EIR

The DEIR has been organized in the following format:

Section 1.0, Introduction.

Section 2.0, Executive Summary. An impact summary presenting the significant EIR findings in tabular form.

Section 3.0, Project Description.

Section 4.0, Environmental Setting, Impacts and Mitigation Measures. A thorough analysis of potentially significant impacts associated with each of the identified issue areas, along with mitigation measures for identified potentially adverse impacts.

Section 5.0, Alternatives to the Project. A description and analysis of reasonable alternatives to the project.

Section 6.0, Other Sections Required by CEQA. Other evaluation required by CEQA, including cumulative impacts, growth-inducing impacts and significant and unavoidable impacts.

Section 7.0, Report Preparers and Persons Consulted. A listing of report preparers and contributors, and of individuals and agencies consulted during the preparation of this EIR.

Section 8.0 References. List of reference materials used to prepare the EIR.

Section 9.0 Acronyms and Abbreviations.

1.5 INTENDED USES OF THE EIR

A number of actions will require approval by the County and other public agencies in order for the proposed project to be implemented. These actions are listed below and are discussed in detail in the appropriate sections of this EIR.

- Approval of Conditional Use Permit (05-010) to permit surface mining for aggregate extraction and processing.
- Approval of the Shasta Ranch Reclamation Plan (05-001).

The County intends to use this DEIR to determine if the project would create significant environmental impacts and whether these impacts can be mitigated to a less-than-significant level, or if a statement of overriding concerns is appropriate. As the lead agency the County must review and consider the final version of the EIR (the Final EIR) before approving a project (CEQA guidelines Section 15090). The County of Shasta may also require additional permits for building, grading, and encroachment onto County right-of-ways in which this EIR will be used to obtain such permits.

In addition, this EIR will be used by other agencies with authority to grant approvals or permits that the project may require. Some the agencies that may have permitting or approval authority over the project are listed below:

U.S. Army Corps of Engineers
152 Hartnell Avenue
Redding, CA 96002

The U.S. Army Corps of Engineers (COE) regulates the discharge of dredged or fill material into waters (including wetlands) of the United States under Section 404 of the Clean Water Act. Areas on the project site that would be under the COE's jurisdiction include emergent wetlands located throughout the property.

REGIONAL WATER QUALITY CONTROL BOARD (RWQCB)
CENTRAL VALLEY REGION
415 Knollcrest Drive
Redding, CA 96002

The RWQCB issues a Water Quality Certification under authority of Section 401 of the Clean Water Act. After submittal of a Pre-Construction Notification Package to the COE, the project applicant would need to submit a copy of the Section 404 Notification and appropriate fees directly to the RWQCB to obtain the Section 401 certification or waiver. After review and approval of the mining and reclamation plan the RWQCB would issue Waste Discharge Requirements for the project.

CALIFORNIA DEPARTMENT OF FISH AND GAME (CDFG
601 Locust
Redding, CA 96001

The Department of Fish and Game manages native fish, wildlife, plant species and natural communities for their ecological values and beneficial uses. In addition the DFG can manage, control and protect spawning areas, unlawful deposit, or placement of any substance or materials, deleterious to fish, plant or bird life that may pass into the waters of the State under Fish and Game Code Section 5650. The Department of Fish and Game is the authorizing agency to issue incidental take permits if the project has the potential to take a state listed species.

CALIFORNIA DEPARTMENT OF WATER RESOURCES, NORTHERN DISTRICT
2440 Main Street
Red Bluff, CA 96080

The Department of Water Resources should be consulted to evaluate the projects distance from the Sacramento River, levee heights derived from engineering studies recommendations and design standards with regards to specifications to protect levee or bank failure from gravel extraction operations.

California Department of Conservation
OFFICE OF MINE RECLAMATION
801 K Street, MS 09-06
Sacramento, CA 95814-3529

The Office of Mine Reclamation is responsible for reviewing the reclamation plan for compliance with the Surface Mining and Reclamation Act (SMARA). Under the provisions of SMARA, no person may conduct surface mining operations without preparing a reclamation plan and obtaining from the Lead Agency for a project a permit, approval of the reclamation plan and approval of financial assurances for the operations.

SHASTA COUNTY AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)
1855 Placer Street
Redding, CA 96001

Shasta County Air Quality Management District (SCAQMD) is the air quality regulating authority within Shasta County. The SCAQMD monitors air quality at several sites throughout the county, and it serves as the lead agency responsible for implementing and enforcing federal, state and county air quality regulations. The agency also issues an "Authority to Construct" and a "Permit to Operate" for stationary air pollution sources.

SHASTA COUNTY DEPARTMENT OF RESOURCE MANAGEMENT
ENVIRONMENTAL HEALTH DIVISION
1855 Placer Street
Redding, CA 96001

The Environmental Health Division is the primary agency responsible for overseeing the commercial use and storage of hazardous materials within the Project Area. Various responsibilities include the review, approval and monitoring of "Business plans", which must be filed by every business that utilizes hazardous materials. Included in each plan is a listing of materials, storage facilities and any particular handling requirements.

SHASTA COUNTY DEPARTMENT OF PUBLIC WORKS
1855 Placer Street
Redding, CA 96001

An encroachment permit must be obtained from the Public Works Department before any grading or construction activities may commence.

1.6 ENVIRONMENTAL REVIEW PROCESS

In compliance with Section 15063 of the CEQA Guidelines, Shasta County has prepared an initial study and has determined that an EIR is required for the Shasta Ranch Mining and Reclamation Plan. In April 2005, Tullis Inc. submitted an application for a Conditional Use Permit Number 05-010 and Reclamation Plan Number 05-001. The Initial Study for this project was prepared in August 2005 by the County. As part of the environmental review for the project, the following agencies provided comments to Shasta County:

1) California Department of Fish and Game (DFG)
2) California Department of Transportation (Caltrans)
3) California Department of Forestry (CDF)
4) California Regional Water Quality Control Board (RWQCB)
5) California Department of Conservation, Office of Mine Reclamation
6) City of Anderson
7) Shasta Mosquito and Vector Control District
8) Shasta County Department of Resource Management, Air Quality District Manager
9) Shasta County Department of Resource Management, Environmental Health Division

NOTICE OF PREPARATION

In accordance with Section 15082 of the CEQA Guidelines, the County prepared a Notice of Preparation (NOP) of an EIR on November 1, 2005. A copy of the NOP is included as **Appendix 3.0-1** to this EIR. This NOP was sent to 14 public agencies in order to solicit comments, as well as the State Office of Planning and Research. The Office of Planning and Research assigned this Project State Clearinghouse #2005102134. The public comment period commenced on November 1, 2005 and ended on December 2, 2005. In order to receive greater public feedback, the comment period was extended until December 9, 2005. A public scoping meeting on the Notice of Preparation was conducted on December 1, 2005 at the Anderson City Hall, Community Room, 1887 Howard Street in the City of Anderson. Approximately 145 citizens attended the scoping meeting. Upon closing of the comment period on December 9, 2005 a total of 237 letters were received by Shasta County. The comment letters are included as **Appendix 3.0-2**.

DRAFT EIR

This document constitutes the Draft EIR (DEIR). The DEIR contains a description of the project, description of the environmental setting, identification of project impacts, and mitigation measures for impacts found to be significant, as well as an analysis of project alternatives. Upon completion of the DEIR, the County will file a Notice of Completion

(NOC) with the State Office of Planning and Research beginning a 45-day public review period (Public Resources Code, Section 21161).

PUBLIC NOTICE/PUBLIC REVIEW

Concurrent with the filing of a Notice of Completion (NOC) with the State Clearinghouse, the County will release a Notice of Availability to provide public notice that the DEIR is available for public review and will invite comment from the general public, agencies, organizations, and other interested parties. Public comment on the DEIR will be accepted both in written form and orally at a public hearing. Prior to consideration of the proposed project, the County will conduct a hearing on the DEIR during the 45-day public review period. Notice of the time and location of a public hearing will be published in the Notice of Availability. All comments or questions regarding the DEIR should be addressed to:

Bill Walker, Senior Planner
Shasta County
Department of Resource Management - Planning Division
1855 Placer Street, Suite 103
Redding, California 96001-1759
Phone: (530) 225-5532

RESPONSE TO COMMENTS/FINAL EIR

Following the public review period, a Final EIR (FEIR) will be prepared. The FEIR will include a written response to comments received during the public review period for the DEIR and to oral comments made at the public hearing. The FEIR may also contain additional information clarifying the project or addressing comments received on the DEIR. The Planning Commission will review and consider the FEIR prior to their decision to approve or conditionally approve the proposed project. The Final EIR and response to comments will be available at least ten (10) days prior to the meeting.

CERTIFICATION OF THE EIR

If the County finds that the FEIR is "adequate and complete", the Shasta County Board of Supervisors may certify the FEIR. The rule of adequacy generally holds that the EIR can be certified if: 1) it shows a good faith effort at full disclosure of environmental information, and 2) provides sufficient analysis to allow decisions to be made regarding the project in contemplation of environmental considerations.

PROJECT CONSIDERATION

After review and consideration of the FEIR, the County can consider taking action on the proposed project. A decision on the project application will be accompanied by

written Findings in accordance with CEQA Guidelines Section 15091 and, if applicable, Section 15093.

MITIGATION MONITORING REPORTING PROGRAM (MMRP)

CEQA Section 21081.6(a) requires lead agencies to adopt a reporting or monitoring program to describe measures that have been adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment. The Mitigation measures adopted by the County as conditions for approval of the project will be included in a Mitigation Monitoring and Reporting Program to reduce or avoid significant effects on the environment in compliance with CEQA Section 21081.6(a). The Mitigation Monitoring Reporting Program will ensure measures are carried out during the project implementation.

1.7 DEFINITIONS OF COMMONLY USED TERMS

The following definitions are provided to describe components of the proposed project and to set forth terminology used throughout this report:

- Project Area – **Figure 3.0-2, Project Area Map**
- Proposed Project – As described in **Section 3.0, Project Description**, and as illustrated in **Figure 3.0-4, Conceptual Site Plan.**
- Program – The Program represents the full buildout of the Shasta Ranch Mining and Reclamation Plan as described in **Section 3.0, Project Description**.
- General Plan – Refers to the existing Shasta County General Plan adopted in 2004 with goals, policies and programs currently in effect.

1.8 IMPACT CLASSIFICATIONS

Determining the severity of project impacts is fundamental to achieving the objectives of CEQA. CEQA Section 15091 requires that decision-makers make findings that significant impacts identified in the Final EIR have been mitigated as completely as feasible. If the EIR identifies any significant unmitigated impacts, CEQA Section 15093 requires decision-makers to adopt a statement of overriding considerations, which explains why the benefits of the project outweigh the adverse environmental consequences identified by the EIR.

The level of significance for each impact examined in this EIR was determined by considering the predicted magnitude of the impact against a threshold. Thresholds were developed using criteria from the CEQA Guidelines, local, regional plans and ordinances, accepted practice, and/or consultation with recognized experts. Three levels of impact significance are recognized by the EIR:

- **Less than significant [LS]** impacts would not cause a substantial change in the environment or are not disruptive enough to require mitigation, because they fall below the significance threshold.

- **Potentially significant subject to mitigation [PSM]** are potentially significant project impacts whose significance cannot be determined for certain but is reasonably considered to be significant for which sufficient mitigation has been formulated to reduce the impact to a less than significant level. Potentially significant impacts are not based upon speculation, but are impacts that can be reasonably inferred from available facts. Without implementation of the identified mitigation these impacts would be considered significant and unavoidable.

- **Significant and unavoidable impacts [SU]** are adverse impacts which cannot be avoided or mitigated to a level that is less than significant. A significant and unavoidable impact is a problem for which a solution has not been formulated, either because of limited technical and /or scientific knowledge, or because solutions are infeasible for technical, economic or social reasons.

This section provides a brief summary of the proposed project and its environmental consequences. It includes a brief description of the proposed project and associated actions, a list of possible issues of concern, and an overview of project alternatives. At the end of this section, a table is provided that lists identified environmental impacts and mitigation measures (See **Table 2.0-1, Summary of Impacts and Mitigation Measures**).

This summary should not be relied upon for a thorough understanding of individual impacts and mitigation measures. For a more complete description of the project, please refer to **Section 3.0, Project Description**. Please refer to **Section 4.0, Environmental Setting, Impacts and Mitigation Measures**, for a more complete description of project issues and potential effects. A more complete description of project alternatives is available in **Section 5.0, Project Alternatives**.

2.1 PURPOSE AND SCOPE OF THE EIR

This Project Level Environmental Impact Report (CEQA Guidelines Section 15161) evaluates the potential environmental effects of the Shasta Ranch Mining and Reclamation Plan, located in the Shasta County. The project will be comprised of 947 acres.

Under CEQA, public agencies are charged with the duty to consider the environmental impacts of a proposed development project, and to minimize these impacts where feasible. The public agency has an obligation to balance a variety of public objectives, including economic, environmental and social factors (CEQA Guidelines Section 15021). The purpose of the EIR is to provide the necessary information on the significant environmental effects of a project to public agency decision makers and the general public. Additionally, the EIR identifies possible means to mitigate the significant effects of a project. The public agency is required to consider the information in the EIR when making its decision on a project (CEQA Guidelines Section 15121).

2.2 PROJECT CHARACTERISTICS

The project applicant, Tullis Inc., proposes to establish a gravel operation that includes the excavation and processing of aggregate material on 268 acres of which is comprised of three parcels totaling 947 acres in size. The purpose of the project is to serve as existing and future market demand for sand and gravel aggregate materials.

The project would include stockpiles, staging areas, and retention basins. (See **Figure 3.0-4, Conceptual Site Plan**.) The Reclamation Plan is available for public review at the Shasta County Department of Resource Management Planning Division, 1855 Placer Street, Suite 103 in Redding, and on the internet at http//www.co.shasta.ca.us/Departments/Resourcemgmt/drm/Shasta%20RanchTOC.htm. The mined aggregate (sand and gravel) would be crushed, screened, washed, stockpiled and loaded at the processing area for off-site transport. The annual excavation of material would be approximately 266,667 cubic yards. Approximately 3.43 million cubic yards of overburden and 6.06 million cubic yards of aggregate would be excavated from the project site. The overburden and topsoil will be stockpiled and

stored for future reclamation activities including backfill of Phase 1, bank stabilization, revegetation, levee construction, and the creation of two ponds.

2.3 ISSUES OF CONCERN

As required in CEQA statutes and guidelines (§15123), the focus of this EIR is limited to issues of concern pertaining to the potential environmental effects of the project. Areas of potential concern that were identified in the Initial Study and the NOP review process include the following:

- Aesthetics
- Agriculture Resources (Addressed under "Land Use and Planning")
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources (Addressed under Geology and Soils)
- Noise
- Traffic and Circulation
- Utilities and Service Systems

2.4 ISSUES DETERMINED TO HAVE NO IMPACT

Following review of the project in the Initial Study and NOP comment period, it was determined that the project would have no impacts concerning the following issues. Consequently, these issues are not addressed in the project EIR:

- Population and Housing – The project would not create housing or parcels for housing and would therefore not increase the local population. Furthermore, the project is not creating many new job opportunities (approximately nine), and the jobs are expected to be filled by the existing local population; therefore, the project would not create a demand for new housing.

- Public Services – With the exception of impacts on public roads, which are addressed under "Traffic and Circulation", the project will not impact existing public services or create a new demand for additional public services.

- Recreation – The project will not impact existing public recreational facilities, nor will it result in an increased demand for recreation opportunities.

2.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The Alternatives Analysis, Section 5.0, identifies an environmentally superior alternative to the project. After comparing the potential environmental impacts of the alternatives, it is determined that the proposed project with mitigation measures identified in the

Draft EIR is the environmentally superior alternative. In addition, the EIR addresses potential cumulative effects of the project, growth-inducing impacts, and significant irreversible effects of the project.

2.6 OTHER IMPACTS

Under the CEQA Guidelines, the EIR must discuss cumulative impacts when they are significant. Cumulative impacts are defined as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. Several cumulative impacts of the project were identified, none of which were considered significant.

CEQA requires that the growth-inducing impacts of a project be addressed in the environmental impact report. A proposed project may result in direct and/or indirect growth-inducing impacts. No growth-inducing impacts were identified with the project.

An EIR shall include a detailed statement in a separate section setting forth any significant effect on the environment that cannot be avoided if the project is implemented. Based on the analysis in **Sections 4.1 – 4.12** and **Section 5.0**, ***significant and unavoidable impacts*** were identified with the project and are discussed in **Section 6.0, Other Sections Required by CEQA**.

TABLE 2.0-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
4.2 LAND USE			
Impact 4.2.1 The proposed project would result in a conversion of agricultural land to non-agricultural land uses, and would convert prime farmland, farmland of statewide importance, and unique farmland on the project site.	Significant and Unavoidable	None identified	Significant and Unavoidable
4.3 TRAFFIC AND CIRCULATION			
Impact 4.3.1: The project may cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system or the project may exceed, a level of service standard established by the county (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, congestion at intersections or the level of service).	Potentially significant	**MM 4.3.1:** The owner, applicant or successor in interest, shall improve the shoulder width from the Deschutes Road and Balls Ferry Road intersection southeast along Balls Ferry Road to 4th Street, Locust Road from Deschutes Road to Kimberly Road, and Kimberly Road from Locust Road to Balls Ferry Road. Alternatively, the project applicant could consolidate truck routes in this area to Deschutes Road and Balls Ferry Road, which would only require the addition of shoulders to Balls Ferry Road. The identified road improvements shall meet the Shasta County Public Works roadway development standards as directed by the traffic engineer to ensure that vehicles can be comfortably accommodated on the roadway system, with shoulders providing areas for vehicle turn-out,	Less than significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		and lane widths adequate such that two vehicles can pass each other in opposite directions, etc. *Timing/Implementation*: The improvement shall be implemented prior to operation of trucks on the study roadway segments. *Enforcement/Monitoring*: Shasta County is responsible for ensuring implementation of the identified mitigation measure.	
Impact 4.3.2: The project may cause an intersection that operates acceptably (LOS A, B, or C) to degrade to an unacceptable LOS (D, E, or F) due to the additional traffic from the project. Or if an intersection is already operating at an unacceptable LOS without the project, the project may cause an increase of 5 or more seconds of control delay due to the addition of project traffic.	Potentially significant	**MM 4.3.2(a):** No project traffic may use the Bowman/Interstate 5 north bound off-ramp intersection during the am peak hours of 7:00 am to 9:00 am during Monday through Friday work days until improvements at this intersection have been completed. Once the improvements have been completed, this mitigation is no longer necessary. *Timing/Implementation*: Ongoing. The restriction shall remain in place until the improvements to the intersection have been completed. *Enforcement/Monitoring*: Shasta County Department of Public Works.	Less than significant
		MM 4.3.2(b): The owner, applicant or successor in interest shall contribute a pro-rata share of the improvements at the Bowman/Interstate 5 north bound off-ramp	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		intersection. The pro-rata share shall be determined by the lead agency in conjunction with Tehama County. *Timing/Implementation*: Prior to issuance of a permit to operate. *Enforcement/Monitoring*: Shasta County Department of Public Works.	
Impact 4.3.3: The project may cause a freeway ramp that is operating at an acceptable level (LOS A, B, or C) to deteriorate to an unacceptable level (LOS D, E, or F) due to the addition of project traffic. Or project traffic may increase traffic at a freeway ramp already operating at an unacceptable level 10 or more passenger car equivalents (PCE's).	Potentially significant	**MM 4.3.3:** The owner, applicant or successor shall enter into an agreement with the City of Anderson to contribute a pro-rata share for the cost of improvements at both the Deschutes Road and Interstate 5 intersections. The pro-rata share shall be determined by the lead agency in conjunction with the City of Anderson. *Timing/Implementation*: Prior to issuance of a permit to operate. *Enforcement/Monitoring*: Shasta County Resource Management, Planning Division	Less than significant
Impact 4.3.7 The project traffic may cause a freeway ramp that is operating at an acceptable level (LOS A, B, or C) to deteriorate to an unacceptable level (LOS D, E, or F) under cumulative plus project	Potentially significant	Apply **MM 4.3.1and MM 4.3.3**	Less than significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
conditions. Or project traffic may increase traffic at a freeway ramp predicted to operate at an unacceptable level of service during cumulative plus project conditions, by adding 10 or more passenger car equivalents (PCE's).			
4.4 AIR QUALITY			
Impact 4.4.1: Estimated increases in onsite short-term construction-related emissions of NO_X, and PM_{10} would exceed applicable thresholds.	Potentially significant	**MM 4.4.1(a):** The applicant shall submit a construction dust mitigation plan to the AQMD for review and approval. The plan shall be deemed adequate and approved by the AQMD for mitigating onsite emissions of fugitive PM_{10} before implementation of the proposed project. This plan shall specify the methods used to control dust and particulate matter, demonstrate the availability of needed equipment and personnel, and identify a responsible individual who can authorize the implementation of additional measures, if needed. Dust control measures shall include County-recommended Best Available Mitigation Measures (BAMM), including, but not limited to, the following: 1. All disturbed areas, including storage piles, that are not being actively used shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, or vegetative ground cover.	Less than significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		2. Alternatives to open burning of vegetative material on the project site shall be used by the project applicant unless otherwise deemed infeasible by the AQMD. Among suitable alternatives are chipping, mulching, or conversion to biomass fuel. 3. The applicant shall be responsible for ensuring that all adequate dust control measures are implemented in a timely and effective manner during all phases of project development and construction. 4. All material excavated, stockpiled, or graded shall be sufficiently watered to prevent fugitive dust from leaving property boundaries and causing a public nuisance or a violation of an ambient air standard. Watering shall occur at least twice daily with complete site coverage, preferably in the mid-morning and after work is completed each day. 5. All onsite unpaved roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant. 6. Onsite vehicle speeds on unpaved surfaces shall be limited to 15 mph. 7. All land clearing, grading, earth moving or excavation activities on the project site shall be suspended when winds are expected to exceed 20 miles per hour. 8. All inactive portions of the development site	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		shall be seeded and watered until a suitable grass cover is established. Seeding shall be with an approved native seed mix. 9. The applicant shall be responsible for applying Department of Public Works approved non-toxic soil stabilizers (according to manufacturers' specifications) to all inactive construction areas (previously graded areas which remain inactive for 96 hours), in accordance with the Shasta County Grading Ordinance. 10. When materials are transported offsite, all material shall be covered and effectively wetted to limit visible dust emissions, or at least 6 inches of freeboard space from the top of the container shall be maintained. 11. All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. 12. The site access road shall be paved prior to conducting other onsite construction activities (e.g., grading of the processing area, construction of equipment footings, equipment installation). *Timing/Implementation*: Prior to and during construction.	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		Enforcement/Monitoring: Shasta County AQMD and Resource Management Department.	
		MM 4.4.1(b): To reduce short-term emissions from onsite mobile source construction equipment, (e.g., NO_x and PM_{10}), the applicant shall implement the following mitigation measures: 1. Idling time for all diesel-powered equipment shall be limited to no more than 5 minutes when not in use. 2. Heavy-duty (>50 horsepower) off-road vehicles to be used in the initial construction process, including owned, leased and subcontractor vehicles, shall achieve a minimum fleet-average 45 percent particulate reduction, compared to the most current ARB fleet average at the time of construction. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. 3. Onsite truck and equipment engines shall be maintained in good running condition, in accordance with manufacturer's specifications. Maintenance records demonstrating compliance shall be kept	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		onsite by the applicant and shall be made available to AQMD upon request. *Timing/Implementation*: Prior to and during construction operations. *Enforcement/Monitoring:* Shasta County AQMD and Department of Resource Management.	
Impact 4.4.2: Operation of the proposed project would result in emissions of NO_x and PM_{10} that would exceed applicable thresholds.	Significant and Unavoidable	**MM 4.4.2(a)**: The applicant shall develop and implement a fugitive dust control plan (FDCP) for purpose of reducing project-related fugitive dust emissions associated with the long-term operation of the proposed project. At a minimum, the FDCP shall include those measures identified in Mitigation Measure 4.4-1(a), and shall be submitted to and approved by the AQMD before implementation of the proposed project. *Timing/Implementation:* Prior to project implementation. *Enforcement/Monitoring:* Shasta County AQMD and Department of Resource Management.	Significant and Unavoidable
		MM 4.4.2(b): Heavy-duty (>50 horsepower) off-road vehicles to be used at this facility, including owned, leased and subcontractor vehicles, shall achieve a minimum fleet-average 20 percent NO_x	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		reduction, compared to the most current ARB fleet average at the time of construction. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. *Timing/Implementation:* During mining operational period *Enforcement/Monitoring:* Shasta County Department of Resource Management.	
		MM 4.4.2(c): Off-road and on-road vehicles, including owned, leased and subcontractor vehicles, shall comply with all applicable rules and regulations, including applicable diesel-risk reduction program rules and air toxic control measures (ATCMs) for diesel particulate matter. The ARB is currently in the process of adopting rules pertaining to the use of off-highway and on-highway vehicles, including those used in the mining industry. These rules are anticipated to establish emission standards for new engines and to require the use of best-available control technologies, which includes use of alternative diesel fuels or retrofit technologies such as diesel oxidation catalysts or diesel particulate filters. In the event these rules are not in effect at the time the project is implemented, off-road and on-road vehicles, including owned, leased and	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		subcontractor vehicles shall be equipped with applicable ARB-certified diesel PM reduction technologies, including but not limited to diesel oxidation catalysts, diesel particulate filters, or use alternative diesel fuels. Prior to operation, the AQMD shall be consulted to determine applicable control measures to be implemented. *Timing/Implementation:* During mining operational period. *Enforcement/Monitoring:* Shasta County Department of Resource Management.	
		MM 4.4.2(d): Off-road and on- road vehicles, including owned, leased and subcontractor vehicles, shall use the lowest sulfur-content fuel available. *Timing/Implementation*: During mining operational period. *Enforcement/Monitoring:* Shasta County Department of Resource Management.	
		MM 4.4.2(e): The applicant shall comply with all AQMD rules and regulations, including AQMD Rule 2-1, New Source Review. Rule 2-1 requires, in part, that the applicant comply with measures to reduce operational emissions of PM_{10}, including but not limited to, the installation of spray bars on screens and	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		transfer points. Rule 2-1 also requires the applicant to provide offsets for any increase in cumulative emissions, including emissions of NO_X and PM_{10}, associated with the operation of any new or modified emission sources that exceed 25 tons per year (137 lbs/day equivalent) (AQMD 2006). Based on the analysis conducted for this project, annual emissions offsets to be provided by the applicant would total approximately 25.4 tons of NO_X and 3.4 tons of PM_{10}. Based on discussions with the AQMD, emission offsets may be obtained by purchase of emission credits or through implementation of AQMD-approved emission reduction measures. *Timing/Implementation:* Prior to mining operations. *Enforcement/Monitoring:* Shasta County AQMD and Department of Resource Management.	
Impact 4.4.4: Implementation of the proposed project could result in increased PM_{10} concentrations at nearby sensitive receptors that would exceed state or federal standards.	Significant and Unavoidable	Apply **MM 4.4.2(a).**	Significant and Unavoidable

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
Impact 4.4.5: Project related activities would result in particulate deposition on nearby agricultural crops. The accumulation of dust on the leaves of nearby agricultural plants and orchards may result in reduced crop yields associated with decreased rates of plant photosynthesis and may affect the health of nearby sensitive plant species.	Potentially Significant	Apply **MM 4.4.2(a).**	Less than significant
Impact 4.4.6: Predicted airborne concentrations of diesel exhaust particulate matter would result in predicted cancer risks that would exceed applicable standards.	Significant and Unavoidable	Apply **MM 4.4.2(b).**	Significant and Unavoidable
Impact 4.4.7: Implementation of the proposed project would result in increased haul truck traffic along area roadways that could exceed applicable cancer-risk thresholds at nearby sensitive receptors.	Significant and Unavoidable	Apply **MM 4.4.2(c**) and **MM 4.4.2(d).**	Significant and Unavoidable
Impact 4.4.9: Future mining activities may expose sensitive receptors to airborne concentrations of crystalline silica.	Potentially Significant	**MM 4.4.9**: If a crystalline silica risk value is adopted by ARB during the life of the project, the applicant shall comply with the AB 2588 facility prioritization and health risk assessment requirements. In accordance with AQMD requirements implementation of mitigation	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		measures would be required to ensure that health risks to sensitive receptors remain within established acceptable levels of risk. *Timing/Implementation:* During mining operational period. *Enforcement/Monitoring*: Shasta County AQMD and Department of Resource Management.	
Cumulative – Air Quality			
Impact 4.4.11: The proposed project could contribute, on a cumulative basis, to increased emissions of ozone precursors and particulate matter, thereby exacerbating the existing exceedance of state ambient air quality standards for ozone and respirable particulate matter.	Significant and Unavoidable	None	Significant and Unavoidable
Impact 4.4.12: The proposed project and cumulative projects could combine to increase emission levels of mobile and fugitive source particulate matter at nearby sensitive receptors that would exceed applicable standards.	Significant and Unavoidable	None	Significant and Unavoidable

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
4.5 BIOLOGICAL RESOURCES			
Impact 4.5.4: Implementation of the Shasta Ranch Mining and Reclamation Plan could result in indirect impacts to federally-protected jurisdictional wetlands and other waters of the United States.	Potentially Significant	**MM 4.5.4:** The following measures shall be implemented to reduce the indirect impacts to waters of the United States: 1. Silt fencing or straw bale siltation barriers shall be installed between all waters of the United States and the construction area. 2. Initial site grading and levee construction shall be conducted during the dry summer months (June 15 through October 15). 3. Hydromulch and/or hydroseed (using native plant species) will be applied to all soil stockpiles to minimize wind and water erosion. 4. Disturbed soil, including roads, shall be watered frequently to prevent dust emissions. 5. Fueling and maintenance of construction equipment shall occur only at the processing facility to reduce the area of potential fuel spills, lubricant spills, etc. 6. Spill containment materials shall be kept on site at all times to contain any accidental spill. 7. The design of the aggregate haul roads and pond levees shall be sloped toward the pond areas to prevent storm water runoff from leaving the site and flood waters from	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		entering the ponds. 8. Work conducted within jurisdictional waters would be limited to the summer dry months, June 15 though October 15. 9. Additional mitigation measures may be implemented as conditions of the Water Quality 401 Certification issued by the Central Valley Regional Water Quality Control Board and/or the Section 1602 Streambed Alteration Agreement issued by the California Department of Fish and Game. *Timing/Implementation*: Prior to initiating construction and ongoing throughout construction for each phase. *Enforcement/Monitoring*: U.S. Army Corps of Engineers	
Impact 4.5.5: Implementation of the Shasta Ranch Mining and Reclamation Plan will result in direct and indirect impacts to fox sedge.	Potentially Significant	**MM 4.5.5:** If special-status plant species cannot be avoided during construction, the CDFG shall be contacted immediately and determine the appropriate salvage and relocation measures. Special-status plant species populations that can be avoided shall be protected with exclusionary fencing to prohibit disturbance. *Timing/Implementation:* Prior to implementing construction	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		Enforcement/Monitoring: California Department of Fish and Game.	
Impact 4.5.6: Implementation of the Shasta Ranch Mining and Reclamation Plan will result in the direct loss of, or indirect impacts, to federal and state-listed endangered Sacramento River winter-run ESU Chinook salmon and threatened Central Valley spring-run ESU Chinook salmon; federal-listed threatened Central Valley ESU steelhead and/or their designated critical habitat; and federal-listed as threatened green sturgeon.	Potentially Significant	**MM 4.5.6(a):** In the event that flood events exceed the 25-year (Phase 1) and 50-year (Phases 2 and 3) design flood capacities of the proposed quarry levees, a qualified fishery biologist shall be retained to conduct site surveys to quantify the extent of anadromous fish stranding that may occur. Fish shall be salvaged and returned to the Sacramento River to the extent practicable using fish collection and handling protocols approved by the California Department of Fish and Game and National Marine Fisheries Service. *Timing/Implementation:* During project operation and in perpetuity. *Enforcement/Monitoring:* California Department of Fish and Game and National Marine Fisheries Service.	Less than Significant
		MM 4.5.6(b): The design of the Phase 2 and Phase 3 quarry ponds shall include a controllable drainage system that allows any juvenile salmonids that may enter the ponds during floods exceeding the 50-year recurrence level to be passively returned to the	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		Sacramento River. *Timing/Implementation:* To be implemented during project operation and maintained in good operation for perpetuity. *Enforcement/Monitoring*: California Department of Fish and Game and National Marine Fisheries Service.	
		MM 4.5.6(c): Grading of the restored Phase 1 quarry shall avoid creating pits or swales and insure that slopes and contours drain to the Sacramento River in order to prevent stranding of fish species during high flow events. *Timing/Implementation*: During reclamation activities. *Enforcement/Monitoring:* California Department of Fish and Game and National Marine Fisheries Service.	
Impact 4.5.7: Implementation of the Shasta Ranch Mining and Reclamation Plan could result in direct and indirect impacts to the California Species of Special Concern: Central Valley fall/late-fall run ESU Chinook salmon, Sacramento splittail, and river lamprey.	Potentially Significant	Apply **MM 4.5.6(a)** through **MM 4.5.6(c).**	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
Impact 4.5.8: Implementation of the Shasta Ranch Mining and Reclamation Plan could result in direct and/or indirect impacts to the federally listed valley elderberry longhorn beetle.	Potentially Significant	**MM 4.5.8:** In order to avoid and/or minimize the impacts to federally listed valley elderberry longhorn beetle, the following measures shall be implemented: 1. Prior to the start of construction activities in the project area, exclusionary fencing shall be erected around all elderberry shrubs within 100 feet of the project construction areas (e.g., roads, levees). Fencing shall be erected a minimum of 20 feet from the dripline (core avoidance area) of each elderberry shrub. In areas where encroachment within 100 feet of an elderberry shrub is necessary to complete construction activities, approval from the USFWS must be received. The exclusionary fencing shall be periodically inspected throughout each period of construction and be repaired as necessary. Signs shall be erected every 50 feet along the avoidance area that state the following: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be readily visible and must be maintained for the duration of construction and mining operations. 2. Prior to construction, a Worker	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		Environmental Awareness Program for construction workers and miners shall be conducted by a qualified biologist. The program shall provide all workers with information on their responsibilities with regard to sensitive biological resources, specifically the status of the federally threatened VELB and the need to protect its elderberry host plant. 3. All construction-related disturbances in buffer areas shall be minimized, and any damaged area shall be promptly restored after construction. 4. All construction personnel shall be excluded from core avoidance areas before, during, and after construction. 5. The Project Engineer shall oversee the construction by the subcontractors, to ensure that the required mitigation measures are being properly implemented (i.e., placement of the temporary exclusionary fencing, monitoring of construction-related activities within the 20-foot buffer area, protection of existing habitat). 6. The USFWS shall be provided with a map and written details identifying the avoidance areas. 7. Should complete avoidance of elderberry shrub buffer zones and core avoidance areas be impossible, the Applicant shall	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		immediately halt construction and consult with the USFWS for further mitigation measures. Construction will continue upon receipt of written authorization from USFWS to proceed. 8. The following additional mitigation measures are identified in the event that intentional/unintentional damage (due to project construction activities) occurs to any qualifying elderberry plant. These include the following: a. Any damage to the buffer area during construction shall be restored following construction. Restoration shall include erosion control and re-vegetation with appropriate native plants as appropriate. b. Continue to protect the buffer areas from adverse effects following construction. These measures may include fencing, signs, weeding, and trash removal as appropriate. c. No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant shall be used within the buffer areas, or within 100 feet of any elderberry plant with one or more stems measuring 1inch or greater in diameter at ground level.	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		d. Mowing of grasses and other ground cover may occur from July through April to reduce fire hazard. No mowing shall occur within 5 feet of elderberry stems. Mowing must be done in a manner that avoids damaging plants (e.g., stripping away bark by mowing/trimming equipment). e. The Applicant shall provide the USFWS with a brief written description of how the core and buffer avoidance areas are to be restored, protected, and maintained after construction is completed. *Timing/Implementation:* Prior to any ground disturbance within 100 feet of elderberry shrubs. *Enforcement/Monitoring:* U.S. Fish and Wildlife Service	
Impact 4.5.9: Implementation of the Shasta Ranch Mining and Reclamation Plan could result in direct or indirect impacts to the bald eagle.	Potentially Significant	**MM 4.5.9:** In order to avoid and/or minimize the impacts to the habitat of bald eagles, the following measures shall be implemented during construction activities: 1. Grading and levee construction activities shall be scheduled to avoid the nesting season (February 15 through September 30) to the extent possible. 2. If vegetation is to be removed by the Project and all necessary approvals have	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		been obtained, potential nesting substrate (e.g. trees) that will be removed by the Project may be removed between October 1 and February 14 *(i.e.*, outside the nesting season) to ensure that active bald eagle nest trees are not removed as a result of construction activities. 3. The project proponent shall retain a qualified biologist to conduct a minimum of one survey for nesting eagles in the proposed construction and mining activities area and in a surrounding 500-foot buffer of the area. The survey shall be conducted no more than one week prior to the onset of construction. Active bald eagle nests located within 500 feet of construction activities shall be mapped. 4. If an active nest is found, Section 10 consultation with the USFWS will be required before any construction activities can begin *Timing/Implementation:* Prior to initiating construction activities for each phase. *Enforcement/Monitoring:* U.S. Fish and Wildlife Service	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
Impact 4.5.10: Implementation of the Shasta Ranch Mining and Reclamation Plan could result in direct or indirect impacts to the California red-legged frog.	Potentially Significant	**MM 4.5.10:** A California red-legged frog habitat assessment shall be conducted in accordance with guidelines provided by the USFWS (U.S. Fish and Wildlife Service 2005). This assessment shall be submitted to the USFWS who will make a determination as to whether protocol-level surveys will be required. If surveys are required by the USFWS, the applicant shall retain a qualified biologist to complete red-legged frog surveys per the USFWS protocol (U.S. Fish and Wildlife Service 2005). If it is determined that red-legged frogs may occur on the site, formal Section 10 consultation with the USFWS will be required. *Timing/Implementation:* Prior to initiating construction activities for each phase. *Enforcement/Monitoring:* U.S. Fish and Wildlife Service	Less than Significant
Impact 4.5.11: Implementation of the Shasta Ranch Mining and Reclamation Plan could result in direct or indirect impacts to the northwestern pond turtle.	Potentially Significant	**MM 4.5.11:** In order to avoid and/or minimize the impacts to the habitat of northwestern pond turtle, the following measures shall be implemented: 1. Prior to any disturbance in suitable pond turtle habitat, the project proponent shall retain a qualified biologist to survey for pond turtles in the areas to be disturbed. Surveys shall occur in no more than 48 hours prior to the onset of disturbance. Surveys of	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		the area shall be repeated if a lapse in construction activity of two weeks or greater occurs. If the species is detected, individuals shall be relocated to a suitable site within the same drainage by a qualified biologist, and a monitoring biologist will be present during initiation of construction activities to ensure that no turtles are present during the onset of disturbance activities. 2. If a northwestern pond turtle is encountered during construction, activities shall cease until appropriate corrective measures have been implemented or it has been determined that the turtle will not be harmed. Any trapped, injured, or killed northwestern *Timing/Implementation:* Prior to implementing construction activities for each phase. *Enforcement/Monitoring:* California Department of Fish and Game	
Impact 4.5.12: Implementation of the Shasta Ranch Mining and Reclamation Plan will result in take of Cooper's hawks, osprey, and white-tailed kites and/or loss of habitat for these species.	Potentially Significant	**MM 4.5.12:** In order to avoid and/or minimize the impacts to nesting raptors, the following measures shall be implemented: 1. Grading and levee construction activities shall be scheduled to avoid the nesting season (February 15 through September 30)	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		to the extent possible. 2. If vegetation is to be removed by the Project and all necessary approvals have been obtained, potential nesting substrate (e.g. trees, shrubs) that will be removed by the Project may be removed between October 1 and February 14 *(i.e.*, outside the nesting season for raptor species) to ensure that active raptor nest trees are not removed as a result of construction activities. 3. The project proponent shall retain a qualified biologist to conduct a minimum of one survey for nesting raptors in the proposed construction and mining activities area and in a surrounding 500-foot buffer of the area. The survey shall be conducted no more than one week prior to the onset of construction. Active raptor nests located within 500 feet of construction activities shall be mapped. 4. If an active nest (a nest containing eggs or young) is found a qualified biologist, in consultation with CDFG, will determine the extent of a construction-free buffer zone to be established around the nest. A qualified biologist shall monitor the nest(s) to determine when the young have fledged and submit status reports to the CDFG, as appropriate, throughout the nesting season. An active nest may only be removed after the young have fledged (based on field	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		verification). *Timing/Implementation:* Prior to initiating construction activities for each phase. *Enforcement/Monitoring:* California Department of Fish and Game	
Impact 4.5.13: Implementation of the Shasta Ranch Mining and Reclamation Plan could result in direct or indirect impacts to the purple martin, tricolored blackbird, California yellow-warbler, yellow-breasted chat, and loggerhead shrike.	Potentially Significant	**MM 4.5.13:** Grading and other construction activities shall be scheduled to avoid the nesting season (March 1 through September 30) to the extent feasible. 1. If vegetation is to be removed and all necessary approvals have been obtained, potential nesting substrate (e.g. bushes, trees, grass) that will be removed by the Project may be removed between October 1 and February 28 (i.e., outside of the nesting season) to help preclude nesting. 2. A qualified biologist shall be retained to conduct a minimum of one survey for nesting birds within the proposed construction and mining activities area and in a surrounding 250-foot buffer of the area. The survey shall be conducted no more than one week prior to the onset of construction. If no active nests are located, no further mitigation is necessary. 3. If active nests (nests containing eggs or young) are located within 250 feet of	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		construction activities, their location shall be mapped and a qualified biologist, in consultation with CDFG, will determine the extent of a construction-free buffer zone to be established around the nest. Active nests may not be removed until after the young have fledged (based on field verification). A qualified biologist shall monitor the nest to determine when the young have fledged and submit status reports to the CDFG throughout the nesting season. *Timing/Implementation:* Prior to initiating construction activities for each phase. *Enforcement/Monitoring*: California Department of Fish and Game	
Impact 4.5.14: Implementation of the Shasta Ranch Mining and Reclamation Plan could result in direct or indirect impacts to the pallid bat and Townsend's western big-eared bat.	Potentially Significant	**MM 4.5.14:** In order to avoid and/or minimize the impacts to the pallid bat and Townsend's western big-eared bat, the following measures shall be implemented: 1. A pre-construction survey for roosting bats shall be conducted prior to any removal or disturbance of large trees ≥12 inches in diameter at 4.5 feet above grade. The survey will be conducted by a qualified biologist. No activities that would result in disturbance to active roosts of special-status bats shall proceed prior to the completed surveys. If no active roosts are found, then	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		no further action would be warranted. If an active roost is located in a tree not scheduled to be removed, a qualified biologist will determine the extent of a construction-free zone to be implemented around the roost. If either a maternity roost or hibernacula is present and located in a tree scheduled to be removed, the Mitigation Measures detailed below shall be implemented. CDFG shall also be notified of any active nurseries within the construction zone. 2. If an active maternity roost or hibernacula is found in a tree schedule to be removed, the Project will be redesigned to avoid the loss of the tree if feasible. 3. If an active maternity roost is located and the Project cannot be redesigned to avoid removal of the occupied tree, demolition of that tree should commence before maternity colonies form (i.e., prior to March 1) or after young are volant (flying) (i.e., after July 31). The disturbance-free buffer zone described above should be observed during the maternity roost season (March 1 - July 31). 4. If a non-breeding bat hibernacula is found in a tree scheduled to be removed, the individuals shall be safely evicted, under the direction of a qualified biologist by opening the roosting area to allow air flow through	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		the cavity. Demolition shall then follow no less than the following day (i.e., there will be no less than one night between initial disturbance for air flow and the demolition). This action should allow bats to leave during dark hours, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight. Trees with roosts that need to be removed shall first be disturbed at dusk, just prior to removal that same evening, to allow bats to escape during the darker hours. *Timing/Implementation:* Prior to initiating construction activities for each phase. *Enforcement/Monitoring:* California Department of Fish and Game	
Impact 4.5.15: Implementation of the Shasta Ranch Mining and Reclamation Plan could result in direct or indirect impacts to the ringtail cats.	Potentially Significant	**MM 4.5.15(a):** A pre-construction survey for ringtails shall be conducted prior to any removal of trees ≥12 inches in diameter at 4.5 feet above grade. The survey will be conducted by a qualified biologist. No activities that would result in disturbance to active dens of ring-tail cats shall proceed prior to completion of the surveys. If no active dens are found, no further action would be warranted. *Timing/Implementation:* Prior to initiating construction activities for each phase.	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		Enforcement/Monitoring: California Department of Fish and Game	
		MM 4.5.15(b): If an active ring-tail nest is found, the project will be redesigned to avoid the loss of the tree occupied by the nest if feasible. If the project cannot be redesigned to avoid removal of the occupied tree, demolition of that tree should commence outside of the breeding season (February 1 to August 30). If a non-breeding den is found in a tree scheduled to be razed, the individuals shall be safely evicted under the direction of a qualified biologist. Trees with dens that need to be removed shall first be disturbed at dusk, just prior to removal that same evening, to allow ring-tail cats to escape during the darker hours. *Timing/Implementation:* Prior to initiating construction activities for each phase. *Enforcement/Monitoring:* California Department of Fish and Game	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
Impact 4.5.19: Implementation of the Shasta Ranch Mining and Reclamation Plan could result in the spread of non-native and invasive plant species.	Potentially Significant	**MM 4.5.19(a):** In order to avoid and/or minimize the potential introduction and/or spread of noxious weeds, the following measures shall be implemented: 1. Use only certified weed-free erosion control materials, mulch, and seed. 2. Preclude the use of rice straw in riparian areas. 3. Limit any import or export of fill to material not known to be weed free. 4. Annual weed monitoring of the project area will be conducted until habitat performance criteria (as detailed in the Reclamation Plan) have been met for two consecutive years. Areas planted with native species will be weeded between the months of April and August using the best available method. Herbicide treatment for invasive species that cannot be eradicated through manual or mechanical removal will be permitted as needed. *Timing/Implementation:* Throughout project construction and reclamation. *Enforcement/Monitoring:* California Department of Fish and Game	Less than Significant
		MM 4.5.19(b): All slopes shall be vegetated with indigenous grasses or plants to	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		minimize surface erosion. *Timing/Implementation:* Prior to issuance of the final grading permit, Conditional Use Permit and Reclamation Plan. *Enforcement/Monitoring:* Shasta County Department of Resource Management, Environmental Health Division and Planning Division.	
4.6 CULTURAL RESOURCES			
Impact 4.6.2: Implementation of the proposed project could result in the potential disturbance or destruction of site CA-SHA-779.	Potentially Significant	**MM 4.6.2:** Ground disturbing project activity should not be conducted within boundaries of sites CA-SHA-779. If ground disturbing activity within boundaries of this site cannot be avoided, one of the following options shall be implemented: 1. An archaeologist meeting the Secretary of Interior's Professional Qualifications Standards in prehistoric archaeology shall be retained to excavate the sites to determine their eligibility for inclusion on the NRHP and the CRHR and recover the data potential of the sites, if appropriate; or 2. An archaeologist meeting the Secretary of Interior's Professional Qualifications Standards in prehistoric archaeology shall be retained to: prepare an inadvertent discovery plan; monitor any ground disturbing activities within site boundaries;	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		and update the records for the sites; or 3. A representative of the Wintu Tribe shall be on-site to monitor all ground disturbing activity within the boundaries of CA-SHA-779. If significant cultural resources are identified during monitoring the protocols presented in the inadvertent discovery plan shall be implemented. *Timing/Implementation:* As a condition of project approval, and implemented prior to and during grading, mining and/or construction activities. *Enforcement/Monitoring:* Shasta County Department of Resource Management Department, Planning Division	
Impact 4.6.3: Prehistoric or historic sites may be uncovered in the course of any grading, construction or mining activity associated with the project.	Potentially Significant	**MM 4.6.3:** If any prehistoric and/or historic resources, or other indications of cultural resources are found once project implementation is underway, all work in the immediate vicinity of the find must stop and the County shall be immediately notified. An archaeologist meeting the Secretary of Interior's Professional Qualifications Standards in prehistoric or historical archaeology, as appropriate, shall be retained to evaluate the finds and recommend appropriate mitigation measures. *Timing/Implementation:* During grading,	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		mining and/or construction activities. *Enforcement/Monitoring:* Shasta County Department of Resource Management, Planning Division	
Impact 4.6.4: Paleontological resources may be uncovered in the course of any grading or construction work associated with the project.	Potentially Significant	**MM 4.6.4:** If any paleontological resources are found once project implementation is underway, all work in the immediate vicinity of the find must stop and the County shall be immediately notified. A qualified paleontologist (i.e. one with a graduate degree in paleontology, geology, or related field, and having demonstrated experience in the vertebrate, invertebrate, or botanical paleontology of California) shall be retained to evaluate the finds and recommend appropriate mitigation measures. *Timing/Implementation:* During grading, mining and/or construction activities. *Enforcement/Monitoring:* Shasta County Department of Resource Management, Planning Division	Less than Significant
Impact 4.6.5: Human remains may be uncovered in the course of any grading or construction work associated with the project.	Potentially Significant	**MM 4.6.5:** If human remains are discovered, all work must stop in the immediate vicinity of the find, and the County Coroner must be notified, according to Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native	Less than significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		American, the coroner will notify the Native American Heritage Commission, and the procedures outlined in CEQA Section 15064.5(d) and (e) shall be followed. *Timing/Implementation*: During grading, mining and/or construction activities. *Enforcement/Monitoring*: Shasta County Department of Resource Management, Planning Division	
4.7 NOISE			
Impact 4.7.1: Construction activities may potentially occur during the more noise-sensitive evening and nighttime hours (i.e., 7p.m. to 7a.m.). Increases in ambient noise levels during these noise-sensitive hours of the day could result in potential increase in levels of annoyance and/ or sleep disruption to occupants of nearby dwellings.	Potentially Significant	**MM 4.7.1(a):** Use of construction equipment during initial placement of the onsite equipment and paving of the access road shall be limited to the hours between 7 a.m. and 7 p.m., Monday through Saturday. Construction activities shall be prohibited on Sundays, and federal-/state-recognized holidays. *Timing/Implementation:* Upon commencement of project operation *Enforcement/Monitoring:* Shasta County Department of Resource Management.	Less than significant
		MM 4.7.1(b): Construction equipment shall be properly maintained and equipped with noise control, such as mufflers and engine shrouds, in accordance with manufacturer specifications.	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		Timing/Implementation: Upon commencement of project operations *Enforcement/Monitoring*: Shasta County Department of Resource Management.	
Impact 4.7.2: Long-term exposure to Stationary-Source Noise Levels. Predicted onsite operational noise levels would exceed County noise standards.	Significant and Unavoidable	**MM 4.7.2(a)**: Mining equipment shall be properly maintained and equipped with noise control devices, such as mufflers and engine shrouds, in accordance with manufacturer specifications. *Timing/Implementation:* Upon commencement of project operations *Enforcement/Monitoring:* Shasta County Resource Management Department.	Less than significant
		MM 4.7.2(b): Mining and processing operations shall be limited to hours between 7 a.m. and 7 p.m. *Timing/Implementation:* Upon commencement of project operations *Enforcement/Monitoring:* Shasta County Resource Management Department.	
		MM 4.7.2(c): A sound barrier (e.g., earthen berms, walls, etc.) shall be constructed to shield nearby residential dwellings from line-of-sight to nearby mining areas. Recommended barrier	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		locations are depicted in **Figure 4.7-2**. The recommended barrier located along the southwestern boundary of the Phase 2 mining area shall be constructed concurrent with removal of material from Phase 1 mining area and prior to commencing Phase 2 mining activities. The recommended barrier located along the northwestern boundary of the Phase 3 mining area shall be constructed prior to commencing Phase 3 mining activities. *Timing/Implementation:* Upon commencement of project operations *Enforcement/Monitoring:* Shasta County Resource Management Department.	
		MM 4.7.2(d): The proposed levee located along the southeastern boundary of the project site shall be constructed to a minimum height of 12 feet above ground level (AGL) (refer to **Figure 4.7-3**). *Timing/Implementation:* Upon commencement of project operations *Enforcement/Monitoring:* Shasta County Resource Management Department	
		MM 4.7.2(e): Material screens and crushers shall be strategically located on the project site, enclosed, or reflective barriers installed sufficient to shield line-of-sight between the	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		noise-generating source of the equipment and the nearest adversely affected receptors (i.e., Receptors 4 and 5). As an alternative, the height of the proposed levee located immediately southwest of the processing area may be increased to a minimum height of 8 feet, provided the increased levee height would interrupt line-of-sight between the noise-generating source(s) of the equipment and the nearest adversely affected receptors (i.e., Receptors 4 and 5). *Timing/Implementation:* Upon commencement of project operations *Enforcement/Monitoring:* Shasta County Resource Management Department	
		MM 4.7.2(f): Excavation of the proposed Phase 1 mining area shall commence at the northern-most boundary (Phase 1d), at the furthest distance, from the nearest residential dwelling (i.e., Receptor 7). *Timing/Implementation:* Upon commencement of project operations *Enforcement/Monitoring:* Shasta County Resource Management Department	
Impact 4.7.3: During temperature inversions and windy conditions, predicted onsite operational noise levels would result in noticeable increases in ambient	Significant and Unavoidable	Apply **MM 4.7.2(a) through MM 4.7.2(f)**	Significant and Unavoidable

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
noise levels at nearby receptors that will exceed County noise standards.			
Impact 4.7.4: The project will result in a noticeable increase in traffic noise levels that exceed the County's noise standard of 60dBA L_{dn}/CNEL at receptors located along proposed haul routes.	Significant and Unavoidable	Apply **MM 4.7.2(b).**	Significant and Unavoidable
Impact 4.7.5: Exposure of Noise-Sensitive Receptors to Intermittent Noise Events. Predicted impulsive noise levels at nearby residences could exceed the County's recommended noise standard.	Potentially significant	Apply **MM 4.7-2(a) through MM 4.7-2(f).**	Less than significant.
Cumulative - Noise			
Impact 4.7.7: The proposed project would result in a noticeable increase in traffic noise levels that could potentially exceed the County's noise standard of 60 dBA CNEL/Ldn at some receptors located along area haul routes. The project's	Significant and Unavoidable	Apply **MM 4.7.6** and **MM 4.7.2(b)**	Significant and Unavoidable

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
contribution to future cumulative traffic noise levels would be considered significant and unavoidable			
4.8 GEOLOGY AND SOILS			
Impact 4.8.2: Seismic-related ground failure, liquefaction and/ or landslides could potentially occur on the project site.	Potentially Significant	**MM 4.8.2:** Prior to approval of the project, a detailed erosion control plan shall be prepared by the project applicant and submitted to the County for approval. The erosion control plan will be designed to limit the effects of soil erosion and water degradation during construction, and limit the hazards associated with streambank erosion within the creek areas. This plan will be prepared and implemented in accordance with any current regulation, and shall include (but not limited to) the following: 1. Construction timing for initial placement of onsite equipment (processing area), road grading/ paving, and levee construction operations (May 15- Oct 15); 2. Erosion control methods which utilized sediment traps, barriers, covers or other methods approved by the County; 3. Recommendations for cut and fill slopes, consistent with the geotechnical report; 4. Recommendations for mulching, seeding, revegetation and other stabilization	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		measures as approved by the County; 5. Plans for deposition and storage of excavated materials; and 6. Construction phasing plans for each excavation pit that identifies the sequence and extent (acreage) of graded areas for the phase under mining. *Timing/ Implementation*: Prior to the construction and equipment installation. *Enforcement/ Monitoring*: Shasta County Department of Resource Management, Environmental Health Division and Planning Division.	
Impact 4.8.3: Mining operations would require extensive grading, excavation, filling, and site preparation that will increase the potential for erosion and could lead to slope instability.	Potentially Significant	Apply **MM 4.9.3** in Section 4.9, Hydrology and Water Quality, **MM 4.4.1(a) and MM 4.4.2(a)** in Section 4.4, Air Quality and **MM 4.5-3(a)** in Section 4.5, Biological Resources in addition to the following mitigation measures.	Less than Significant
		MM 4.8.3(a): All excavated slopes shall be hydroseeded with indigenous grasses or plants to minimize surface erosion. *Timing/Implementation*: During project implementation and thereafter as part of the annual mine inspection program. *Enforcement/Monitoring*: Shasta County Department of Resource Management, Environmental Health Division and Planning	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		Division.	
		MM 4.8.3(b): Topsoil and overburden piles shall be treated with hydroseed and/or mulch to restore the structure of the bare soil during storage and reduce soil erosion from wind and heavy rains. *Timing/Implementation:* During project implementation and thereafter as part of the annual mine inspection program. *Enforcement/Monitoring*: Shasta County Department of Resource Management, Environmental Health Division and Planning Division.	
		MM 4.8.3(c): Soil disturbance, grading, and other site preparation (levee construction, road improvements, and construction of the processing area), including vegetative clearance shall occur between May 1 and October 15 of any project construction year to avoid the rainy season and reduce soil erosion and potential runoff. *Timing/Implementation*: During project implementation and thereafter as part of the annual mine inspection program. *Enforcement/Monitoring*: Shasta County Department of Resource Management, Environmental Health Division and Planning Division.	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		MM 4.8.3(d): Drainage and storm water runoff control systems and related facilities shall be designed to fit the hydrology of the site under full development and have full flow capacity plus adequate safety features. The systems shall be non-erosive in design, should conduct runoff to a stable outlet, and be installed prior to October 15 of each construction year. *Timing/Implementation*: During the initial road construction and equipment installation. *Enforcement/Monitoring*: Shasta County Department of Resource Management, Environmental Health Division and Planning Division.	
		MM 4.8.3(e): Excavated slopes shall be protected from concentrated runoff and sheet flows using v-ditches at the tops of the slopes to keep the drainage from running over the slope face. *Timing/Implementation:* During project implementation and thereafter as part of the annual mine inspection program. *Enforcement/Monitoring:* Shasta County Department of Resource Management, Environmental Health Division and Planning Division.	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
Impact 4.8.4: Structures associated with the project may be constructed on potential expansive soils as defined in Table 18-1-B of the California Building Code.	Potentially Significant	**MM 4.8.4**: For portion of the project site where structures would be placed, the project applicant shall submit a report from a qualified engineer or soils specialist that identifies the location of expansive soils and demonstrates how the potential negative impacts of these soils can be minimized or avoided, in accordance with Policy SG-e of the Shasta County General Plan. *Timing/Implementation:* Prior to construction and equipment installation. *Enforcement/Monitoring:* Shasta County Department of Resource Management, Environmental Health Division and Planning Division.	Less than Significant
4.9 HYDROLOGY AND WATER QUALITY			
Impact 4.9.3: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on-or off-site, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on-or off-site.	Potentially Significant	**MM 4.9.3(a):** Prior to the construction of any drainage improvements for the access roadway to the project site in the vicinity of the crossing(s) of Anderson Creek that will raise the elevation of the roadway embankment or result in construction outside of the limits of the existing roadway, plans and specifications for the modifications to the access roadway and crossing(s) shall be prepared by a registered professional engineer and submitted to the County for approval. Additionally, the design shall be supported by a hydrologic and	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		hydraulic analysis that demonstrates that the proposed crossing modifications will not impede or redirect flood flows. *Timing/Implementation:* Prior to the acquisition of a Floodplain Use Permit. *Enforcement/Monitoring:* Shasta County Department of Public Works.	
		MM 4.9.3(b): The project shall incorporate the following provisions for local drainage control as represented in the submitted Reclamation Plan: 1) Surface runoff generated within proposed mining operation areas will be prevented from discharging into the river; 2) Construction of the site levees and grading performed during mining operations will be performed in a manner such that onsite runoff will be directed to the interior of the mining phases. The onsite haul roads and pond levees will be sloped toward the pond areas and the internal Oak Woodland/Riparian/Wetland Reserve area to prevent storm water from leaving the site; and 3) A flood control levee will be constructed along the south boundary of the project site to prevent runoff from mining operations from entering the property to the south. *Timing/Implementation:* Prior to the acquisition of a Conditional Use Permit. *Enforcement/Monitoring:* Shasta County Department of Public Works.	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		MM 4.9.3(c): Construction plans and specifications and a maintenance plan shall be prepared by a registered professional engineer and submitted to the County for the proposed flood control levee (spur dike) along the south boundary of the project site. This levee will be constructed in conjunction with the initial phase of the project using topsoil and overburden produced by initial grading operations. The construction plans and specifications and maintenance plan shall include and conform to the following: 1) Relevant provisions set forth in the geotechnical investigation report prepared for the project by Kleinfelder; 2) Provision for an appropriate level of freeboard for the levee height above the 100-year flood elevation for the Sacramento River, considering wave action, velocity head, settlement potential and other factors; 3) Provision for armoring of any portions of the levee that may be subject to erosion due to flow velocities or other concerns; and 4) A plan/program for inspection and maintenance of the levee, including the period beyond the life of the project. *Timing/Implementation*: Prior to the acquisition of a Conditional Use Permit. *Enforcement/Monitoring*: Shasta County Department of Public Works.	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
Impact 4.9.6: Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, inundation by seiche, tsunami or mudflow.	Potentially Significant	Apply **MM 4.9.3(c)**	Less than Significant
4.10 AESTHETICS AND VISUAL RESOURCES			
Impact 4.10.2: The project will substantially degrade the visual character or quality of the site and the surrounding area.	Potentially Significant	**MM 4.10-2:** All mining stockpiles, spoils, and recycled material shall be stored at least 200 feet away from natural waterways (i.e. Anderson Creek, and Sacramento River) unless it is fully screened by a berm and/ or vegetation. New structures shall be located at least 200 feet away from existing waterways. No junk, debris, non-operative vehicles, or equipment that is not already existing and/or unrelated to the quarry shall be stored anywhere on the property, unless visually screened from off-site views. *Timing/Implementation:* Upon commencement of mining operations. *Enforcement/Monitoring:* Shasta County Department of Resource Management - Planning Division, Building Department.	Less than Significant
Impact 4.10.3: The project would introduce new light and glare sources into the project area.	Potentially Significant	**MM 4.10.3**: All lighting on the site shall meet the Illuminating Engineering Society of North America (IESNA) requirements for reduction/illuminations of light trespass as set forth in Recommended Practice Manual:	Less than Significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		Lighting for Exterior Environments (RP-33-99). The location of lighting shall be shown on building/ site plans for review and approval by the Planning Division. *Timing/Implementation:* The location of lighting shall be approved prior to issuance of a building permit for the first phase of construction. *Enforcement/Monitoring:* Shasta County Department of Resource Management, Planning Division.	
4.12 HAZARDS AND HAZARDOUS MATERIALS			
Impact 4.12.1: Hazardous materials transported, stored and/or used onsite during proposed mining and reclamation activities (i.e., petroleum products, lubricants, solvents) could potentially be spilled or released into the atmosphere through improper storage and/ or handling.	Potentially significant	See **MM 4.4.1(a)** and **MM 4.4.2(a)** in Section 4.4, Air Quality and the following mitigation measure: **MM 4.12.1** A designated parking area shall be paved for vehicles and equipment not in use. *Timing Implementation*: Prior to initiating quarry operations. *Enforcement/Monitoring*: Shasta County Resource Management, Planning Division	Less than significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
Impact 4.12.2: The potential transport of polychlorinated dibenzo-p-dioxin (2,3,7,8- TCDD) and polychlorinated dibenzo-furan (2,3,7,8-TCDF) in groundwater during construction and mining operations could result in the contamination of neighboring private drinking water wells.	Potentially significant	**MM 4.12.2:** The Phase 3 overburden material may not be used as fill material for the Phase 2 reclamation activities below existing groundwater levels. *Timing/Implementation:* During Phase 2 site reclamation activities. *Enforcement/Monitoring*: Regional Water Quality Control Board and Shasta County Resource Management Department, Planning Division.	Less than significant
Impact 4.12.3: Hazardous materials polychlorinated dibenzo-p-dioxin 2,3,7,8-TCDD and polychlorinated dibenzo-furan 2,3,7,8-TCDF, may become airborne during mining and reclamation activities that could potentially result in an adverse impact to both public and environmental health within the vicinity of the mining and reclamation activities.	Potentially significant	See **MM 4.4.1(a)** and **MM 4.4.2(a)** in Section 4.4 Air Quality, **MM 4.5-3(a)** in Section 4.5 Biological Resources, **MM 4.8.2 (a-e)** in Section 4.8 Geology, Soils and Minerals, and **MM 4.9.3** in Section 4.9 Hydrology and Water Quality and the following mitigation measures:	Less than significant
		MM 4.12.3(a): Trenches constructed around the stockpiles containing Phase 3 soils/ overburden shall have a minimum setback distance of 30 feet from the trench toe of slope to the Phase 3 excavated slope to ensure the trenches remain undisturbed. This 30-foot setback area does not prohibit the use of a	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		haul road. *Timing/ Implementation*: Prior to grading and excavation activities for Phase 3 operations. *Enforcement/Monitoring:* Shasta County Resource Management Department, Environmental Health Division.	
		MM 4.12.3(b): Bright colored fencing shall be placed in the setback area between the trenches and Phase 3 mining pit. *Timing/Implementation:* Prior to grading and excavation activities for Phase 3 operations. *Enforcement/Monitoring:* Shasta County Resource Management Department, Environmental Health Division.	
Impact 4.12.4: The project may increase the potential for mosquitoes and the West Nile virus to adversely impact public residents in the area.	Potentially significant	**MM 4.12.4:** The applicant shall consult with the Shasta Mosquito and Vector Control District in designing and developing the settling basins. Any recommendations made by the Control District shall be incorporated into the basin designs. At minimum, the shorelines of the banks shall be graded out to the maximum extent practical to minimize potential breeding grounds. Banks and slopes shall be constructed to inhibit the growth of emergent vegetation	Less than significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		while maintaining slope stability (2:1 ratio). The Control District design guidelines and mosquito prevention measures shall also be incorporated into the project's continual maintenance program. *Timing/Implementation:* Prior to granting of occupancy permit. *Enforcement/Monitoring*: Shasta County Department of Mosquito and Vector Control District.	
Impact 4.12.5: The project would be located in an "Unclassified" wildland fire hazard area.	Potentially significant	**MM 4.12.5:** The project applicant shall comply with the standard requirements and recommendations of the Shasta County Fire Department, as described in the letter from Ken McClean, County Fire Warden, to Russ Mull, Director of Department of Resource Management, dated April 25, 2005 (See **Appendix 3.0-2**) These standard and requirements shall be incorporated into the condition of approval for the use permit, and include the following: 1. The access road shall be in accordance with Section 6.12 of the Fire Safety Standards. 2. Bridges and culverts shall be designed and constructed in accordance with the Fire Safety Standards and shall be capable of supporting 40,000-pound vehicle load.	Less than significant

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		3. The applicant shall properly dispose of any vegetation cleared for this project. Disposal shall be in accordance with Air Quality management Regulation and Site or local Fire Department Burning Permit Regulations. 4. Storage, use, and dispensing of flammable/combustible liquids shall be in accordance with the adopted edition of the California Fire Code. Plans shall be submitted for review and approval prior to construction, storage, or use. 5. Any welding and storage of cylinders shall be in accordance with the adopted edition of the California Fire Code. 6. Accumulations of waste paper, weeds, combustible waste material, waste petroleum products, tires, or rubbish of any type shall be prohibited. 7. Rags, cloth, or paper towels saturated with oil, solvent, or petroleum products shall be kept in a metal can with a tight fitting cover. 8. In accordance with Public Resources Code 4291 (a) the applicant shall provide "Defensible Space" by removing all flammable vegetation from around all buildings for a minimum of 100 feet or to the property line, whichever is closer. 9. All mobile and stationary equipment with non-turbocharged internal combustion	

Impact	Level of Significance Without Mitigation	Mitigation Measure	Level of Significance After Mitigation
		engines shall be equipped with a property functioning, approved spark arrestor. 10. Each vehicle shall be equipped with a portable fire extinguisher. *Timing/Implementation:* Prior to approval of the conditional use permit. *Enforcement/Monitoring*: Shasta County Fire Department, Department of Resource Management	

3.1 PROJECT LOCATION AND REGIONAL SETTING

The proposed project is located in the southern portion of Shasta County in northern California. The project site is approximately 140 miles north of the City of Sacramento, 16 miles south of the City of Redding and 24 miles southeast of Shasta Dam. The City of Anderson is the nearest city located approximately 2.5 miles northwest of the project site. See **Figure 3.0-1,** Regional Map. (Section 53, 55, 56, 59, 60 of the P.B. Reading Grant)

The Shasta Ranch project site can be found along the southwest banks of the Sacramento River, east of Balls Ferry Road between Riverland Drive and Blue Jay Road. The project site encompasses the following Shasta County Assessors Parcel Numbers: 091-040-002, 091-050-002 and 091-080-002 totaling 947 acres in size. Access is gained from Balls Ferry Road via an unpaved private road located approximately 100 yards northwest of the Balls Ferry Road and Kimberly Road intersection. (See **Figure 3.0-2**, Location Map).

The southern Shasta County region can be described as rural agricultural lands with flat to gentle slopes, a mix of valley-oak woodlands, and annual grasslands. Within the project vicinity lies the northern Sacramento River, one of the principle waterways that runs throughout the Shasta County. The southern region is predominantly rural residential with open space. Within the project vicinity there is a mix of rural residential houses scattered west of the Sacramento River, but overall the area is sparse in population.

3.2 SITE DESCRIPTION

The project site is located on an alluvial floodplain bound by the Sacramento River to the east, the Anderson Creek drainage west and the Anderson Cottonwood Irrigation District (ACID) canal, which bisects the west portion of the southwest boundary. The topography is relatively flat with gentle to moderate slopes. Valley-oak woodlands occur throughout the area. Valley foothill-riparian and fresh emergent marsh occurs mainly in floodplain areas and agricultural drainages while annual grasslands occur within fallow fields. See **Table 3.0-1**, Vegetation Habitat Types.

TABLE 3.0-1
VEGETATION HABITAT TYPES (TOTAL ACREAGE)

Habitat Type	Number of Acres
Valley Oak Woodland	94.97
Valley foothill riparian	116.22
Annual grassland	425.43
Fresh emergent wetland	13.10
Eucalyptus	75.3
Irrigated hayfield	189.56
Riverine Plant Communities	1.66

Source: EIP & Sharrah, Dunlap, & Sawyer, Screencheck for Shasta Ranch Mining and Reclamation Plan. March 2005

The site currently supports row crops, areas of native habitat, and fallow farmland. The primary crops grown are alfalfa, corn, pumpkins and oats. There is a small feed lot, cattle corrals, and a few residences on the southwest side of Anderson Creek. A eucalyptus grove exists on either side of the access road. The Pacific Gas & Electric (PG&E) Company has four sets of high voltage transmission lines (power lines) that traverse across the north end of the property in a northeast-southwest direction. Existing

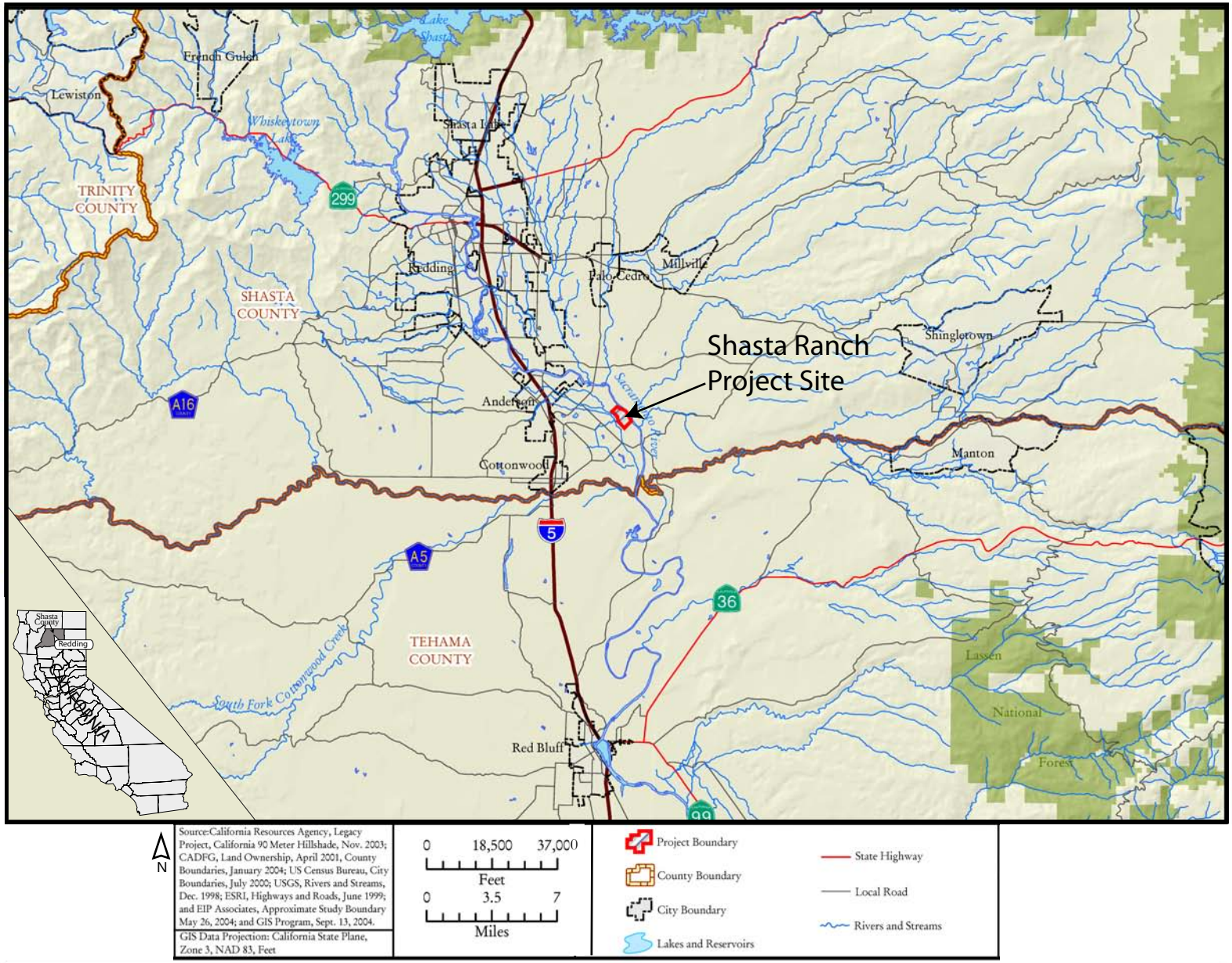
Photo 3.0-1: Power Lines crossing north end of property.

Photo 3.0-2: Agricultural croplands located near the proposed processing area and Phase 2.

agricultural wells including groundwater monitoring wells are located throughout the site. In addition, unimproved dirt roads outline the existing waterways and agricultural fields. A return reservoir, used to collect irrigation runoff from past and present farming practices, is centrally located near the Sacramento River. At this time farming practices are expected to continue dependent upon the phase in active operations.

Previous irrigation practices include the irrigation of selected fields with wastewater effluent material disposed from the previous paper mill operations located north of the site. (See **Figure 3.0-3**, Shasta Ranch Site map) Because of these past operations the Shasta Ranch site has undergone extensive studies to identify any potential on site hazards associated with wastewater effluent materials disposed of onsite. Seven different types of dioxins including 2,3,7,8- TCDD and 10 furans including 2,3,7,8- TCDF were identified. For further discussion see **Section 4.12 Hazards and Hazardous Materials**.

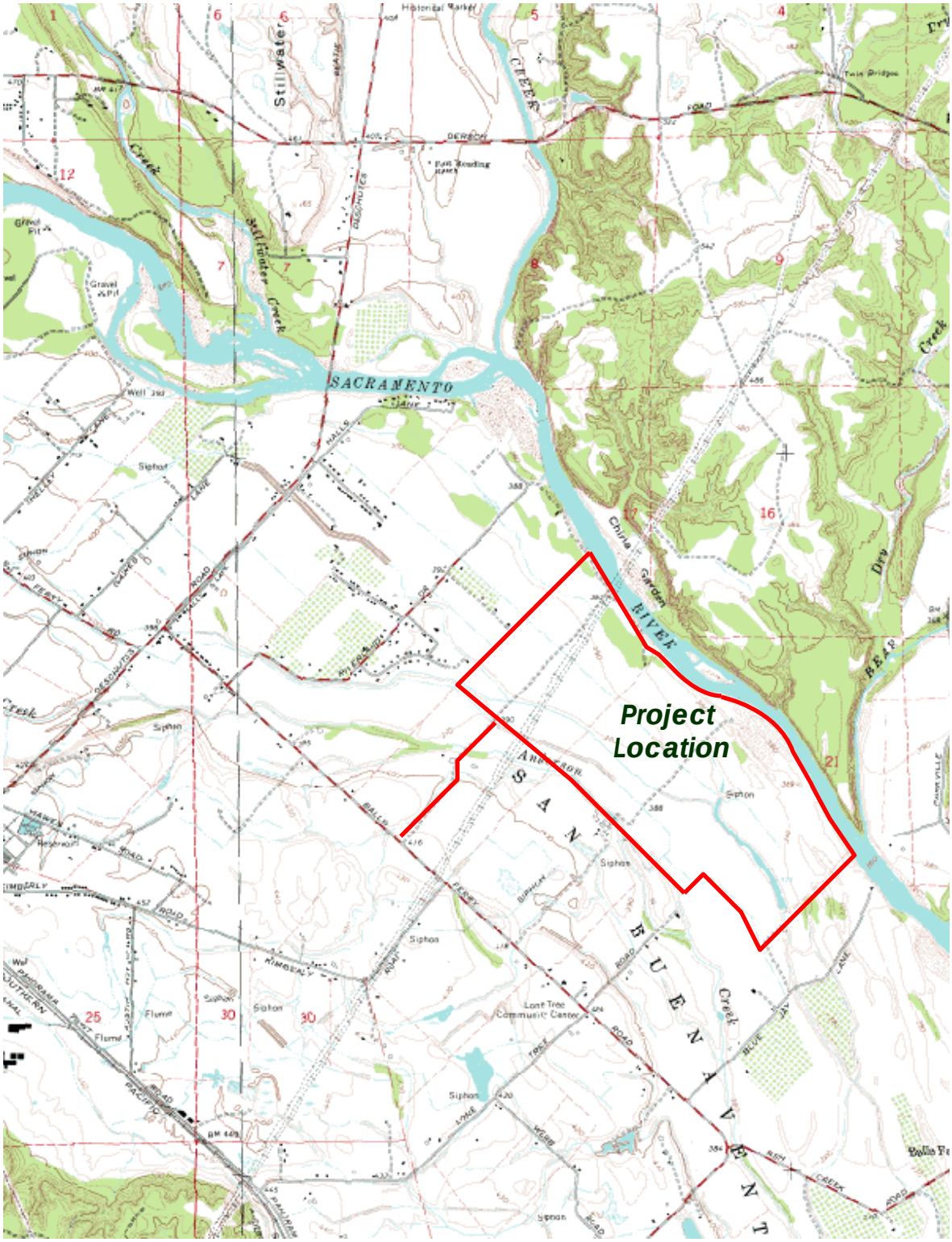
A reconnaissance level biological survey and wetlands delineation was completed for the project site. The wetland delineation determined that approximately 55.2 acres of wetlands, " waters of the United States" occur within the project area. The biological survey reviewed various state and federal special-status species lists, which revealed the presence of one special status plant species occurring on the site, and nine special-status wildlife species. More information on biological resources of the project site is available in **Section 4.5 Biological Resources** and **Appendix 4.5-1.**



Source: Vestra, 2006

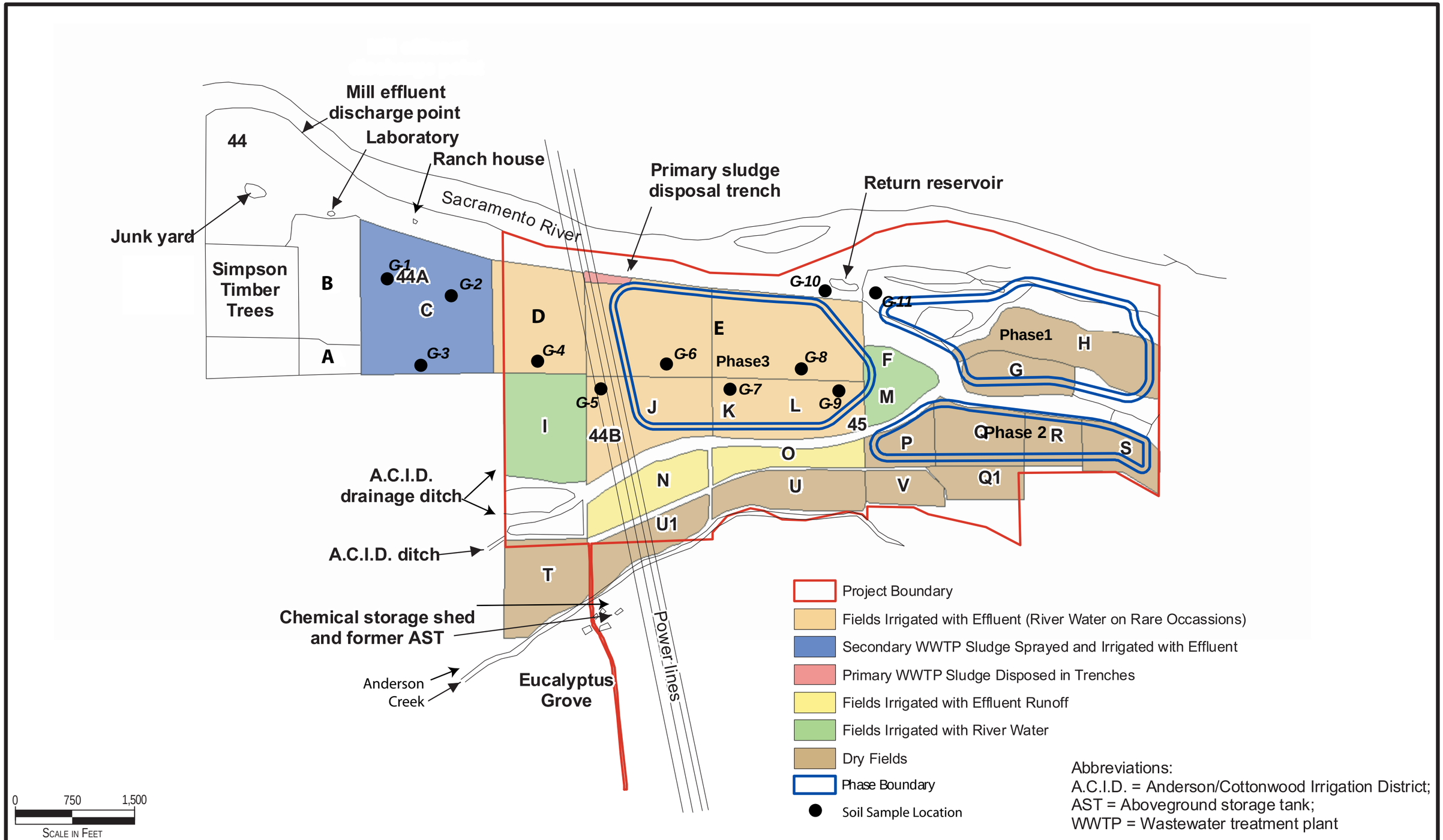
FIGURE 3.0-1
REGIONAL MAP

PMC



Source: PMC, 2006

FIGURE 3.0-2
LOCATION MAP
SHASTA RANCH
PMC



SOURCE: GEOMATRIX, 2005

Figure 3.0-3
Shasta Ranch Site Map
PMC

3.3 PROJECT OBJECTIVES

The project applicant, Tullis Inc., proposes to establish a gravel operation that includes the excavation and processing of aggregate material. The purpose of the project is to serve as an existing and future market demand for sand and gravel aggregate materials. The following objectives have been created to define the scope of work for the Shasta Ranch project.

- Establish a surface mining sand and gravel operation to supply the existing and future market demands.
- Create a processing area for washing, screening, and crushing of aggregate material with designated stockpile and storage areas.
- Reclaim mined materials as material is removed to restore back to active agricultural farmland.
- Modify and revegetate two mining pits to create productive ecosystems that are compatible with the existing riparian area and natural landscape.
- Create ponds as reclamation to the site to enhance the existing ecosystem and natural habitat.
- Preserve onsite areas of emergent marsh wetlands and protect areas of Sacramento River riparian habitat.
- Create both temporary and permanent levees to exclude migratory fish from excavated areas of the project site during high river flows.

3.4 PROJECT CHARACTERISTICS

Table 3.0-2 provides a brief summary of terms and definitions that may be found throughout the Shasta Ranch Draft EIR.

TABLE 3.0-2
GENERAL TERMS AND DEFINITIONS

Terms	Definition
Topsoil	The material found in the upper most part of the soil, ranging in depths of 7-to 25 cm, ordinarily moved during cultivation activities.
Overburden	Consists of a mix of clay, silt, sand and topsoil that is relatively rich in organic material located above the aggregate deposits. Overburden on the Shasta Ranch site can be found between 0-10 feet in depth.
Aggregate	Material is a combination of sand and gravel found beneath the overburden approximately 15-feet in depth on the project site.
Reclamation	A combined process of land treatment that minimize water degradation, air pollution, damage to aquatic or wildlife habitat, flooding, erosion, and other adverse effects from surface mining operations, including adverse surface effects incidental to underground mines, so that mined lands are reclaimed to a

TABLE 3.0-2
GENERAL TERMS AND DEFINITIONS

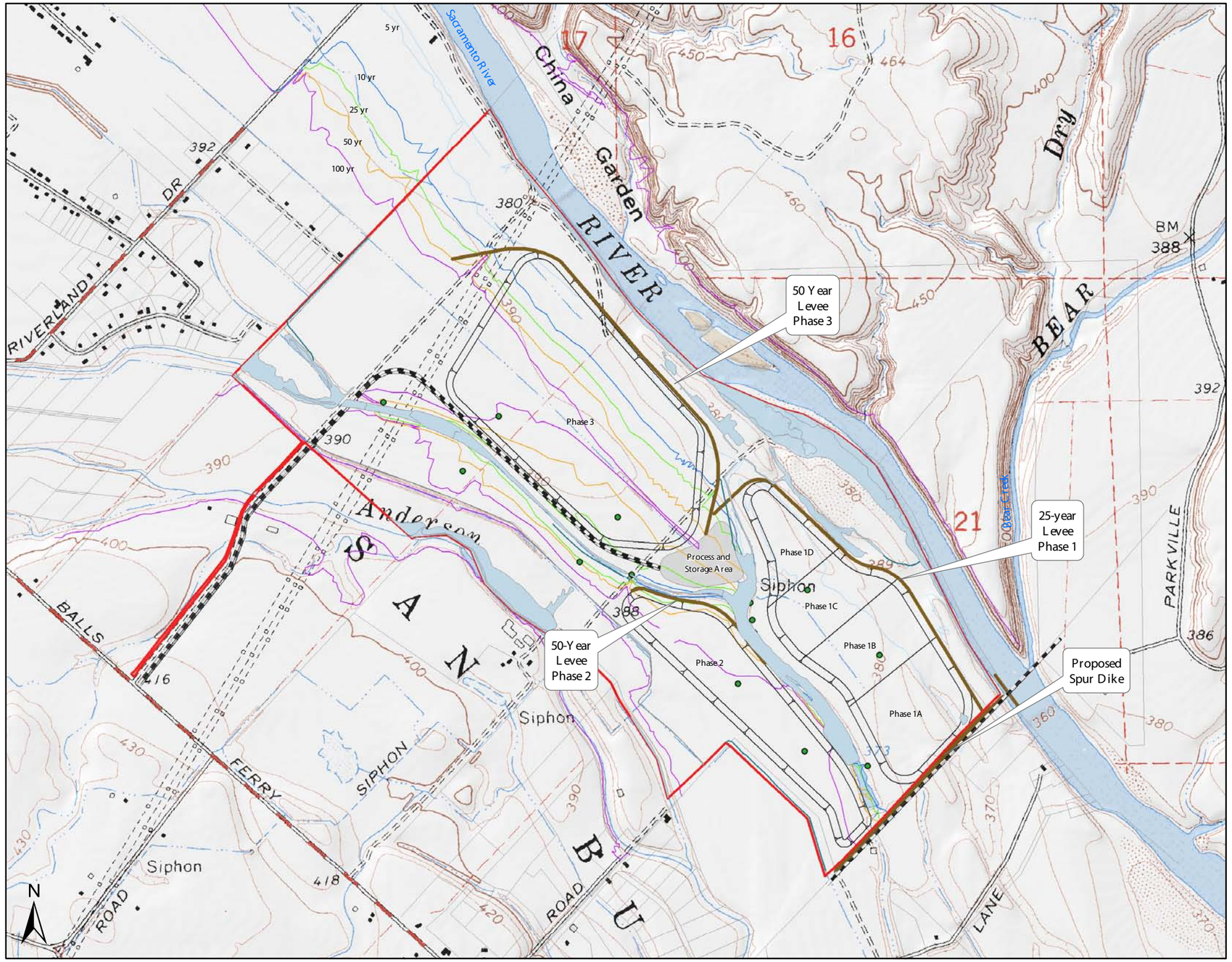
Terms	Definition
	usable condition which is readily adaptable for alternate land uses and create no public danger to health and safety.
Retention Basin	An area having a permanent pool, whereas a detention basin is normally dry.
Detention Basin	An area made to collect storm water runoff from a management system for the purpose of reducing peak flow and controlling rate of flow.
Spur Dike	Bank, usually of earth, constructed to control or confine water.
Mine	A pit or excavation in the earth from which mineral substances are extracted.
Levee	Any low ridge or earthen embankment built along the edges of a stream or river channel to prevent flooding of the adjacent land. Artificial levees are typically needed to control the flow of rivers meandering through broad, flat floodplains.
Sediment Basin	An impoundment area or Structure that slows the velocity of runoff to allow sediment particles to settle out. Retention basins also function as sediment basins, although the reverse is not necessarily true. Retention, detention, and sediment basins require periodic cleaning to remove sediment.
Slope	The face of an embankment or cut section; any ground whose surface makes an angle with the horizontal plane.
Surface Water	Water that is deposited by rainfall or irrigation, which has not permeated the soil, flowing on top of turf, landscapes and hard scapes.

Source: PMC February 2006.

PROJECT DESCRIPTION

The project applicant proposes to construct and operate a gravel operation and processing area on 268 acres of which is comprised of three parcels totaling 947 acres in size. The project would include stockpiles, staging areas, and retention basins. (See **Figure 3.0-4, Conceptual Site Plan**. The Reclamation Plan is available for public review at the Shasta County Department of Resource Management Planning Division, 1855 Placer Street, Suite 103 in Redding.

The mined aggregate (sand and gravel) would be crushed, screened, washed, stockpiled and loaded at the processing area for off-site transport. The annual excavation of material would be 266,667 cubic yards. Approximately 3.43 million cubic yards of overburden and 6.06 million cubic yards of aggregate would be excavated from the project site. (See **Table 3.0-3**) The overburden and topsoil will be stockpiled and stored for future reclamation activities including backfill of Phase 1, bank stabilization, revegetation, levee construction, and the creation of two ponds.



Project Boundary
Excavation Area
Levee
Proposed Spur Dike
Road
Parcel Boundary
Piezometer Location

Flood Zones

5-Y ear
10-Y ear
25-Y ear
50-Y ear
100-Y ear

0 500 1,000
Feet
1 inch equals 1,000 feet

SOURCE: Sharrah Dunlap Sawyer, Nov. 2004

FIGURE 3.0-4
CONCEPTUAL SITE PLAN
PMC

TABLE 3.0-3
ESTIMATED VOLUMES OF OVERBURDEN AND AGGREGATE
(MILLION CUBIC YARDS)

Phase	Overburden	Aggregate
1	1.08	2.16
2	0.40	1.10
3	1.95	2.80
TOTAL	3.43	6.06

Source: EIP & Sharrah, Dunlap, & Sawyer, Screencheck for Shasta Ranch Mining and Reclamation Plan. March 2005

EXCAVATION AND MINING OPERATIONS

The proposed mining operations would occur in three phases with each phase lasting approximately 8-10 years. The total duration of the mining project is estimated to operate between 24 to 30 years. The quarry's processing area is centrally located between all three-excavation pits near the south central area of the project site. This area is relatively flat surrounded by open space and existing vegetation. (See **Figure 3.0-5, Process and Storage Area)**

The topsoil and overburden materials removed during grading and excavation activities would be stockpiled and stored onsite for mining and reclamation activities. These activities include the construction of levees, backfill of Phase 1 pit, creation of side banks for ponds, slope gradients and revegetation activities.

The first phase is located on the southeast end of the property near the Sacramento River. The excavation approach for Phase 1 will be different than that proposed for Phases 2 and 3. Excavation operations would start from the south and work north. Phase 1 excavation operations will be removed in four stages. This approach would allow backfilling and reclamation activities to occur concurrently with the mining activities. At the beginning of Phase 1 extraction, overburden will be stockpiled and used for the construction of the proposed 25-year levee and spur dike adjacent to the south and east Phase 1 boundaries. (See **Figure 3.0-6, Phase 1 Operations Plan)**

Phase 2 is located between the ACID canal and the west side of Phase 1. Phase 2 would also be graded and excavated from south to north. The overburden material will be used to create a 50-year levee along the northeast corner of Phase 2. The remaining overburden will be applied to Phase 1 to complete reclamation. (See **Figure 3.0-7, Phase 2 Operations Plan)**

During Phase 3 operations, the removed overburden will be used to complete construction of the proposed levee bordering the northeast, eastern and southern edges of the Phase 3 pit. Remaining overburden will be applied to the Phase 1 pit. The temporary levee next to Phase 1 will be removed and graded to match existing landscape contours and complete Phase 1 reclamation. All surplus overburden generated from Phase 3 will be used to complete Phase 2 reclamation activities or will

be stockpiled and stored until final reclamation of Phase 3. (See **Figure 3.0-8, Phase 3 Operations Plan)**

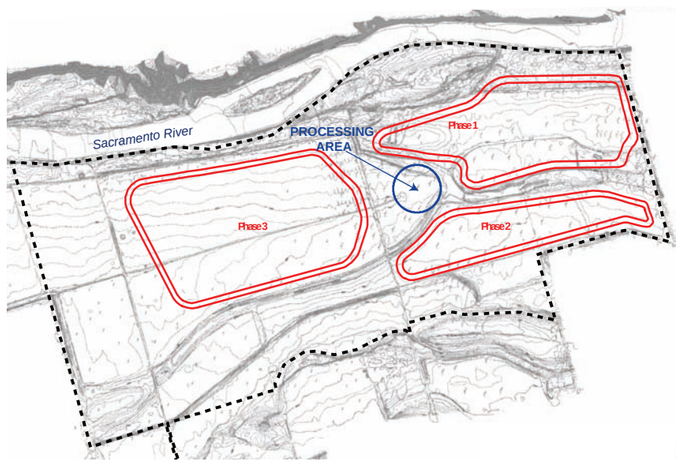
In total there are three levees and one spur dike that will be constructed on site to provide flood protection during high water flows to prevent surface runoff from entering excavated areas or adjacent waterways. The proposed levee construction would occur within each mining phase. The foundations will be constructed on engineered fill according to the specifications outlined in the Geotechnical Report (Kleinfelder, 2005). The average side slopes near the excavation areas would be 2:1. (See **Figure 3.0-6,** through **Figure 3.0-8**, for a levee slope details for each phase.)

The 25-year levee proposed along the east boundary of Phase 1 will be constructed with the excavated overburden from pit 1. A permanent spur dike will also be constructed along south boundary of the Phase 1 mining pit. Upon completion of Phase 1 mining activities the temporary levee will be removed. Phases 2 and 3 include two permanent 50-year levees that will be constructed from graded materials stockpiled on site. (See **Figure 3.0-9, Levee and Spur Dike locations**)

Processing Plant Operations and Transport

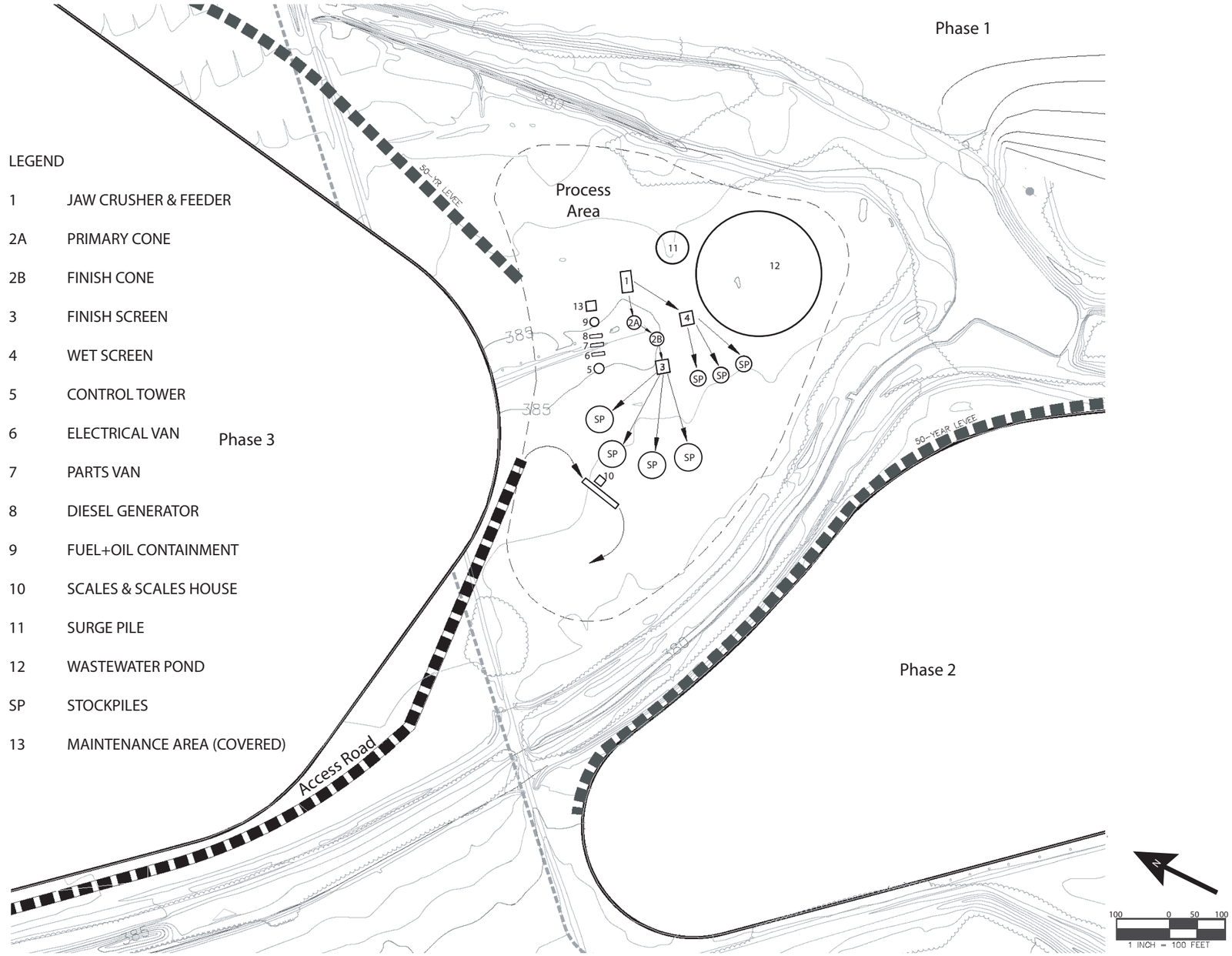
Processing of the aggregate materials include the stockpiling of aggregate, loading of aggregate into conveyor chutes, washing, sorting, and crushing to market specifications and delivery to stockpiles for offsite transport. Most of the mobile equipment will be diesel-powered or hydraulically operated wheel and track mounted machines. Stationary equipment will be powered by electricity.

There will be a maximum of nine employees to operate various equipment and machinery onsite. The mining and processing operations would occur Monday through Friday, 7 a.m. to 5 p.m. daily. Operational hours may increase from 6 a.m. to 6 p.m. Monday through Friday and occasionally include Saturdays from 6 a.m. to 6 p.m. based on market conditions. In total the plant would operate approximately 2500 to 3000 hours per year. The number of hours is based upon a truck-hauling rate of 150-300 tons per hour at 60-120 truck trips per day for 250 to 300 days per year. Based on the operating conditions or market demands the schedule of phasing may require adjustments.



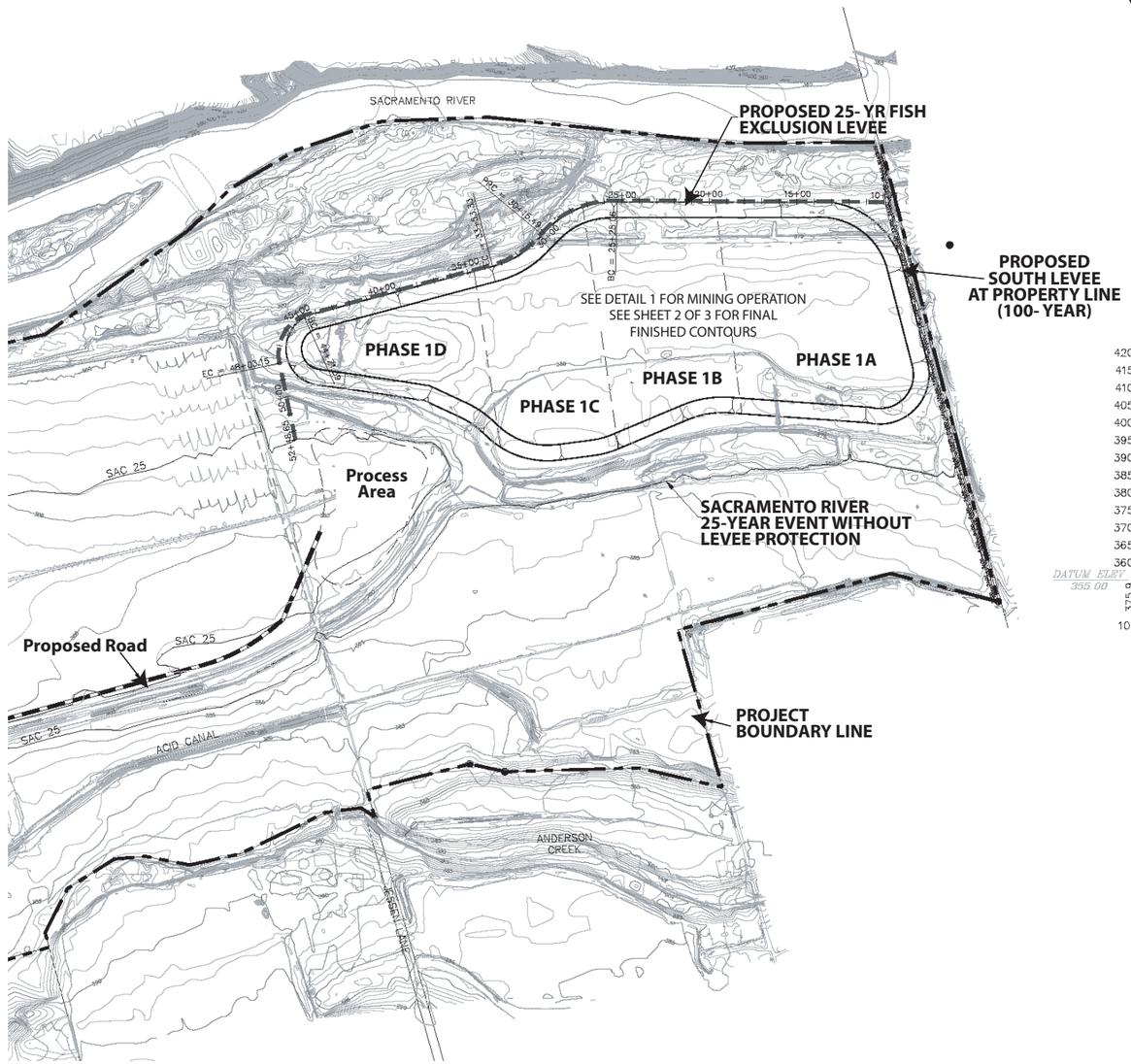
LEGEND

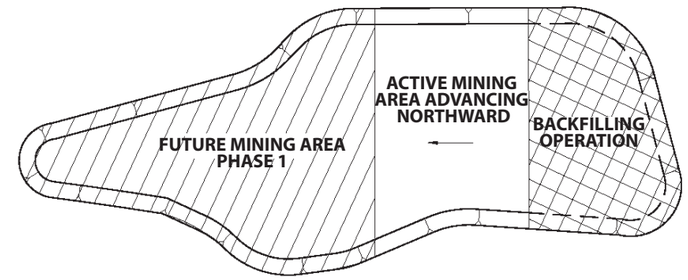
1	JAW CRUSHER & FEEDER
2A	PRIMARY CONE
2B	FINISH CONE
3	FINISH SCREEN
4	WET SCREEN
5	CONTROL TOWER
6	ELECTRICAL VAN
7	PARTS VAN
8	DIESEL GENERATOR
9	FUEL+OIL CONTAINMENT
10	SCALES & SCALES HOUSE
11	SURGE PILE
12	WASTEWATER POND
SP	STOCKPILES
13	MAINTENANCE AREA (COVERED)



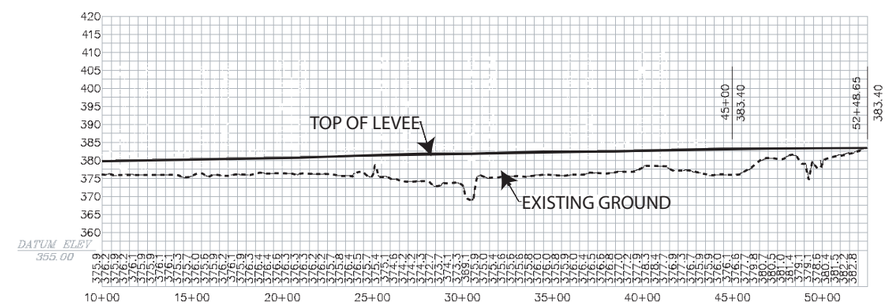
Source: Sharrah Dunlap Sawyer, Inc
Engineering, March, 2005

FIGURE 3.0-5
PROCESS AND STORAGE AREA
PMC

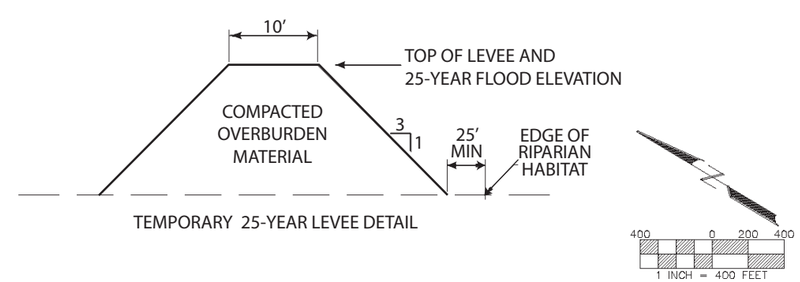




DETAIL 1



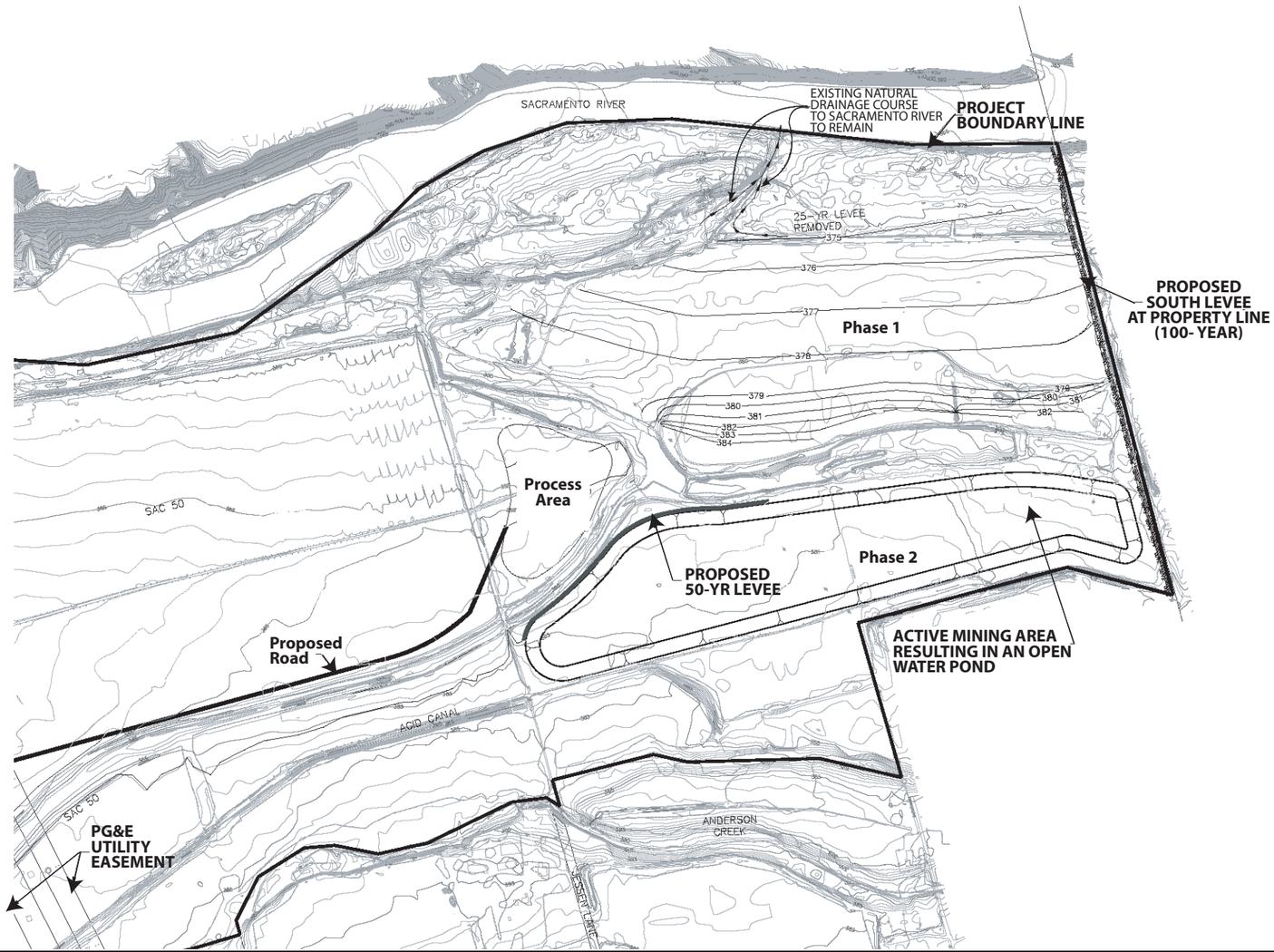
TEMPORARY 25-YEAR LEVEE PROFILE

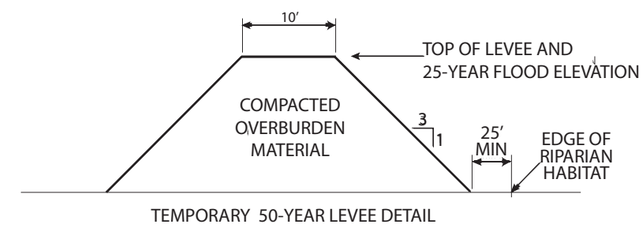


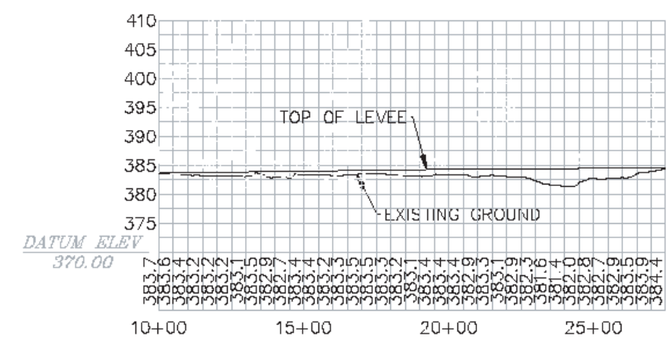
TEMPORARY 25-YEAR LEVEE DETAIL

SOURCE: Sharrah Dunlap Sawyer, Inc.

FIGURE 3.0-6
PHASE 1
OPERATION PLAN
PMC



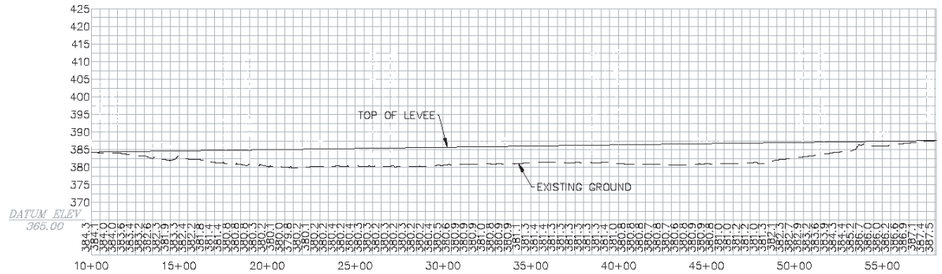




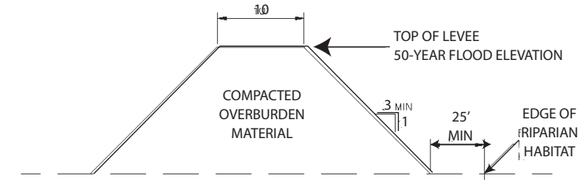
PHASE 2 50-YEAR LEVEE PROFILE

SOURCE: Sharrah Dunlap Sawyer, 2005

FIGURE 3.0-7
PHASE 2
OPERATIONS PLAN
PMC

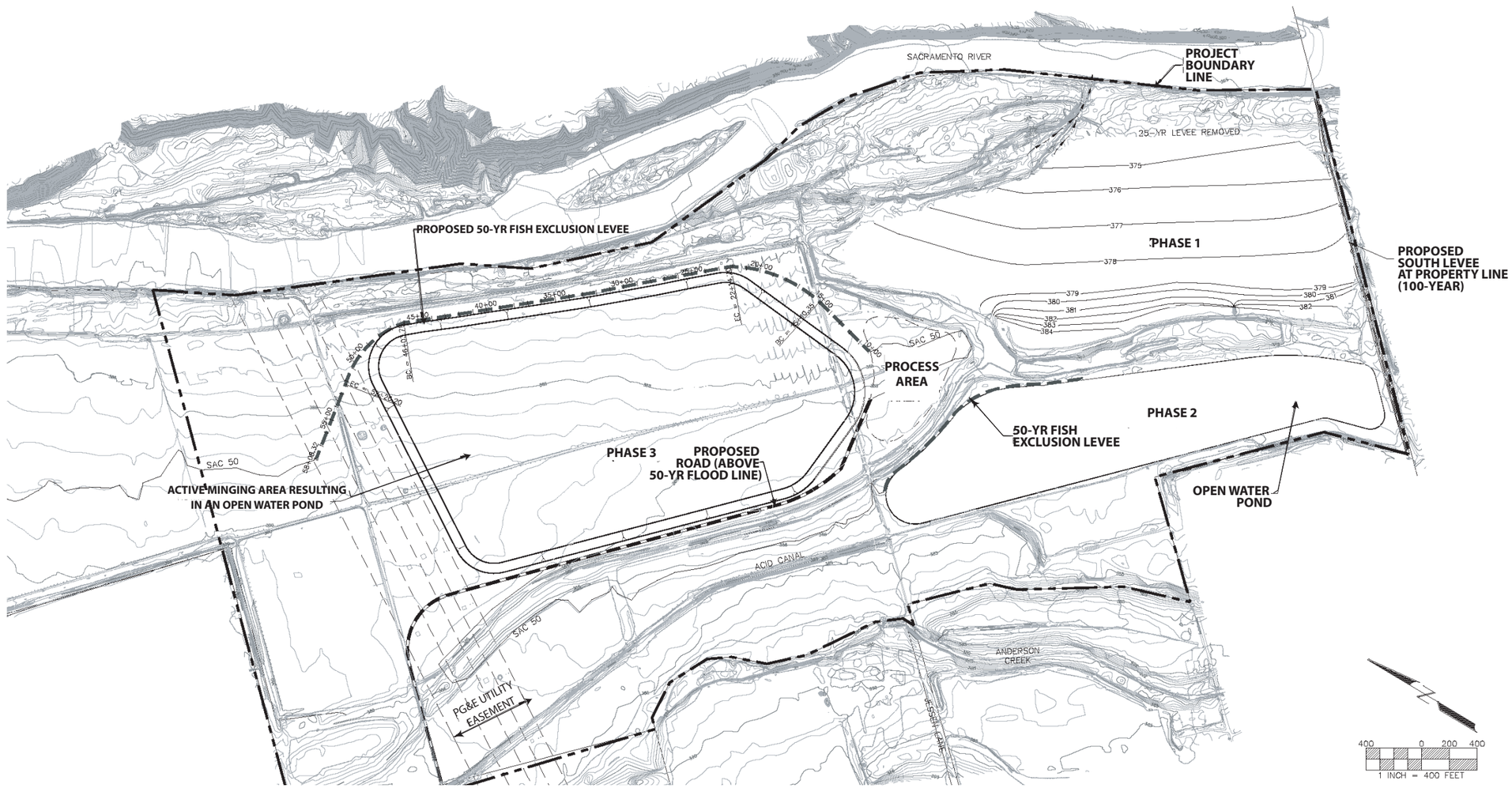


PHASE 3 50-YEAR LEVEE PROFILE



50-YEAR LEVEE DETAIL

NTS



SOURCE: Sharrah Dunlap Sawyer, 2005

FIGURE 3.0-8
PHASE 3
OPERATION PLAN
PMC

The onsite haul roads will be paved to reduce fugitive dust emissions from onsite and offsite aggregate transport. The project would generate an average of 60 truckloads with a maximum of 120 truckloads round-trip per day. Each truckload estimates 25 tons or 17cubic yards. See Photo 3.0-3 for existing conditions of the proposed access road. The estimated annual production of material processed would be 400,000 tons. The estimated daily production would range from 1,067 to 2,000 cubic yards.

Photo 3.0-3: Proposed access road to project site.

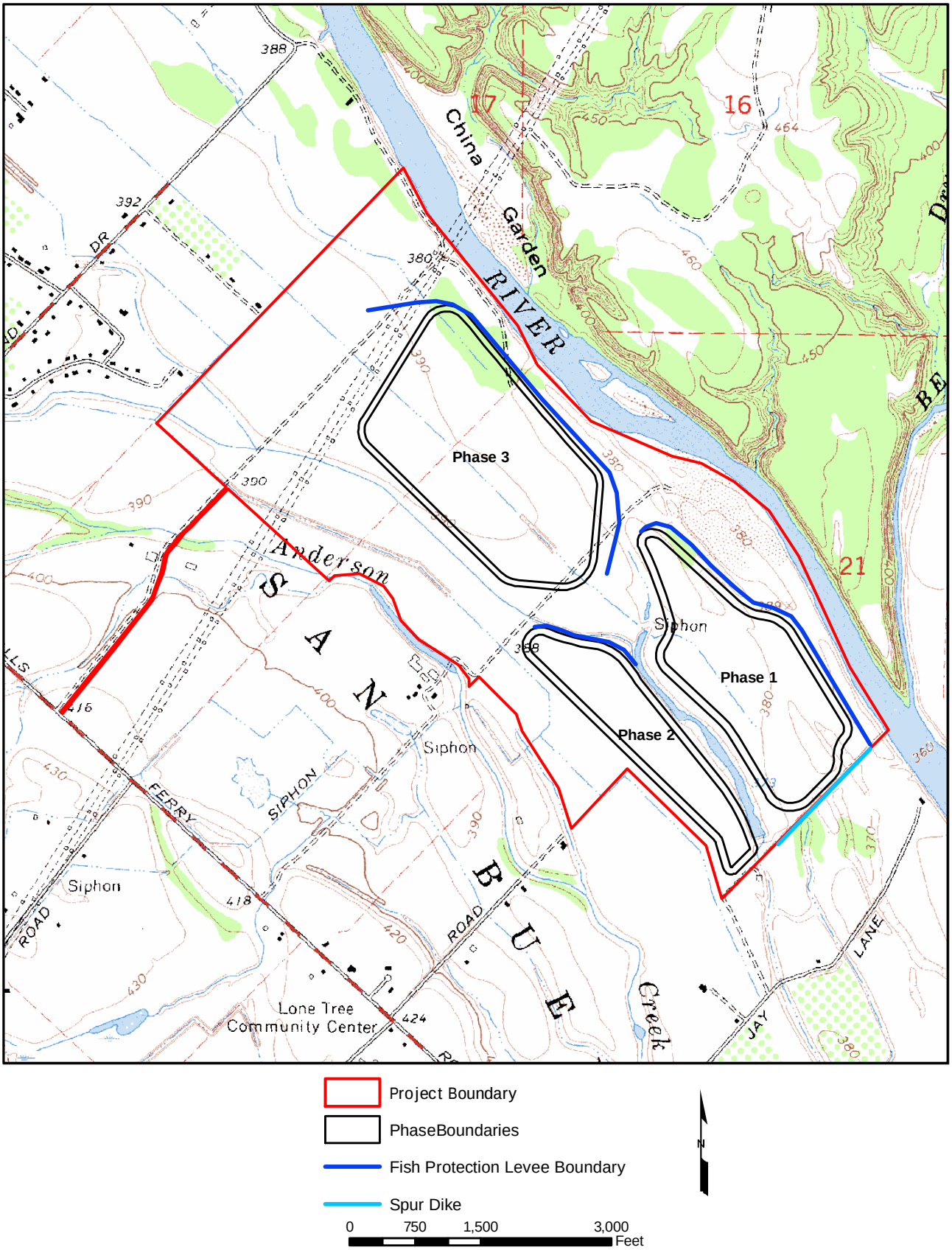
Transportation would occur on four routes:

- Balls Ferry Road to Kimberly Road to Panorama Point Road to Locust Road to Deschutes Road to Interstate 5.
- Balls Ferry Road northwest to Deschutes Road to Interstate 5.
- Balls Ferry Road southeast then southwest, to Fourth Street to Main Street in Cottonwood, then south to the Bowman Road/Interstate 5 interchange.
- Balls Ferry Road southeast then southwest, to Chestnut Street to Front Street to Main Street in Cottonwood, then south to the Bowman Road/Interstate 5 interchange.

For more information pertaining to traffic routes described above see **Section 4.3, Transportation and Circulation**.

CRUSHING AND SCREENING OPERATION

The proposed project will use a portable crushing and screening machine. This machine requires a loader to take aggregate and rock to a crusher. Jaw and cone crushers would then be used for crushing, while a grizzly type screen would be used in the screening process to sort material by size. A wet screening method would be employed to wash the material and control dust emissions. Conveyors would be used to transport the processed material/ aggregate to various stockpiles based upon size. Hauling trucks would be loaded to transport material off-site to various markets for production of asphalt and concrete. (See **Figure 3.0-5, Process and Storage Areas**)



Project Boundary

PhaseBoundaries

Fish Protection Levee Boundary

Spur Dike

0 750 1,500 3,000 Feet

Source: Vestra, 2005

FIGURE 3.0-9
LEVEES FOR SPUR DIKE LOCATION

PMC

Approximately 50,000 gallons of water would be used per day for aggregate washing and dust abatement purposes. Water runoff from these activities would be pumped to a small settling pond located north of Phase 1 and recycled back into operation for aggregate washing and dust abatement. Sediment accumulated in the settling pond will be used for reclamation and fill of Phase 1. The settling basin will be approximately 1-acre in size and 10-feet deep. All surface runoff will be directed to drainage systems that lead to a retention basin and mining pits. The grading plan is designed to prevent the discharge of stormwater runoff to offsite and adjacent waterways. This includes the design of the haul roads and pond levees, which will be sloped toward excavation areas to prevent storm water runoff from leaving the site and floodwaters entering the ponds.

A 10,000-gallon diesel storage tank would be placed at the crushing and screening operation. The structure and placement of the tank would be located and maintained in conformance with Federal, State and local hazardous material regulatory standards, including spill containment provisions. Approximately five 55- gallon drums of lubricants and transmission oil would also be stored onsite. To control fugitive dust from this operation, water sprayers will be installed by the Shasta County Air Quality Management District (SCAQMD), where necessary. Clean wash water would be provided by an onsite well. Wash water would be discharged into a proposed retention basin.

OTHER PROJECT FEATURES

Project Infrastructure

Water for the project would be provided by existing private wells located on site. A permanent sewage disposal system is not proposed as part of the project. The applicant has proposed that a private company be contracted to provide onsite sewage disposal services to the site. This would include portable toilets and maintenance for all sewage disposal services to and from the site. Pacific Gas and Electric (PG&E) Company will provide power to the site based on the anticipated demand. This will require an upgrade of the existing distribution line adjacent to the project site. See **Section 4.11, Public Utilities and Services** for more information.

RECLAMATION PLAN

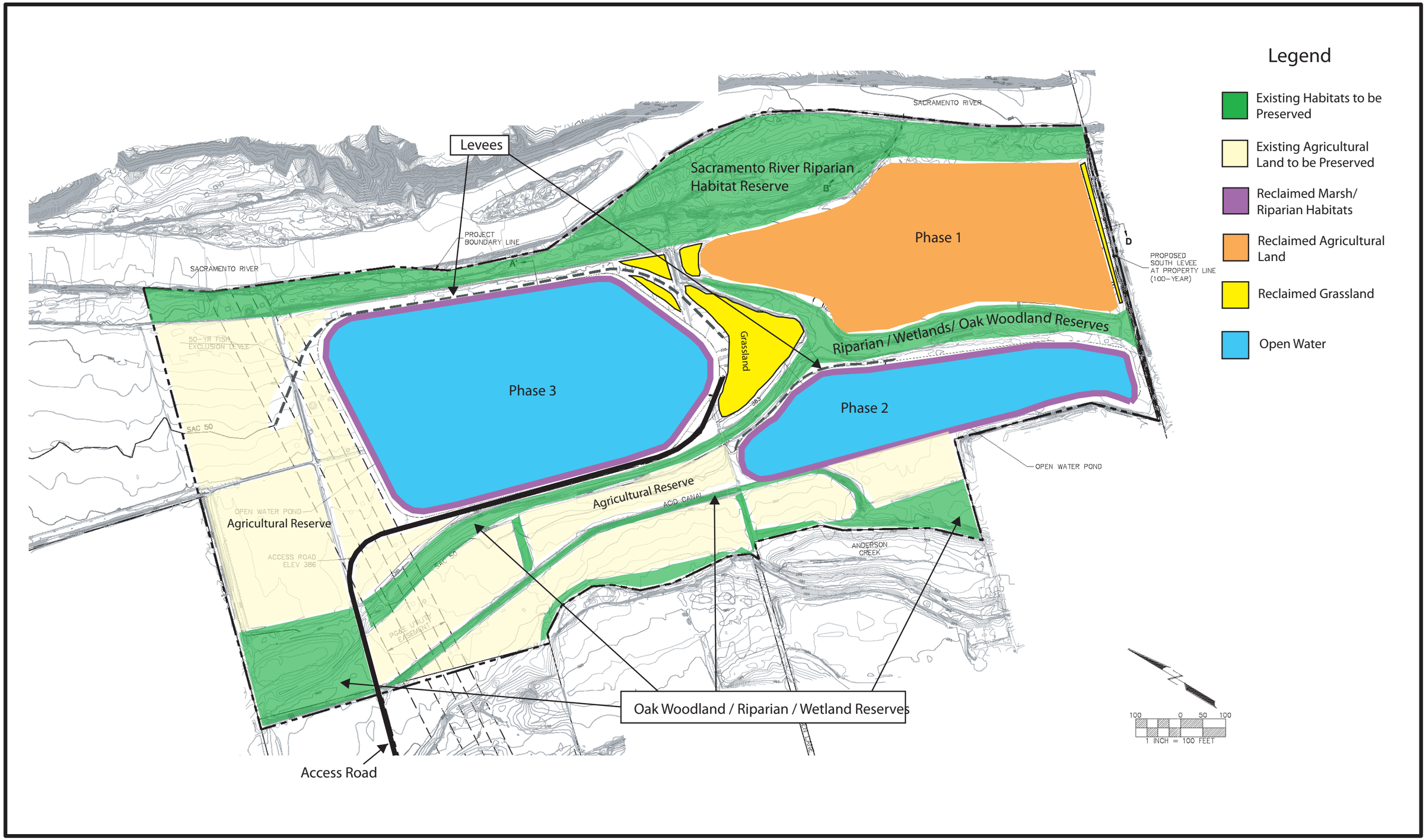
In accordance with SMARA requirements, the Shasta Ranch Reclamation Plan is designed to return the project area back to a self-sustaining ecosystem after all mining operations are complete. **Figure 3.0-10, Final Site Reclamation Plan**, illustrates the development of aquatic habitat in the form of two freshwater ponds, two 50-year permanent levees, one spur dike, open space preserves and approximately 85 acres of reclaimed agricultural farmland. Mining operations and reclamation activities would occur successively after each mining phase, with the exception of phase three. Phase three would require an additional 10 years to ensure all reclamation activities are completed.

The stockpiled and stored materials (topsoil and overburden) will be used during landscape and reclamation activities to create an 85-acre area of reclaimed farmland, re-vegetate side slopes, levees, access roads, and restore the aggregate processing area. These stockpiles would remain onsite until depleted, after which the stockpile areas would then be revegetated. Once soils were graded at specified elevations the site would be transplanted and seeded to reduce the potential for erosion. The site revegetation plan will be required to use local plants and a local seed mix that does not contain noxious weeds. Any large rubble heaps remaining on the site will be removed or graded to match the existing contour elevations.

Phase 1 reclamation activities include the creation of an 85-acre reclaimed area of farmland. The excavated pit will be backfilled with overburden concurrently during all three mining stages. The temporary levee constructed on the east boundary will be removed. Levee materials will be incorporated into the Phase 1 reclamation activities. Upon completion of backfill operations the surface conditions will be graded with one foot of recycled topsoil, overburden and reject material stockpiled from the crushing and screening operations over the surface area of Phase 1. The proposed grading plan is designed to restore and match the existing contour elevations in such a way that it will redirect offsite drainage during high flow events reducing the potential for migratory fish entrapment. (See **Figure 3.0-11 Proposed Phase 1 Reclamation Cross-sections)**

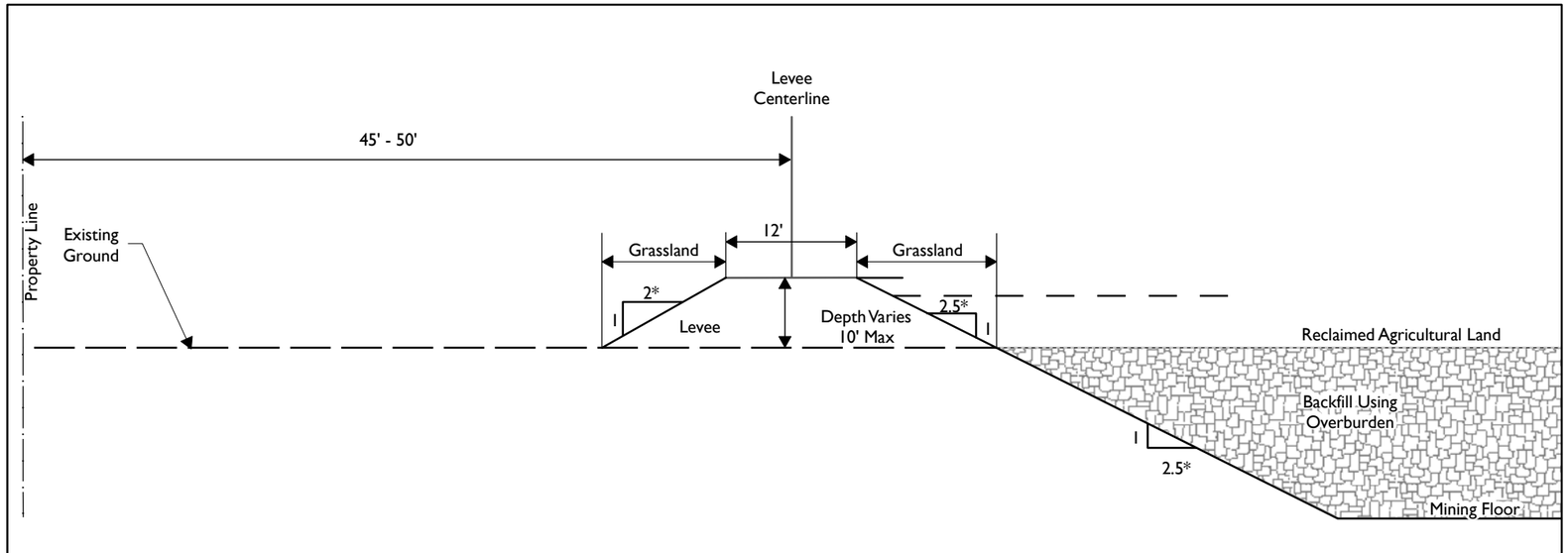
Phase 2 and Phase 3 reclamation activities will create riparian and aquatic habitat in the form of two freshwater ponds to serve as habitat for fish, waterfowl, and terrestrial wildlife native to the region. The side slope areas of the ponds will be formed using mostly native material. A 2:1 to 3:1 side slope configuration would be constructed at the average watermark to enhance the aquatic diversity using stockpiled overburden from Phase 2 and 3. (See **Figure 3.0-12, Proposed Phase 2 and 3 Reclamation Cross Sections**)

The distribution of soil fertilizers or soil additives used during vegetation enhancement would be placed in such a manner to avoid contact with pond water. However, the final conditions of the reclaimed land will be dependent upon the volume of overburden, groundwater depth, and volume of material removed from processing activities.

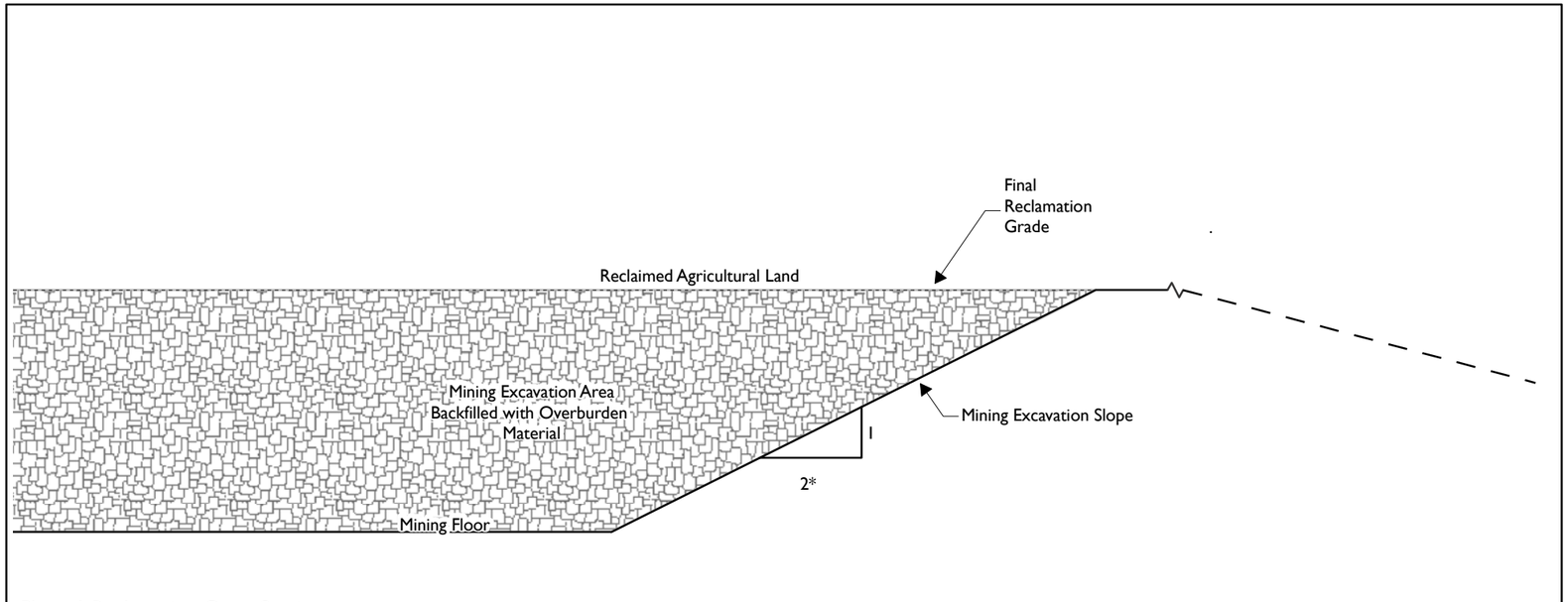


SOURCE: Vestra, 2006

Figure 3.0-10
Final Site Reclamation Plan
PMC



Phase 1 Reclamation Cross Section D - D'



Phase 1 Reclamation Cross Section B - B'

PLANT PALETTE

Grassland	
California barley	*Hordeum californicum*
Purple needlegrass	*Nassella pulchra*
Nodding needlegrass	*Nassella cernua*
Idaho fescue	*Festuca idahoensis*
California oniongrass	*Melica californica*
Native pine bluegrass	*Poa secunda*
Western redbud	*Trifolium wildenovii*
Tom cat clover	*Rhus trilobata*
Lupinus bicolor	*Lupinus bicolor*
California poppy	*Eschscholzia californica*
Golden yarrow	*Eriophyllum confertifolium*
White yarrow	*Achillea millifolium*
Purple owls clover	*Castelleja exerta*
Goldfields	*Lasthenia californica*
Naked buckwheat	*Eriogonum nudum*

Notes:

1. Boundary between habitats is approximate and may change based on field conditions.
2. Creation of benches or variation in the shoreline may facilitate plant establishment.
3. Erosion prevention may include wattles, bales or other technologies.

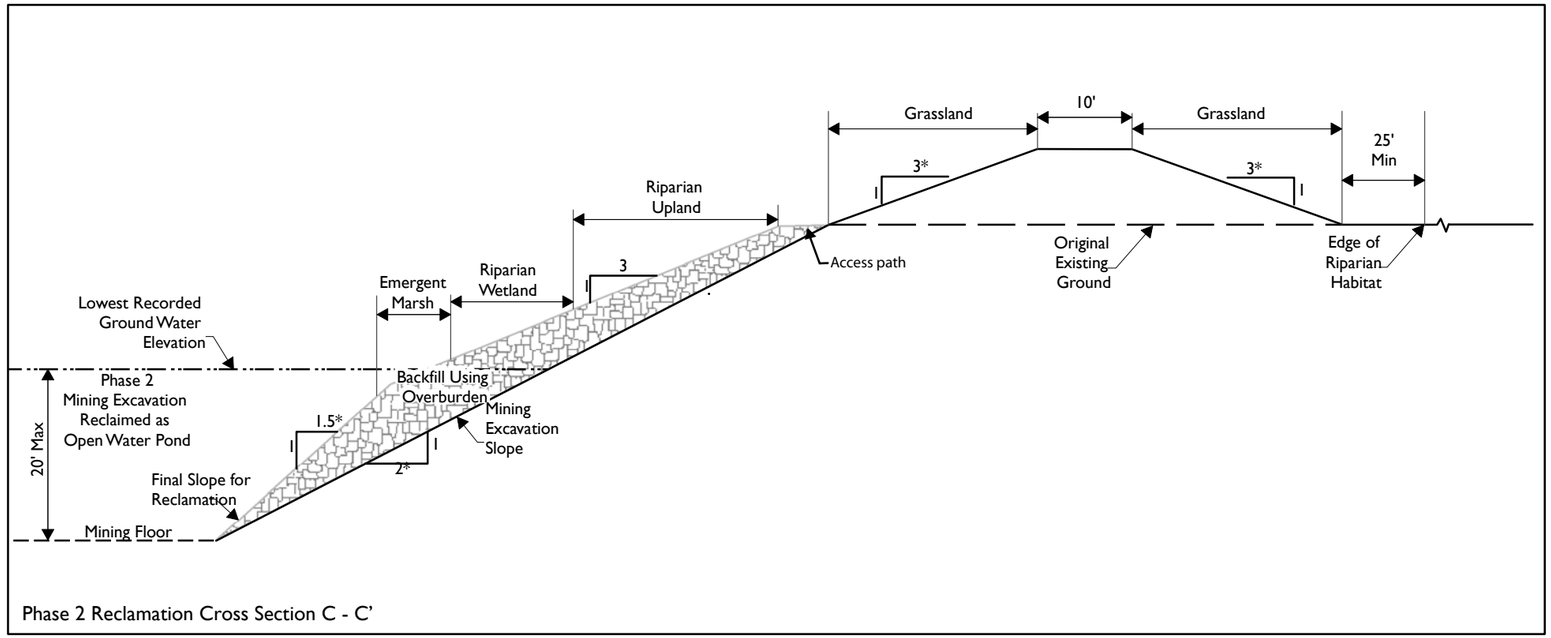
* Slope may change based on final geotechnical investigation report recommendations

Not to Scale

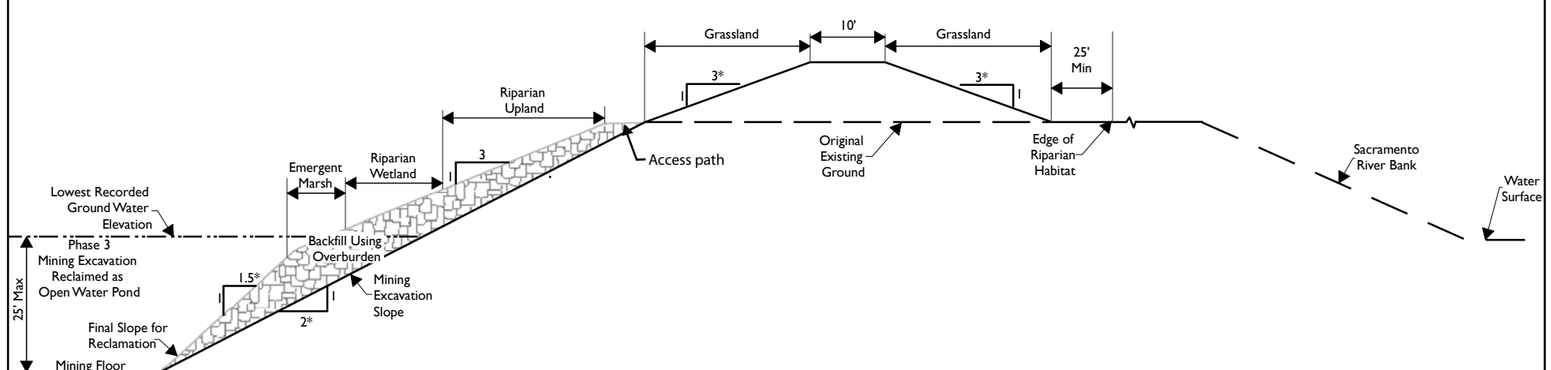
SOURCE: Sharrah Dunlap Sawyer, Engineering, March, 2005

FIGURE 3.0-11
RECLAMATION CROSS-SESCTION
PHASE 1

PMC



Phase 2 Reclamation Cross Section C - C'



Phase 3 Reclamation Cross Section A- A'

PLANT PALETTE

Common Name	Species Name
Emergent Marsh	
Soft Rush	*Juncus patens*
Santa Barbara sedge	*Carex barbarea*
Spike rush	*Eleocharis macrostachys*
Western rush	*Juncus occidentalis*
Riparian Wetland	
Black willow	*Salix gooddingii*
Narrow-leaved willow	*Salix exigua*
Fremont cottonwood	*Populus fremontii*
White alder	*Alnus rhombifolia*
California box elder	*Acer negundo*
Oregon Ash	*Fraxinus latifolia*
California wildrose	*Rosa californica*
California blackberry	*Rubus ursinus*
Riparian Upland	
Valley oak	*Quercus lobata*
Interior live oak	*Quercus wislizeni*
Black walnut	*Juglans hindsii*
California sycamore	*Platanus racemosa*
California box elder	*Acer negundo*
Blue elderberry	*Sambucus mexicana*
Western redbud	*Cercus occidentalis*
Skunkbrush	*Rhus trilobata*
Coffeeberry	*Rhamus tomentella*
Coyote brush	*Baccharis pilularis*
Grassland	
California barley	*Hordeum californicum*
Purple needlegrass	*Nassella pulchra*
Nodding needlegrass	*Nassella cernua*
Idaho fescue	*Festuca idahoensis*
California oniongrass	*Melica californica*
Native pine bluegrass	*Poa secunda*
Western redbud	*Trifolium wildenovii*
Tom cat clover	*Rhus trilobata*
Lupinus bicolor	*Lupinus bicolor*
California poppy	*Eschscholzia californica*
Golden yarrow	*Eriophyllum confertifolium*
White yarrow	*Achillea millifolium*
Purple owls clover	*Castelleja exerta*
Goldfields	*Lasthenia californica*
Naked buckwheat	*Eriogonum nudum*

Notes:

1. Boundary between habitats is approximate and may change based on field conditions.
2. Creation of benches or variation in the shoreline may facilitate plant establishment.
3. Erosion prevention may include wattles, bales or other technologies.

Source: Sharrah Dunlap Sawyer, Engineering, Mar. 2005.

* Slope may change based on final geotechnical investigation report recommendations

Not to Scale

SOURCE: Sharrah Dunlap Sawyer, Engineering, March, 2005

FIGURE 3.0-12
RECLAMATION CROSS-SESCTION
PHASE 2 AND 3

PMC

4.1.1 FORMAT OF ISSUE SECTIONS

Sections in this chapter describe, for each environmental issue area, 1) the environmental setting as it relates to the specific issue; 2) the regulatory framework for the issue as applicable to the project; 3) significance criteria and the methodology used to assess impacts; 4) an evaluation of project-specific and cumulative impacts, identification of mitigation measures, and a determination of the level of significance after mitigation measures are implemented. Each section is organized into five parts: Introduction, Setting, Regulatory Framework, Impacts and Mitigation Measures, and References.

The **Existing Setting** subsection describes the existing conditions pertaining to the issue at the regional, local and project site levels, as appropriate.

The **Regulatory Framework** identifies plans, policies, laws and regulations at the federal, state and local levels that are applicable to the particular issue.

The **Impacts and Mitigation Measures** subsection begins with a description of the significance criteria used to evaluate project impacts, followed by a description of the methodology utilized to assess impacts. Next are the individual impact statements, which include explanatory text and technical information necessary to formulate a conclusion. Following is a discussion of potential project-specific impacts. Where necessary, each impact discussed is followed by a description of the proposed mitigation and a statement of the level of impact following mitigation.

The **Cumulative Setting, Impacts and Mitigation Measures** subsection describes the cumulative setting that is appropriate to that subject area. For example, some air quality impacts are of a regional nature and the cumulative setting includes the entire air basin, while storm water impacts would be specific to the local drainage basin. Next are the individual impact statements, which include explanatory text and technical information necessary to formulate a conclusion. Following is a discussion of potential cumulative impacts. Where necessary, each cumulative impact is discussed, the project's contribution to that cumulative impact is identified, followed by a description of the proposed mitigation and a statement of the level of impact following mitigation.

The **References** subsection lists the documents, personal communications, and other sources of information cited or otherwise used in the preparation of the section.

4.1.2 DETERMINING LEVEL OF SIGNIFICANCE

Determining the severity of project impacts is fundamental to achieving the objectives of CEQA. CEQA Guidelines Section 15091 requires that no public agency shall approve or carry out a project for which an EIR has been certified which identifies one or more significant environmental effects of the project unless the public agency makes one or more written findings for each of those significant effects, accompanied by a brief explanation of the rationale for each finding. If the EIR identifies any impacts that cannot be mitigated to a less than significant level, CEQA Guidelines Section 15093 requires decision-makers to adopt a statement of overriding considerations, explaining why the benefits of the project outweigh the adverse environmental consequences identified by the EIR.

The level of significance for each impact examined in this EIR was determined by considering the predicted magnitude of the impact against a threshold. Thresholds were developed using criteria from the CEQA Guidelines, local/regional plans and ordinances, accepted practice,

and/or consultation with recognized experts. Thresholds are identified in each chapter under Significance Criteria. Four levels of impact significance are recognized by this EIR:

- No Impact [NI] would have no impact associated with the project.
- Less than Significant [LS] impacts would not cause a substantial change in the environment because they fall below the significance threshold.
- Potentially Significant Subject to Mitigation [PSM] impacts would cause a substantial adverse change in the physical conditions of the environment. Significant impacts are identified by the evaluation of the project effects using specified significance criteria. Mitigation measures are identified to reduce project effects to less than significant.
- Significant and Unavoidable [SU] impacts are significant adverse project impacts that cannot be avoided or reduced to a less than significant level with feasible mitigations if the project is implemented.

4.1.3 IMPACT AND MITIGATION FORMAT

The standard format used to present the evaluation of impacts is as follows:

Impact 4.1.1 The impact number identifies the section of the report and the sequential order of the impact within that section. The impact statement is followed by an abbreviation identifying the level of impact: ***less than significant*** [LS], ***potentially significant subject to mitigation*** [PSM], or ***significant and unavoidable*** [SU].

The identified impact is then discussed in more detail. If the impact is identified as potentially significant, proposed mitigation measures will follow.

MITIGATION MEASURES

In some cases, following the impact discussion, reference is made to policies contained in County plans and ordinances that would fully or partially mitigate the impact. Also, state and federal regulations and agency policies that partially or fully mitigate the impact may be cited. These policies and regulations shall be considered as part of the package of recommended mitigation measures.

Project-specific mitigation measures, beyond those contained in other documents, are described in the format presented below:

MM 4.1.1a Project-specific mitigation is identified that would reduce the impact to the less-than-significant levels, if possible. The mitigation number links the mitigation to the impact; the letter identifies the sequential order of the mitigation for that impact.

Timing/Implementation: *Gives the time when the mitigation measure is to be implemented (e.g., upon submission of final map, prior to issuance of building permit).*

Enforcement/Monitoring: *Identifies the department or agency with the responsibility for implementing the mitigation measure.*

The discussion concludes by describing how the mitigation measures presented above will reduce the impact. It then identifies the resulting level of significance of the impact following mitigation.

4.1.4. CUMULATIVE IMPACTS

Section 6.0, Cumulative Impacts, of this EIR provides a broader evaluation of the cumulative impacts of the proposed project.

This section of the EIR evaluates the consistency of the proposed project with the applicable plans and policies that govern land use in and around the project area in Shasta County, particularly the Shasta County General Plan. The discussion in this section focuses on the proposed project's compatibility with existing and planned land uses, both onsite and off-site.

As used in this Section, there is a difference between the terms "consistency" and "significance". A finding of general plan consistency may be made, even if a project will result in substantial changes to the environment. For example, the extraction and processing of minerals may be consistent with the agricultural land use designation and zone district for the property, but the physical extraction, operations and reclamation of the site may still result in impacts to the environment requiring mitigation to reduce impacts to a less than significant level. These changes to the project can be required even though the project itself is consistent with the goals and policies of the County's General Plan as well as the adopted zoning for the property.

The proposed aggregate mining and reclamation project site is located within the jurisdiction of Shasta County and is subject to findings of consistency with the Shasta County General Plan. This chapter will also evaluate the County's zoning provisions related to the proposed project and issues concerning compatibility with other land uses in the vicinity.

4.2.1 ENVIRONMENTAL SETTING

PROJECT LOCATION AND SETTING

The project site, approximately 947 acres in size, lies within Shasta County's unincorporated area, approximately 2.5 miles southeast of the City of Anderson and approximately 16-miles south of the City of Redding. To be more specific, the site is located adjacent to the west bank of the Sacramento River and east of Balls Ferry Road. Access is gained to the site by an unimproved private road off Balls Ferry Road approximately ¼-mile north of the Kimberly Road and Balls Ferry Road Intersection. (See **Figure 3.0-2, Project Area Map**) The site is roughly surrounded by the following waterways: Sacramento River to the northeast, an Anderson Cottonwood Irrigation District (ACID) ditch to the west and Anderson Creek to the southwest. (See **Figure 3.0-4, Conceptual Site Plan**)

The property on which the project site is located is owned by Shasta Ranch LLC. Of the 947-acre parcel site, 268 acres are proposed to be mined for aggregate resources. The project site is located in a 100-year alluvial floodplain. Based on historic U.S.G.S. flood maps, the Sacramento River once ran through the southern portion of project site. However, during the gold mining era (mid-1800's), the river was redirected to accommodate gold mining operations. Today, the remains of dredge tailings and hydraulic mining have since filled the old river channel to its existing depths and conditions.

During the mid-1800's, small mining operators began mining the property for gold. In the early 1900's, agricultural uses such as farming and ranching began to replace mining activities. More recent activities include use associated with the disposal of wastewater and effluent material from the Simpson Paper Mill Company and Shasta Paper Company from 1972 to 2002. A portion of the effluent material from the paper mill was disposed of onsite and used for the irrigation of croplands. As of 2002, all related paper mill operations ceased.

Today the project site supports agricultural operations and maintains a variety of habitat types, including emergent wetlands, foothill-riparian and valley oak woodland habitat.

EXISTING ON-SITE LAND USES

The property's current land use is predominately agriculture, including irrigated cropland, pasture, and fallow land. The land consists of flat to gently rolling floodplains, woodlands and agricultural fields producing various crops (i.e., corn, alfalfa, and pumpkins). A Pacific Gas & Electric (PG&E) easement with high voltage transmission and distribution lines traverses the property in a northeast and southwest direction near the access road. There are no residences located within the project site area; however, there are two residences located on the property of which the project site is a part. Unimproved roads, agricultural wells and monitoring wells exist throughout the property.

SURROUNDING LAND USES

An Anderson Cottonwood Irrigation District (ACID) irrigation ditch flows along the southwest boundary of the site. The Sacramento River meanders along the northeast property boundary and Anderson Creek runs west of the ACID ditch.

There are two residences located on the property on which the project is proposed, but they are situated off of the actual project site. The residence north of the project site is a caretaker unit. The second residence is located 30-feet west of the access road near Anderson Creek.

Adjacent to the project site are agricultural and rural residential uses on the north, west and south sides. The land south of the project site consists of orchards and row crops. To the northeast, across the Sacramento River, is Fenwood Ranch, a conservation easement on which is located a large-scale agricultural operation associated with the Shasta Land Trust.

There are several residences in the vicinity of the proposed project site. An inventory of residences in the area was conducted by AMBIENT Air Quality and Noise Consulting in 2006. (See **Section 4.7, Noise**) The inventory took into consideration the distances of the residences to the nearest proposed mining phase, which represents the nearest location to residences at which material excavation or transfer activities and equipment use would be expected to occur. For proposed Phase 1 of the project, the closest residence would be 770 feet from mining activity. For proposed Phase 2, the

closest residence would be at a distance of 900 feet. For Proposed Phase 3, the closest residence would be at a distance of 150 feet. (See **Figure 4.7-2, Predicted Stationary Noise Levels**)

AGRICULTURAL RESOURCES

The California Department of Conservation, Division of Land Resource Protection, manages the Farmland Mapping and Monitoring Program. This program includes a list of "Important Farmland Categories" based on soil characteristics that have significant agricultural production values. There are three specific map categories in this program that pertain directly to the project site: Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. (See **Figure 4.2-1, Farmland Categories Map**). The "Important Farmland Categories" are defined below:

- *Prime Farmland (P)*- Farmland with the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

- *Farmland of Statewide Importance (S)*- Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

- *Unique Farmland (U)*- Farmland of lesser quality soils used for the production of the state's leading agricultural crops. These lands are usually irrigated, but may include non-irrigated orchards or vineyards found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

The project area contains topsoil that was classified in a soil survey published in 1974 by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). Based on this soil survey, the soils found on site are considered to be "farmland of statewide importance", or "prime farmland" if irrigated.

More recent site-specific surveys question the farmland classifications that have been given to the soils on some portions of the project site. On October 2004, Geomatrix conducted a field survey that indicated that the soils located in the southeastern portion of the site (i.e., the area of proposed Phase I) have not been actively irrigated and the topsoil appears to have a significant amount of gravel and cobbles. The survey also found no signs of farming activities in this southeastern area of the site; only shallow undisturbed soils with dense areas of natural vegetation, predominantly star thistle. This information concluded that the NRCS classification of this area as "farmland of statewide importance" and "prime farmland" may be inaccurate.

In addition, a geotechnical survey of the site by Klienfelder, Inc. (2005) indicates that topsoil in the same area is generally shallow with aggregate resources occurring close to the surface. (Kleinfelder, 2005) Prime farmland or farmlands of statewide importance designations are based on criteria that soils are deep and of high quality with few rocks. As a result of the recent surveys, the soil in the southeastern portion of the project site may not be appropriately classified in either of the NRCS categories.

MINERAL RESOURCES

According to the Mineral Land Classification Study of 1997 (i.e., *Mineral Land Classification of Alluvial Sand and Gravel, Crushed Stone, Volcanic Cinders, Limestone, and Diatomite Within Shasta County, California*), mining operations with approved use permits and reclamation plans were expected (at that time) to only supply Portland concrete cement grade alluvial sand and gravel material to the county for approximately 17 years. (California Department of Conservation, 1997) In recognition of this conclusion, the study involved a thorough evaluation and classification of potential mineral resource sites within Shasta County.

The aggregate resources within Shasta County were mapped consistent with Section 2761(a) and (b) and 2790 of the Surface Mining and Reclamation Act (SMARA). (See **Section 4.8, Geology, Soils and Minerals**, in this EIR for more information.) SMARA, enacted in 1975, provides for a mineral lands inventory process termed classification-designation. Mineral resource areas are classified by the State Geologist on the basis of geologic factors without regard to existing land use and land ownership. The MRZ-2 classification adopted by the State Mining and Geology Board (SMGB) is defined as an area where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.

The 1997 Mineral Land Classification Study indicates that portions of the project site that border the Sacramento River are classified as Sacramento River, MRZ-2b$^{SG(pcc-3)}$. The definition of the MRZ-2b classification is as follows:

> MRZ-2b: Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present. For this report, areas classified MRZ-2b contain discovered mineral deposits that are significant inferred resources as determined by their lateral extension from proven deposits or their similarity to proven deposits. Further exploration could result in upgrading areas classified MRZ-2b to MRZ-2a.

The "SG(pcc-3)" part of the MRZ-2b classification indicates alluvial sand and gravel suitable for use as PCC-grade aggregate. The MRZ-2b classification applies to approximately 363 acres of the project site.

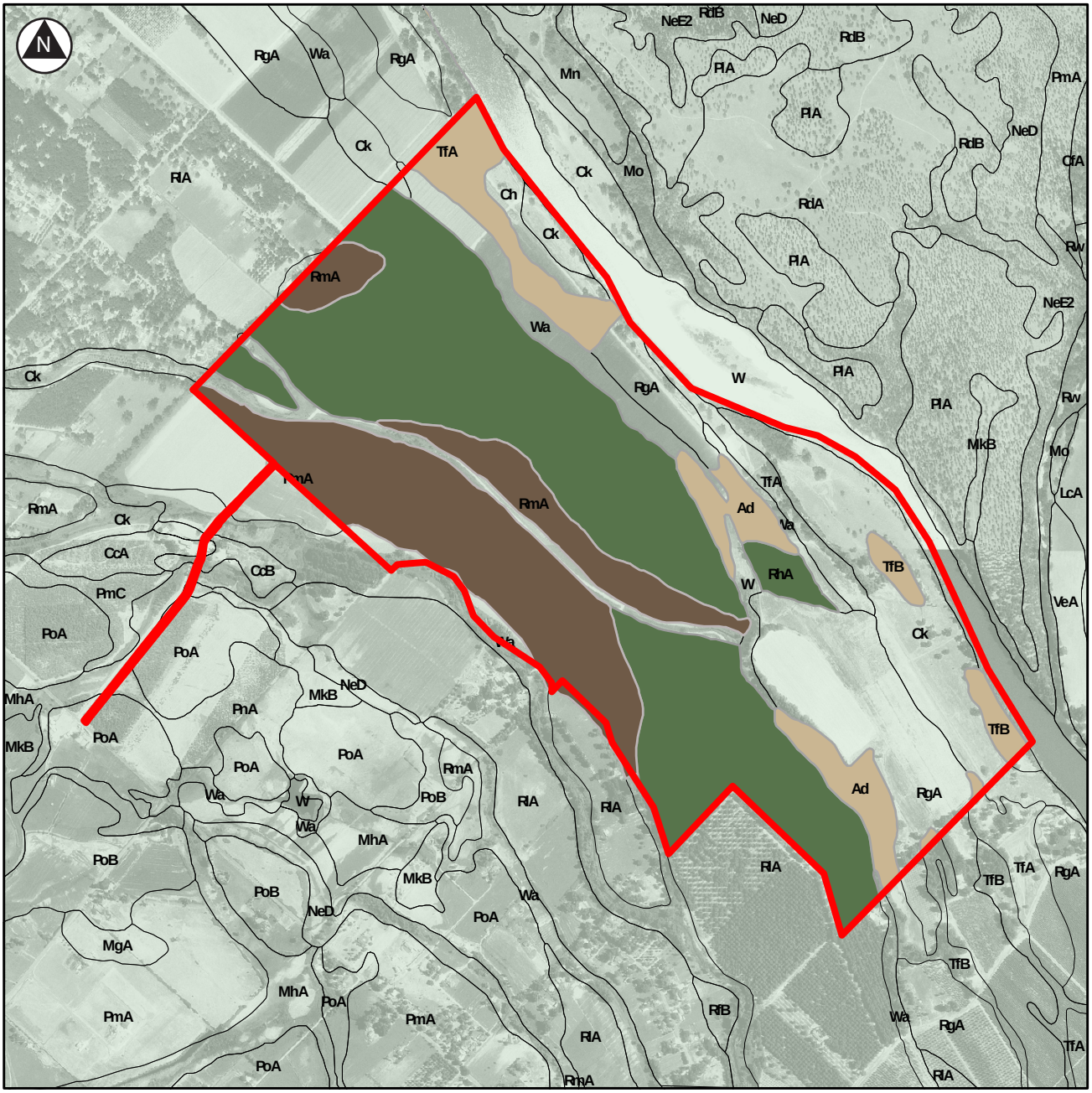
The project site is also within the Sacramento River Aggregate Resource Area (ARA) C-11. An ARA is an area classified by the State Geologist as MRZ-2a$^{SG(pcc)}$ and MRZ-2b$^{SG(pcc)}$ for concrete-grade aggregate, and is deemed available for mining based upon criteria for compatibility provided by the State Mining and Geology Board. Lands that

have compatible uses are defined as those that are non-urbanized or that have very low density residential development (one unit per 10 acres), land that does not have high cost improvements, and lands used for agriculture, silviculture, grazing or open space. Approximately 313 acres of the project site are within the boundaries of the approximately 829-acre Sacramento River ARA C-11. The location of the site relative to the MRZ-2b and ARA areas are illustrated in **Section 4.8, Geology, Soils and Minerals**.

With the assistance of the California Division of Mines & Geology (CDMG) database, the Shasta County General Plan has characterized the mineral resources within the county into three "Mineral Resource Area" classifications using state guidelines. They include:

- Mineral Resource (MR) – Lands that allow mining and accessory uses with twenty- acre minimum.
- Mineral Resource Buffer (MRB) – Lands that allow mining, depending on principal land use designation with five-acre minimum.
- Interim Mineral Resource" (IMR) – Lands that allow mining, depending on principal land use designation with ten-acre minimum.

According to the Shasta County Zoning Plan, the project is consistent with the applicable Zone Districts: Exclusive Agriculture combined with the Interim Mineral Resource District (EA-IMR), and Exclusive Agriculture combined with the Restrictive Flood District and the Interim Mineral Resource District (EA-F-2-IMR), subject to approval of a use permit and reclamation plan.



Project Boundary

Soil Map Unit

Ad Anderson gravelly sandy loam
CcA Churn loam, 0 to 3% slopes
CcB Churn loam, 3 to 8% slopes
Ch Cobbly alluvial land
Ck Cobbly alluvial land, frequently flooded
MhA Moda loam, seeped, 0 to 3% slopes
MkB Moda loam, shallow, 0 to 5% slopes
PnA Perkins gravelly loam, 15 to 30 % slopes
PoA Perkins gravelly loam, moderately deep 0 to 3% slopes
RgA Reiff fine sandy loam, 0 to 3% slopes
RhA Reiff fine sandy loam, deep, 0 to 3% slopes
RlA Reiff loam, 0 to 3% slopes
RmA Reiff loam, seeped, 0 to 3% slopes
TfA Tugunga loamy sand, 0 to 3% slopes
TfB Tugunga loamy sand, 3 to 8% slopes
W Water
Wa Wet alluvial land

Prime Farmland

Farmland of Statewide Importance

Unique Farmland

0 750 1,500 3,000 Feet

File Name and Date

Source: VESTRA, November 2005
Natural Resource Conservation Service

FIGURE 4.2-1
AGRICULTURE SOIL MAP
SHASTA RANCH, ANDERSON

PMC

4.2.2 Regulatory Framework

STATE

In the California Government Code, Sections 65302 and 65560 pertain to general plan provisions concerning the conservation and production of agricultural land and mineral resources. Specifically, Section 65560 requires that county general plan open space elements recognize "open space" lands used for the managed production of resources including, but not limited to, forest lands, rangelands, agricultural lands... and areas containing major mineral deposits, including those in short supply.

The Surface Mining and Reclamation Act (SMARA) of 1975 is contained in the California Public Resources Code (PRC), Section 2710, et seq. SMARA has established requirements for the conservation and production of mineral resources in California. According to SMARA (PRC Section 2711):

- The extraction of minerals is essential to the continued economic well-being of the State and to the needs of society, and the reclamation of mined lands is necessary to prevent or minimize adverse effects on the environment and to protect the public health and safety.

- The reclamation of mined lands will permit the continued mining of minerals and will provide for the protection and subsequent beneficial use of the mined and reclaimed land.

- Surface mining takes place in diverse areas where the geologic, topographic, climatic, biological, and social conditions are significantly different, and reclamation operations and the specifications therefore may vary accordingly.

The legislative intent of SMARA, pursuant to PRC Section 2712, is to create and maintain an effective and comprehensive surface mining and reclamation policy with regulation of surface mining operations so as to assure that: (a) Adverse environmental effects are prevented and that mined lands are reclaimed to a usable condition which is readily adaptable to alternative land uses; (b) The production and conservation of minerals are encouraged, while giving consideration to values relating to recreation, watershed, wildlife, range and forage, and aesthetic enjoyment; and (c) Residual hazards to the public health and safety are eliminated.

Public Resources Code Section 2762 states that the General Plan must establish mineral resource management policies if the State Geologist has identified resources of statewide or regional significance within the city or county. Furthermore, PRC Section 2763 requires that city and county land use decisions affecting areas with minerals of regional or statewide significance be consistent with mineral resource management policies in the General Plan.

EXISTING LAND USE DESIGNATIONS AND ZONING

Shasta County Land Use Designations

The Shasta County General Plan Land Use Element designates the project area as Agriculture-Cropland (A-C) and Agriculture-Cropland combined with the Interim Mineral Resource designation (A-C/ IMR). (See **Figure 4.2-2, General Plan Land Use Map**) The general plan land use designations that are applicable to the project are identified below:

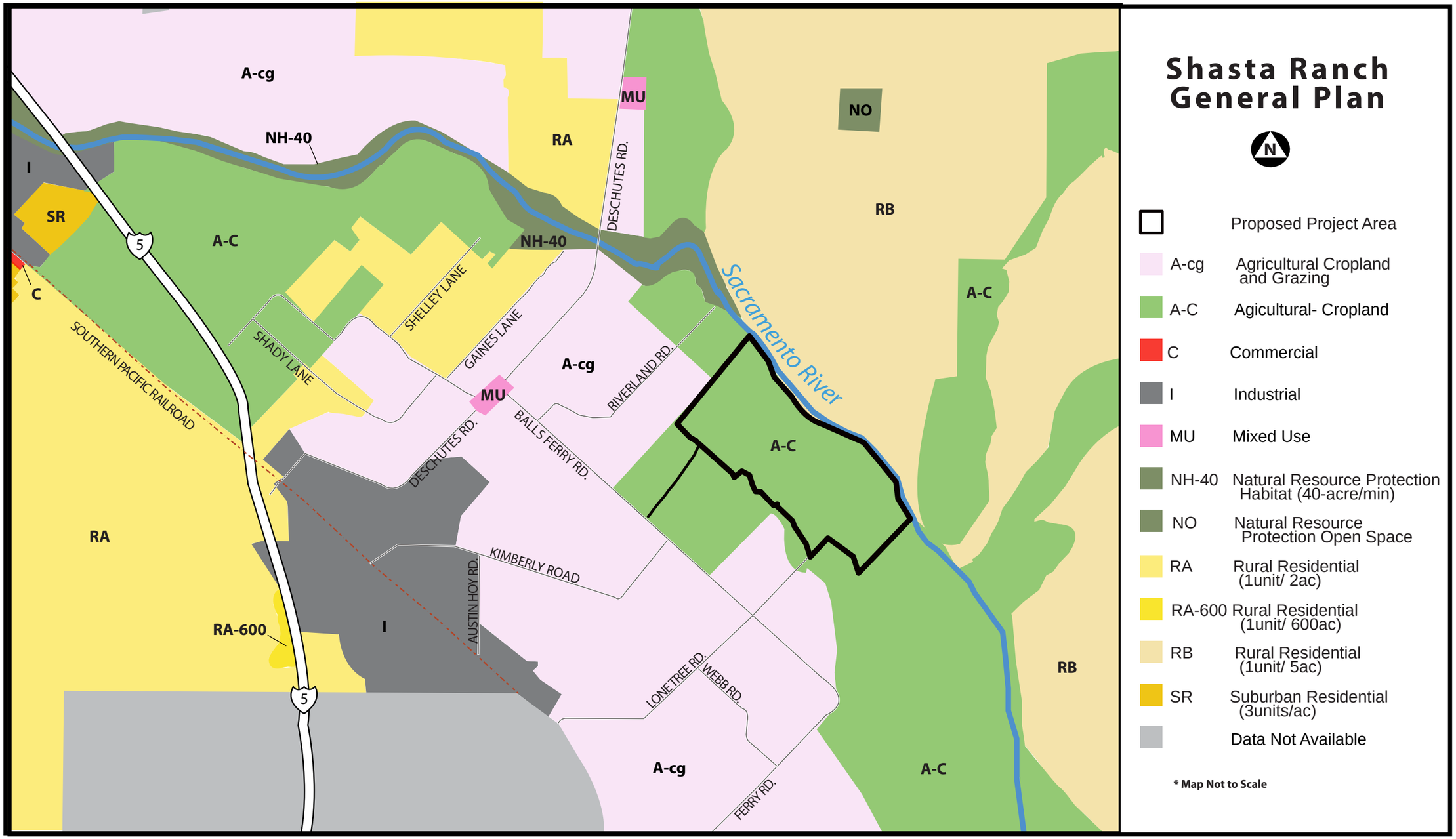
TABLE 4.2-1
SHASTA COUNTY GENERAL PLAN LAND USE DESIGNATIONS

Land Use Designation	Land Use Definition
Agricultural Cropland- (A-C)	The purpose of the Agricultural-Cropland (A-C) designation is to preserve lands with existing and potential cropland production based on resource characteristics, quality and size limitations stated in Table AG-3. These lands shall be used for grazing and crop production. Lands classified as agricultural lands may be used for mineral exploration and extraction purposes that will not permanently interfere with the principal uses of the lands for agricultural purposes. [1]
Interim Mineral Resource- (IMR)	The purpose of the Interim Mineral Resource (IMR) designation is to allow for compatible land uses while protecting the potential for mineral resource development. The Interim Mineral Resource refers to the short-term development of mining operations (i.e., less than 30 years). The IMR designation is applied as an overlay designation, which shall be combined with a principal land use designation.

Source: Shasta County General Plan, Oct. 1998.

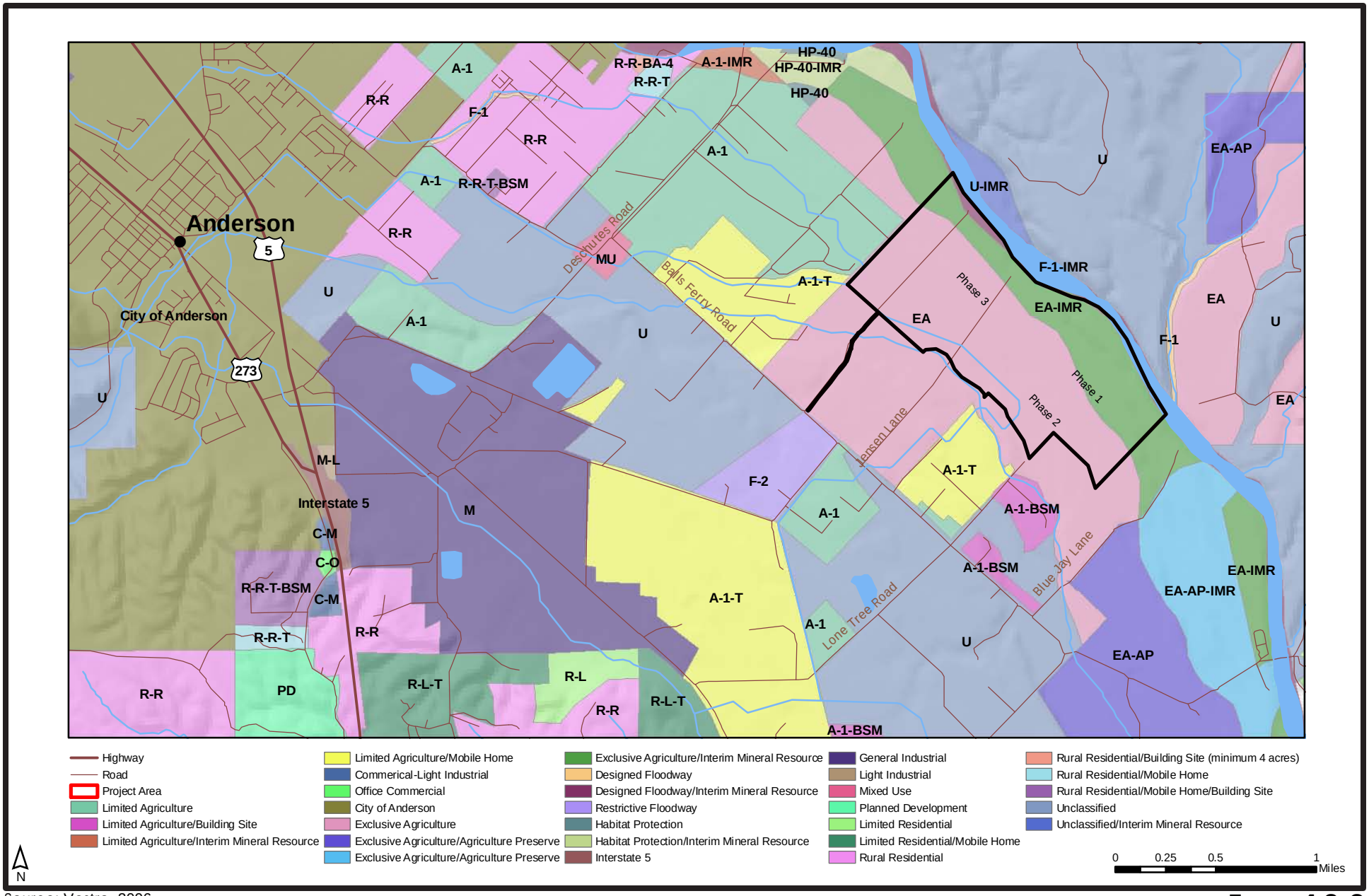
ADJACENT LAND USE DESIGNATIONS

Land use designations in the Shasta County General Plan for lands adjacent to the project site include Agricultural-Cropland (A-C) and, across the Sacramento River, Rural Residential- 600 acre minimum (RA-600). To the northwest, some lands are designated A-cg. According to Policy AG-a of the General Plan, land designated as A-cg is capable of supporting crop production by part-time or second income operators. Applicable parcel size minimums are 5, 10 or 20 acres.



SOURCE: Shasta County General Plan, 1998

FIGURE 4.2-2
SHASTA COUNTY GENERAL PLAN
PMC



Source: Vestra, 2006

FIGURE 4.2-3
SHASTA COUNTY ZONING
SHASTA RANCH AGGREGATE

PMC

RELATED GENERAL PLAN POLICIES

The Shasta County General Plan is a long-range comprehensive plan that governs growth and development in the unincorporated areas of Shasta County, including the project site. The following objectives and policies concerning land use have been extracted from the Shasta County General Plan because of their relevancy to the proposed project and related land use issues. In some cases, the notes below are excerpts of the most relevant portions of a particular objective or policy. The page of the General Plan on which the referenced objective or policy section begins is indicated:

Minerals

Objectives: (Page 6.3.08)

MR-1 To identify, conserve develop and utilize Shasta County mineral resources while protecting mineral resource sites and access routes from potential conflicts with incompatible land uses.

MR-2 To encourage the production and conservation of minerals while giving consideration to values related to recreation, watershed, wildlife, range, forage, timberlands and aesthetics.

MR-3 To ensure mining operations are conducted in such a manner as to protect the public health, safety, and welfare; to minimize adverse impacts on adjacent land uses; and to mitigate other potential adverse environmental impacts.

MR-4 To ensure that mined lands are reclaimed to minimize adverse impacts on the environment, to protect the public health and safety, and to restore mined lands sites to a usable condition which is readily adaptable to alternative land uses.

MR-5 To maintain an adequate long-term supply of mineral resources within the County, in particular, Portland cement concrete grade alluvial sand and gravel.

MR-7 To recognize the mineral information classified by the State Geologist and transmitted by the State Mining and Geology Board.

MR-8 To ensure the joint participation of residents, industry, and affected agencies in a well-defined and consistent regulatory process.

Policy: (Page 6.3.08)

MR-c Mining operations which are short-term (i.e. less than 30 years of expected operation) should be included in the Interim Mineral Resource (IMR) land use designation combined with the principal land use designation, and in the

Interim Mineral Resource (IMR) Zone District combined with the principal zone district. The IMR combining zone district shall be designed to allow for compatible land uses while protecting the potential for mineral resource development.

2. Principal land use designations considered to be incompatible with the IMR combining designation include Urban Residential (UR), Suburban Residential (SR), and Rural Residential A (RA).

3. Discretionary land use permits within ½ mile of the IMR zone district shall be mitigated, as determined necessary by CEQA review to prevent conflicts with existing and potential mining operations.

MR-e All Portland cement concrete grade alluvial sand and gravel resource areas (classified as MRZ 2-b as shown on Plat 4 of the Mineral Land Classification study), and all diatomite resource areas (classified as MRZ-2-b as shown on Plate 8 of the same study), which are not presently occupied by existing incompatible land uses, should be designated and zoned Interim Mineral Resource (IMR). The designation and zoning of these specific mineral resource areas shall be initiated by the County.

MR-i All new or expanded mining operations shall have a use permit to ensure that they are conducted in a manner to protect the public health, safety, and welfare, and to minimize adverse impacts on adjacent land uses and the environment.

MR-j On-site processing, including crushing, washing, screening, sorting, and stockpiling, should be allowed as much as possible at all mineral resource sites, subject to consideration of potential conflicts with adjacent and nearby land uses, and to mitigation of potential adverse environmental effects. However, concrete plants and asphalt plants should only be permitted in the Mineral Resource (MR) and General Industrial (M) zone districts, subject to approval of a use permit.

MR-l Mining may be permitted in the floodplain area of a river or stream provided that a plan is prepared by a qualified professional including data and analysis to show that the proposed mining in the floodplain will not alter the course of the adjacent river or stream, will not cause river or stream to flow through the mined area, and will not significantly change the boundaries of the floodplain.

MR-m Mining may be permitted in areas of agricultural soils, provided that a plan is submitted by a qualified professional including data and analysis to show that the soil shall be replaced in such a way as to maintain the same or better agricultural qualities and class as existed prior to mining disturbance. Mining in A-cg designated areas is subject to policy AG-g.

MR-n An operating term shall be required for each mining use permit. This would set a defined length of time during which mining may occur. ... The maximum length of time for which any mining permit may be approved is 30 years.

MR-p The *Mineral Land Classification of Alluvial Sand and Gravel, Crushed Stone, Volcanic Cinders, Limestone, and Diatomite within Shasta County, California*, 1997, and the associated maps, by the California Department of Conservation, Division of Mines and Geology, is incorporated by reference as a source of geologic and mineral resource technical information for the Shasta County General Plan.

Community Organization and Development Pattern

Objectives: (Page 7.1.13)

CO-3 To guide development in a pattern that will respect the natural resource values of County lands and their contribution to the County's economic use.

CO-4 To guide development in a pattern that will minimize land use conflicts between adjacent land users.

Policy: (Page 7.1.13)

CO-a The County shall, in coordination with the Cities of Anderson, Redding and Shasta Lake ensure the availability within the County of an inventory of developable lands sufficient to accommodate growth projected for the planning period.

Agricultural Lands

Objectives: (Page 6.1.09)

AG-1 Preservation of agricultural lands at a size capable of supporting full-time agricultural operations (designated on the land use maps as A-C or A-G in order to allow the continuation of such uses and to provide opportunities for the future expansion and/or establishment of such uses.

AG-3 Recognition by Shasta County residents that the preservation of agricultural land for agricultural uses, both large and small scale, is in the public interest because it preserves local and regional food supplies and is an important contributing industry to the Shasta County economy.

AG-4 Recognition by Shasta County residents that preservation of agricultural lands, both large-and small-scale, provides privately maintained open space, facilitates a rural lifestyle, and requires community understanding the problems facing ranchers and farmers.

AG-5 Protection of agricultural lands from development pressures and or uses which will adversely impact or hinder existing or future agricultural operations.

Policies: (Page 6.1.09)

AG-a Agricultural lands in Shasta County shall be classified according to three general categories based on the following criteria:

Land designated on the land use maps as A-G capable of supporting grazing by full-time operators . . .

Land designated on the land use maps as A-C capable of supporting crop production by full-time operators, including:

- Existing croplands used for this purpose
- Lands which are not now but could be used for this purpose based on resource characteristics (soils, climate, access to water) and compliance with the applicable parcel size minimums of Table AG-3.

Land designated on the land use maps as A-cg capable of supporting crop production by part-time or second income operators, with the following characteristics:

- Existing lands used for this purpose.
- Lands which are not now but could be used for this purpose based on resource characteristics (soils, climate, access to water).
- Applicable parcel size minimums of 5, 10 or 20 acres, as best suited to the locale, and applied to part-time agricultural areas found in Table AG-3.

TABLE 4.2-2

MINIMUM PARCEL SIZE REQUIREMENTS

(Extracted from the Shasta County General Plan, Table AG-3)

Agricultural Area	Current Primary Use	Full-time Operators (A-C or A-G)	Part-time Operators (A-cg)
Sacramento River Valley	Field Crops	40	5, 10 or 20
	Orchard Crops	40	5, 10 or 20
	Nursery Stock	40	5, 10 or 20
	Irrigated pasture	120	5, 10 or 20
	Grazing	760	5, 10 or 20

Source: Shasta County General Plan, Table AG-3, Page 6.1.08). Table AG-3 minimum parcel sizes provide a framework for plan policies designed to preserve agricultural lands in units capable of supporting agricultural operations. (Shasta Co. Gen. Plan, 2002)

AG-c Lands designated on the land use map, as A-C or A-G shall be principally used for grazing and crop production.... Lands classified as agricultural lands may be used for mineral exploration and extraction purposes that will not permanently interfere with the principal uses of the lands for agricultural purposes.

AG-g Lands designated A-cg shall be maintained to support both short- and long-term part-time agricultural activities as the primary land use while allowing subordinate auxiliary uses, including single-family residences. Removal of agricultural soils and other activities which reduce the potential for agricultural production as the primary land use are prohibited, except in the following situations:

A. Mineral extraction or mining on lands in the vicinity of a significant waterway where the County has adopted a stream corridor delineation upon consultation with the Department of Fish and Game and subject to all of the following general performance standards:

- The land shall be located within the adopted delineated stream corridor.
- The end result of the land use change is to enhance fish and wildlife
- The land use conversions result in habitat protection zoning.
- A long term and comprehensive aggregate and wildlife habitat management and protection program for the waterway reach affected by the proposed land use change has been adopted by the County, after consultation with the Department of Fish and Game.

- Protection of bridges and other infrastructure, which may be impacted by mining operations, is assured through proper engineering and hydrologic design.

AG-h The site planning, design, and construction of on-site and off-site improvements for non-agricultural development in agricultural areas shall avoid unmitigatible short- and long-term adverse impacts on facilities, such as irrigation ditches, used to supply water to agricultural operations.

Flood Protection

Objective: (Page 5.2.03)

FL-1 Protection of public health and safety, both on-site and downstream, from flooding through floodplain management which regulates the types of land uses which may locate in the floodplain, prescribes construction designs for floodplain development, and requires mitigation measures for development which would impact the floodplain by increasing runoff quantities.

Policies: (Page 5.2.03)

FL-b County flood control measures should advance, insofar as possible, the goals of providing for domestic and agricultural water uses, recreation, resource conservation (including streamside vegetation and habitat) and the preservation of the scenic values of the County's water resources.

FL-c Whenever possible, flood control measures should consist of channel diversions or limited floodplain designs which avoid alteration of creeks and their immediate environments.

FL-f Known flood hazard information shall be reported as part of every General Plan amendment, zone change, use permit, variance, building site approval, or other land development applications subject to environmental assessment.

SHASTA COUNTY ZONING ORDINANCE

The Shasta County Zoning Plan consists of the establishment of various zoning districts to be used within the unincorporated territory of the county. The purpose of Zoning Plan provisions is:

- To promote and protect the public health, safety, peace, morals, comfort, convenience and general welfare;
- To implement the county general plan, and to facilitate and guide growth in accordance with the general plan; and

- To protect the social and economic stability of residential, commercial, industrial, resource production, and recreational activities within the county through the orderly, planned use of the land.

The zoning of the project area is: Exclusive Agriculture (EA); Exclusive Agriculture combined with the Restrictive Flood District (EA-F-2); Exclusive Agriculture combined with the Interim Mineral Resource District (EA-IMR); and Exclusive Agriculture combined with the Restrictive Flood District and Interim Mineral Resource Districts (EA-F-2-IMR). (See**, Figure 4.2-3, Zoning Map.**) The zoning districts applicable to the project area are identified below:

TABLE 4.2-3
SHASTA COUNTY ZONING DISTRICTS

Zoning District	General Description
Exclusive Agriculture District- (EA)	The purpose of the Exclusive Agricultural (EA) district is to preserve lands with agricultural value that have the combination of size and quality, sometimes in conjunction with other lands, to make their use for agriculture economically feasible, and within which agricultural preserves may be created for the purpose of utilizing provisions of the law relating to agricultural preserves. *
Interim Mineral Resource District- (IMR)	The Interim Resource (IMR) district is intended to be combined with any principal district to protect mining operations that are short term (i.e. less than 30 years of expected operation), and to allow for compatible land uses while protecting the potential for mineral resource development.
Restrictive Flood District- (F-2)	The restrictive flood (F-2) district may be combined with any principal district to minimize or avoid hazards to life and property from flooding in the areas of special flood hazard established by the Federal Emergency Management Agency, pursuant to the Flood Disaster Protection Act of 1973, and in other areas of significant flood hazard. These regulations apply to all districts combined with this district provided that, in case of conflict between the regulations of the principal district and this district, the more restrictive regulations control.
**Under Zoning Code Section 17.06.050-A, Exclusive Agriculture, other permitted uses found to be similar in character under Chapter 17.88, Special Uses, (Sections 17.88.010-17.88.150) are allowed provided a use permit is issued. Section 17.88.020 includes mining and exploration, extraction and processing of minerals, rock, sand, gravel, topsoil or steam for commercial purposes.*	

Source: Shasta County General Plan, Oct. 1998.

The following information concerning zoning districts in the vicinity of the proposed project and related zoning provisions has been selected from the Shasta County Zoning Ordinance. This information is emphasized because of the applicability of these provisions to the project and the project area.

Interim Mineral Resource (IMR)

17.72.010 The interim mineral resource district is intended to be combined with any principal district to protect mining operations which are short-term (ie., less than 30 years of expected operation), and to allow for compatible land uses while protecting the potential for mineral resource development.

17.72.020-A Uses permitted in the IMR district are all uses permitted in the principal district with which the IMR district is combined, provided the use does not conflict with existing mineral resource development nor preclude future mineral resource development. The use permit requirements of the principal district shall apply.

17.72.020-B Discretionary land use permits within one-half mile of an IMR district shall be mitigated, as determined necessary by CEQA review, to prevent conflicts with existing and potential mining operations.

Special Uses- Mining

17.88.020-E Mining may be permitted in areas of agricultural soils, provided a use permit is issued in each case, and a plan is submitted by a qualified professional including data and analysis to show that the soil shall be replaced in such a way as to maintain the same or better agricultural qualities and class as existed prior to mining disturbance. Mining in A-cg designated areas is subject to General Plan policy AG-g.

17.88.020-F An operating term shall be required for a mining use permit. This would set a defined length of time during which mining may occur. Any extensions beyond the permit expiration would require further environmental review and discretionary approval. The term of mining should be balanced so as to allow sufficient time for the operator to amortize investments, without sacrificing regulatory effectiveness. The maximum length of time for which any mining permit may be approved is 30 years.

Exclusive Agriculture (EA)

17.06.010 The purpose of the exclusive agriculture district is to preserve lands with agricultural value that have the combination of size and quality, sometimes in conjunction with other lands, to make their use for agriculture economically feasible, and within which agricultural preserves may be created for the purpose of utilizing provisions of the law relating to agricultural preserves. This district may also be applied to parcels that do not have these characteristics, but are located in an area where the predominant land use pattern meets the criteria of this district. This district is consistent with the agricultural-croplands (A-C) and agricultural grazing (A-G) general plan designations. This district may also be applied to other areas within which the parcels have a combination of size and quality to

be used for full-time agriculture, provided there are no conflicts with other general plan policies.

Restrictive Flood (F-2)

17.70.10 The restrictive flood district is intended to be combined with any principal district to minimize or avoid hazards to life and property from flooding in the areas of special flood hazard established by the Federal Emergency Management Agency, pursuant to the Flood Disaster Protection Act of 1973, and in other areas of significant flood hazard. These regulations apply in all districts combined with this district, provided that in case of conflict between the regulations of the principal district and this district, the more restrictive regulations control.

17.70.020 Uses permitted in the F-2 district are all uses permitted in the principal district with which the F-2 district is combined, provided the use permit requirements of the principal district shall apply. Proposed development shall not adversely affect the carrying capacity of areas where base flood elevations have been determined but a floodway has not been designated.

17.70.050-A Every structure shall be designed and anchored to prevent flotation, collapse or lateral movement of the structure, or portions of it, due to flooding.

17.70.050-E The lowest floor, including the basement, of all nonresidential structures, or substantial improvements to existing nonresidential structures may be below the base flood level, provided the structure, utilities and water and sewage disposal facilities are flood proofed to a point at least one foot above the base flood level. When flood proofing is require, a registered civil engineer or licensed architect shall certify that the flood proofing methods are adequate to withstand the flood depths, pressures, velocities, impact and uplift forces, and other factors associated with the base flood level.

17.70.050-F All permits from governmental agencies whose approval of development in the restrictive flood zone is required by federal or state law, shall be obtained prior to commencement of construction or installation of any structure, water supply or sewage disposal system.

17.70.050-G No work that alters or relocates any portion of a watercourse shall diminish the flood-carrying capacity of the watercourse within the area of alteration or relocation.

17.70.050-K All new construction and substantial improvement, with fully enclosed areas below the lowest floor (excluding basements) that are usable solely for parking of vehicles, building access or storage, and which are subject

to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs meeting this requirement must either be certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria:

1. A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided.

2. The bottom of all openings shall be no higher than one foot above grade.

3. Openings may be equipped with screens, louvers or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

4.2.3 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

An impact relating to land use would be considered significant if it would:

- Physically divide an established community;
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect;
- Conflict with any applicable habitat conservation plan or natural community conservation plan;
- Conflict with existing zoning for agricultural use or a Williamson Act contract.
- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance as shown in the maps pursuant to the California Department of Conservation Farmland Mapping and Monitoring Program to non-agricultural use.
- Induce substantial population growth in an area, either directly or indirectly;
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.

The land use analysis presented below evaluates the consistency of the proposed project with the type and intensities of existing and planned land uses on and near the proposed project. Potential land use conflicts or incompatibility are typically the result of other environmental effects such as the generation of noise, traffic, or objectionable

odors. Potential land use conflicts resulting from the effects of project construction or operation are summarized here. The reader is also referred to other EIR sections for more detailed discussion of relevant environmental effects.

METHODOLOGY

The methodology used for this impact analysis involved a comparison and assessment of the proposed project to relevant objectives and policies of the Shasta County General Plan and provisions of the County's Zoning Ordinance. In addition consideration to surrounding uses and site features. The analysis was conducted through a combination of document review and field visits and communication with County staff.

IMPACTS AND MITIGATION MEASURES

The potential impacts of the proposed project concerning land use and planning involves the need for compliance with various provisions of the Shasta County General Plan that relate to mining, agricultural use, compatibility with surrounding land uses, and the avoidance or mitigation of impacts to various resources and community services. As discussed in **Section 4.2.2, Regulatory Framework**, many of the general plan policies pertain to how a project is permitted and developed once it has been determined that the project is consistent with the general plan. It is noted that ensuring the compatibility of land uses is an important objective in the intent to avoid or lessen particular impacts to levels that are less than significant. All general plan issues, except the conversion of agricultural lands, are considered to be ***less than significant***.

Generally, the development of an aggregate mining quarry can be found to be consistent with the existing General Plan and zoning districts, subject to compliance with specific policies and zoning provisions. Lands classified as agricultural lands may be used for mineral exploration and extraction purposes that will not permanently interfere with the principal uses of the lands for agricultural purposes. The mining and reclamation operations of the proposed project are allowable uses under the Agricultural Cropland (A-C) and Agricultural Cropland and Interim Mineral Resource (A-C/IMR) land use designations, which are the current land use designations of the proposed project site pursuant to Shasta County's General Plan. The principle zoning district of the project is Exclusive Agriculture (EA), combined with Interim Mineral Resource and the Restrictive Flood district (IMR/F-2). There is no requirement for a general plan amendment or rezone of the project site. However, the project does require a discretionary conditional use permit and approval of a reclamation plan.

Impact 4.2.1 The proposed project would result in a conversion of agricultural land to non-agricultural land uses, and would convert prime farmland, farmland of statewide importance, and unique farmland on the project site. This impact is considered a ***significant and unavoidable impact.*** **[SU]**

The Shasta County General Plan addresses and allows the use of agricultural lands for mining, especially when the site has valuable mineral and aggregate resources. The Shasta Ranch Mining and Reclamation Plan project will result in conversion of prime farmland and farmland of statewide importance. The project site contains viable agricultural soils that are located in areas that would be disturbed by the proposed mining activities (i.e., extraction phases). The land use would, for the term of the project, be altered from the existing agricultural use to mineral resource extraction. The topsoil and overburden extracted would be stockpiled and recycled onsite.

The proposed mining project will disturb soils and areas that are designated prime farmland, farmland of statewide importance and unique farmland according to the Department of Conservation Mapping and Monitoring Program. Portions of the Phase 2 project area and a majority of the Phase 3 area are classified as prime farmland. There will be a loss of agricultural lands due to the extraction of aggregate material. As noted above, after more detailed site studies, the Phase 1 area does not appear to have special farmland soil characteristics. The existing conditions are fallow land covered with natural vegetation, shallow topsoil, and a high aggregate content (cobblestone, gravel, etc.).

Although the conversion of agricultural land would alter existing conditions, the project would not result in a total loss of agricultural soils. A portion of the disturbed site will be reclaimed for agricultural use; the reclamation plan includes the backfill of stockpiled and recycled overburden and topsoil into the Phase 1 mine pit, which will be restored back to active agricultural use. The Phase 2 and Phase 3 mining pits would be modified and revegetated to create productive ecosystems that are compatible with the adjacent riparian area and surrounding landscape.

This would include the creation of two ponds with both aquatic vegetation and natural vegetation to restore and enhance wildlife amenities. While these reclamation efforts further the goals of the County General Plan, the project will result in the conversion of some lands considered prime farmland to non-agricultural use.

Implementation of the proposed project reclamation plan will reduce, but cannot eliminate, the impact associated with converting farmland to non-farmland uses. No other mitigation has been identified that can both meet the objectives of the project and reduce this impact to a less than significant level. As a result, implementation of the proposed project will have a ***significant and unavoidable impact.*** **[SU]**

Impact 4.2.2 The proposed project would not conflict with permitted or existing land uses on adjacent lands. This impact is considered ***less than significant.*** **[LS]**

A wide range of rural land uses including farmland, rural residential uses, recreation and open space are common in the vicinity of the proposed project site. The project is considered compatible with existing and future agricultural land uses subject to mitigation of dust (See **Section 4.4, Air Quality**). The project includes several design features to ensure potential impacts would be minimized to the extent feasible. These

include mining in phases to focus activity in specific areas and on-going reclamation. The proposed mining and processing activities are relatively removed from homes adjacent to the site. The processing area is located to allow ample separation from adjacent homes. The distance to mining and processing areas, the below-ground nature of the mining process, and the reclamation plans concurrent with mining will reduce the visual impact of the quarry. Overall, the development of the proposed project will result in a ***less than significant*** impact to adjacent land uses. No mitigation in addition to those proposed in specific sections of this EIR (e.g., **Section 4.4, Air Quality**, is required.

Impact 4.2.3 The proposed project would not substantially increase local employment or displace existing housing. The proposed project will result in a ***less than significant impact*****. [LS]**

The project will include a maximum employment of nine workers. This would not result in a significant increase in employment. There are two residential units located on the property. The residences are associated with the project applicant and the houses will remain undisturbed by the proposed mining project. There will be no loss of available housing. This impact is considered ***less than significant*****. [LS]** No mitigation is required.

Impact 4.2.4 The project would not conflict with off-site agricultural land uses and/ or existing Williamson Act contracts. The proposed project will result in a ***less than significant impact*****. [LS]**

There are no Williamson Act contracts or preserves located on the site. The proposed project site is designated for agricultural use. However, under the General Plan agricultural land use designation, mining of mineral resources is permitted with an approved discretionary use permit and reclamation plan. These discretionary permits are part of the project description. Therefore the impact is considered ***less than significant*****. [LS]** No mitigation is required.

Impact 4.2.5 The project would not physically divide a community, conflict with a known Habitat Conservation Plan, and/or a Natural Community Conservation Plan. The proposed project will result in ***no impact*****. [NI]**

The proposed project is located in a rural area and will not displace or divide any established community. There is no Habitat Conservation Plan applicable to the site. Therefore, the proposed project would not divide an existing Habitat Conservation Plan or Natural Community Plan. This impact is considered to be ***no impact*****. [NI]** No mitigation is required.

4.2.6 CUMULATIVE IMPACTS AND MITIGATION MEASURES

Impact 4.2.6 Implementation of the proposed project would result in changes to the existing agricultural and open space patterns. In relation to the existing Shasta County General Plan land uses the cumulative impacts are considered **less than significant. [LS]**

Although some of the mineral extraction areas are located in areas recognized as Prime Agriculture the proposed project is consistent with the General Plan Land Use designation under approval of a Conditional Use permit and Reclamation Plan. While the implementation of the project would result in the removal of 268 acres of open space and agricultural farmland, the reclamation plan would ensure the property is restored to its pre-existing uses. The reclamation plan includes agricultural uses and restoration of disturbed areas throughout the project site. Cumulatively the site would result in the total site preservation of 947 acres of combined open space and agriculture.

As identified in the NRCS Mapping and Monitoring Program (MMP), Phase 1 of the proposed project area is not considered Prime Agricultural land. Yet, Phase 1 will be reclaimed to agricultural farmland upon site reclamation activities. The soils that will be used to reclaim this area will come from Phase 2 and 3, of which both are listed as Prime Agriculture. Although the proposed reclamation plan shows Phase 2 and 3 areas being reclaimed as ponds, these soils will be relocated to Phase 1 and incorporated into the remaining onsite reclamation activities. In essence compensating a portion of the net loss of Prime Agricultural land from Phase 2 and 3 will be attained in Phase 1.

In order to further preserve natural resources, the General Plan, Conditional Use Permit and Reclamation Plan would establish specific project development standards, slope development standards, and oak tree preservation standards for all development within the project area. Although the natural setting of the area would be altered as a result of the proposed project the cumulative impacts to existing land uses are considered **less than significant. [LS]**

REFERENCES

California Department of Conservation, Division of Land Resource Protection. *Important Farmland Categories*. http://www.conserv.ca.gov/DLRP/fmmp/mccu/mapcategories.htm January 5, 2006.

Dupras, Don. Department of Conservation, Division of Mines and Geology. *Mineral Land Classification of Allubial Sand and Gravel, Crushed Stone, Volvanic Cinders, Limestone, and Diatonmite within Shasta County, California*, 1997.

Geomatrix Consultants, Phase 1 Environmental Site Assessment, Shasta Ranch, Anderson, California, October 11, 2004.

Kleinfelder, Inc. Geotechnical Investigation Report, Proposed Shasta Ranch Quarry, Anderson, California, March 29, 2005.

Mineral Resource Element. Shasta County General Plan. Revised 1998. P.6.3.01

ENDNOTES

[1] Agricultural Lands, Shasta County General Plan, pg 6.1.09

[2] Agricultural Lands, Shasta County General Plan, pg 6.1.11

[3] Screencheck. Shasta Ranch Project Mining and Reclamation Plan. EIP Associates and Sharrah, Dunlap, Sawyer Inc. p. 12

This section of the report analyzes the existing transportation system in the area and addresses the potential transportation and circulation impacts resulting from development of the Shasta Ranch Mining and Reclamation project. Fehr and Peers Traffic Consultants completed traffic analysis for the proposed project. Technical data sheets utilized for analysis are included as **Appendix 4.3-1** to this EIR.

4.3.1 ENVIRONMENTAL SETTING

EXISTING TRANSPORTATION SYSTEM

The proposed project site is located in southern Shasta County, east of Interstate 5, which provides the major north-south regional access to the County. The site is approximately three miles east of I-5 and access to the project site is gained from Balls Ferry Road, a county road. The general boundaries of the project are Balls Ferry Road to the west, Deschutes Road one-mile to the north, Blue Jay Lane to the south and the Sacramento River to the east. An unimproved private road provides access to the project site approximately one-quarter mile north of the Balls Ferry Road and Kimberly Road intersection.

This section of the traffic report analyzes the operation of the roadway system in the project study area for existing conditions. The area is primarily categorized as agricultural and rural residential, with automobiles as the primary travel. Limited bus transit service, and bicycle and pedestrian facilities exist in the immediate vicinity of the project site.

TRAFFIC OPERATIONS

The operations of roadway facilities are described with the term *level of service*. Level of service (LOS) is a qualitative description of traffic flow from the perspective of motorists based on factors such as speed, travel time, delay, freedom to maneuver, traffic volume, and the capacity of the roadway. Six levels are defined from LOS A, as the least congested operating conditions, to LOS F, or the most congested operating conditions. LOS E represents "at-capacity" operations. When volumes exceed capacity, stop-and-go conditions result and operations are designated as LOS F. Consistent with the Circulation Element of the Shasta County General Plan, LOS C is considered the minimum acceptable operating LOS.

Roadway Network

A brief description of the key roadway facilities in the vicinity of the proposed project is provided below. See **Figure 4.3-1, Project Location** for the existing roadway network within the project area.

- *Interstate 5* (I-5) is the main north-south facility through Shasta County. It extends the entire length of Shasta County, from its southern border with Tehama County to its northern border with Siskiyou County. I-5 is a four-lane divided freeway from the Tehama County line to the Siskiyou County line.

- *State Route-273* (SR-273*)* is a major north-south 4-lane highway, which intersects I-5 in the City of Anderson, then runs parallel to the west of I-5, intersects I-5 to the north of the City of Redding.

- *Balls Ferry Road* is a two-lane collector that connects the City of Anderson in the north with the community of Cottonwood to the south. The road meanders through a primarily low density, rural residential and agricultural area, and has limited shoulders on both sides. The road has two sharp curves. One of these curves is where the road crosses the Union Pacific rail line just east of Treefoil Lane; the other curve is a dogleg, where it intersects Ash Creek Road. All access to the project site is from Balls Ferry Road.

Photo 4.3-1: The north view of Balls Ferry Road from the project entrance.

Photo 4.3-2: The south view of Balls Ferry Road from the project entrance.

- *Deschutes Road* is a four-lane minor arterial between SR-273 and I-5 in the City of Anderson, and a two-lane collector east of I-5. The intersection with the I-5 southbound off-ramp is signalized, while the intersection with the I-5 northbound on-ramp is three way stop controlled. From its intersection with I-5, Deschutes Road continues east and north, crossing the Sacramento River, and connecting with the community of Palo Cedro.

- *Main Street* is a two-lane collector that intersects I-5 north of the downtown area, runs south through downtown Cottonwood, crosses under the Union Pacific rail line, crosses Cottonwood Creek into Tehama County, and then continues to the I-5 interchange with Bowman Road.

- *Bowman Road* is an east-west collector in Tehama County located at the southern edge of the study area. From its western terminus at SR-36, it runs northeastward and parallel to Cottonwood Creek, to its eastern terminus at I-5. Bowman Road is a two-lane collector.

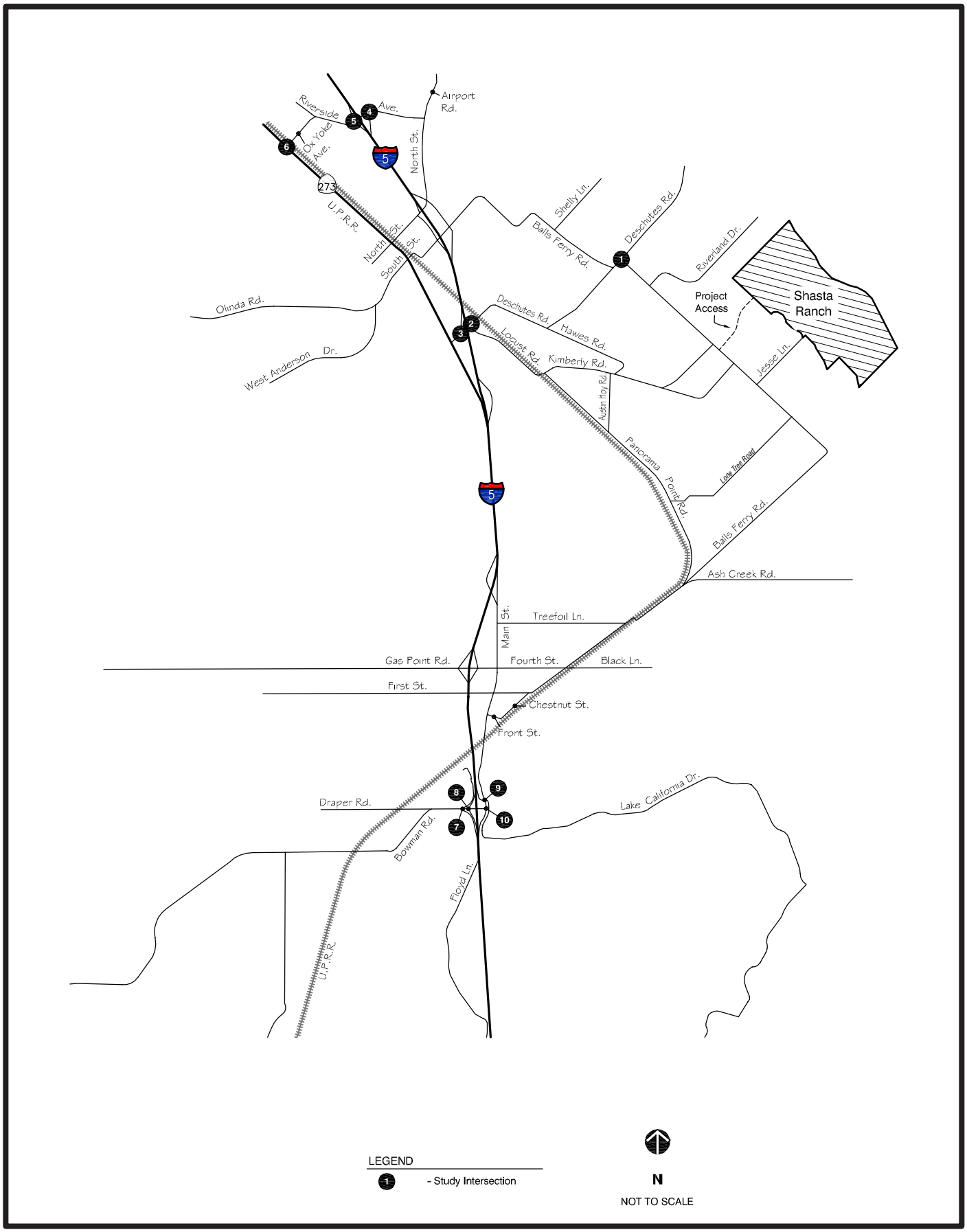
- *Ox Yoke Avenue* is a two-lane collector that intersects SR-273. Currently this intersection is unsignalized, with side street stop control. Work has begun on the installation of a traffic signal at this intersection.

- *Riverside Avenue* provides access between SR-273 and Airport Road. It is a two-lane collector that crosses over I-5, and connects with SR-273 via Ox Yoke Avenue. Sections of Riverside have no shoulder.

All of the rural roadways providing access to the project site are narrow in nature with limited shoulders.

Rail Service

Union Pacific Railroad provides rail service through Shasta County. Within the project area there are existing at-grade rail crossings of Balls Ferry Road and Kimberly Road/Locust Road. There are additional at-grade rail crossings near intersections of SR-273 as rail tracks parallel SR-273 from South Street north into the City of Redding. Grade separated rail crossings are provided at I-5, Deschutes Road, and Main Street.



SOURCE: FEHR & PEERS, 2/14/06

FIGURE 4-3-1
PROJECT LOCATION

PMC

Traffic Study Area

The traffic study area was a collaborative effort between the Shasta County staff, other agency staff, and the applicant. The applicant indicated which locations would be used as the primary haul routes throughout the operations. The following study locations listed below were determined and approved by Shasta County staff and the applicant for this assessment.

Roadway Segments

- Balls Ferry Road – Deschutes Road to Kimberly Road
- Balls Ferry Road – Kimberly Road to Panorama Point Road
- Deschutes Road – SR-273 to Locust Road
- Kimberly Road – Balls Ferry Road to Locust Road
- SR-273 – South Street to Deschutes Road
- Balls Ferry Road – Panorama Point Road to Fourth Street
- Balls Ferry Road – Deschutes Road to Shelly Lane
- Fourth Street – Main Street to Balls Ferry Road
- First Street – Main Street to Chestnut Street
- Main Street – Fourth Street to First Street
- Main Street – Shasta County Line to Front Street

Intersections

- Deschutes Road / Balls Ferry Road
- Deschutes Road / I-5 Northbound Ramps
- Deschutes Road / I-5 Southbound Ramps
- Riverside Avenue / I-5 Northbound Ramps
- Riverside Avenue / I-5 Southbound Ramps
- Ox Yoke Avenue / SR-273
- Bowman Road / Floyd Lane
- Bowman Road / I-5 Southbound Ramps
- Bowman Road / I-5 Northbound On Ramp / Lake California Drive
- Bowman Road /I-5 Northbound Off Ramp

Interchanges

- Interstate 5 northbound at Deschutes Road
- Interstate 5 southbound at Deschutes Road

Existing Traffic Volumes

Fehr & Peers obtained existing daily, and AM and PM peak hour traffic counts from several sources. These sources include Caltrans District 2, the *Shasta Ranch Gravel Operations TIS* completed in June of 2005, the *Sun City Tehama Specific Plan Draft EIR* completed in December of 2005, and traffic counts conducted by Fehr & Peers on January 4th and 5th of 2006. The AM peak hour is defined as the one hour of peak traffic

flow counted between 7:00 AM and 9:00 AM on a typical weekday. The PM peak hour is defined as the one hour of peak traffic flow counted between 4:00 PM and 6:00 PM on a typical weekday. **Figure 4.3-2, Peak Hour Traffic Volumes, Land Configurations, Traffic Control and Average Daily Volumes Existing Conditions,** shows existing daily roadway segment traffic volumes and AM and PM peak hour intersection turning movement volumes.

Existing Traffic Conditions

Roadway Segments

Table 4.3-1, Roadway Level of Service-Existing Conditions, presents the existing conditions analysis for roadway segments.

TABLE 4.3-1

ROADWAY LEVEL OF SERVICE (LOS) – EXISTING CONDITIONS

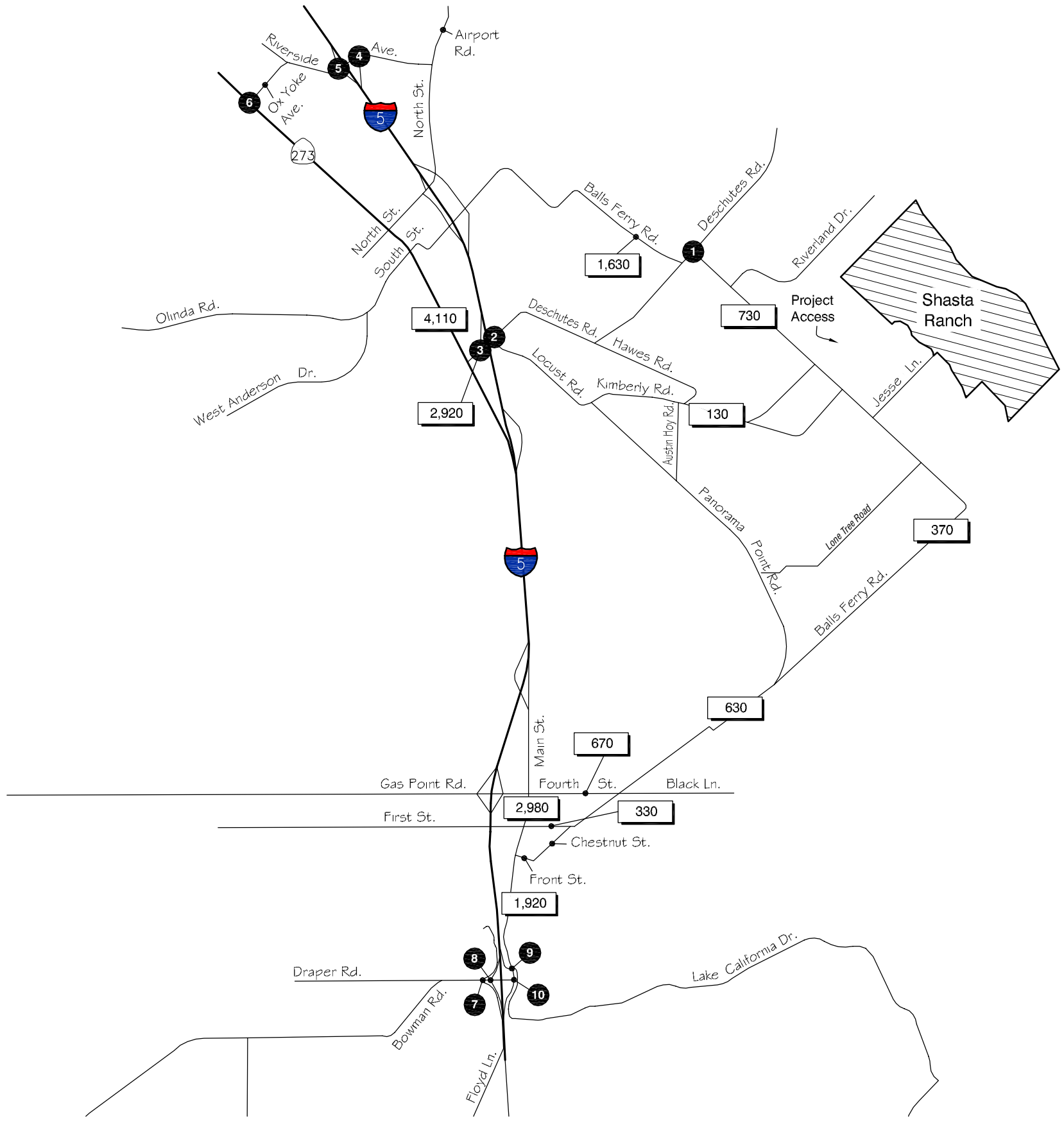
Roadway Segment	Existing Conditions			
	Lanes	Volume	V/C	LOS
1. Balls Ferry Road – Deschutes to Kimberly	2	730	0.05	A
2. Balls Ferry Road – Kimberly to Panorama Point	2	370	0.02	A
3. Deschutes Road – SR-273 to Locust	4	2,920	0.08	A
4. Kimberly Road – Balls Ferry to Locust	2	130	0.01	A
5. SR-273 – South to Deschutes	4	4,110	0.10	A
6. Balls Ferry Road – Panorama Point to Fourth	2	630	0.04	A
7. Balls Ferry Road – Deschutes to Shelly Lane	2	1,630	0.11	A
8. Fourth Street – Main to Balls Ferry	2	670	0.04	A
9. First Street – Main to Chestnut	2	330	0.02	A
10. Main Street – Fourth to First	2	2,980	0.17	A
11. Main Street – Shasta County Line to Front	2	1,920	0.11	A

Volume to capacity ratio (V/C) measures the actual volume of vehicles observed or counted on any street segment in relation to the throughput capacity of the facility. Any measure higher than about 0.80 indicates congestion. The number can exceed 1.00, indicating an overloaded situation with stop and go traffic.
Source: Fehr & Peers, 2006

All roadway segments operate at acceptable levels of service as roadway capacity substantially exceeds existing volumes.

Intersections

The existing peak hour traffic volumes, traffic control, and intersection lane configurations shown on **Figure 4.3-2, Peak Hour Traffic Volumes, Lane Configurations, Traffic Control and Average Daily Volumes Existing Conditions,** were used to calculate levels of service (LOS) at the study intersections. **Table 4.3-2, Intersection Level of Service, Existing Conditions,** summarizes intersection LOS under existing conditions.

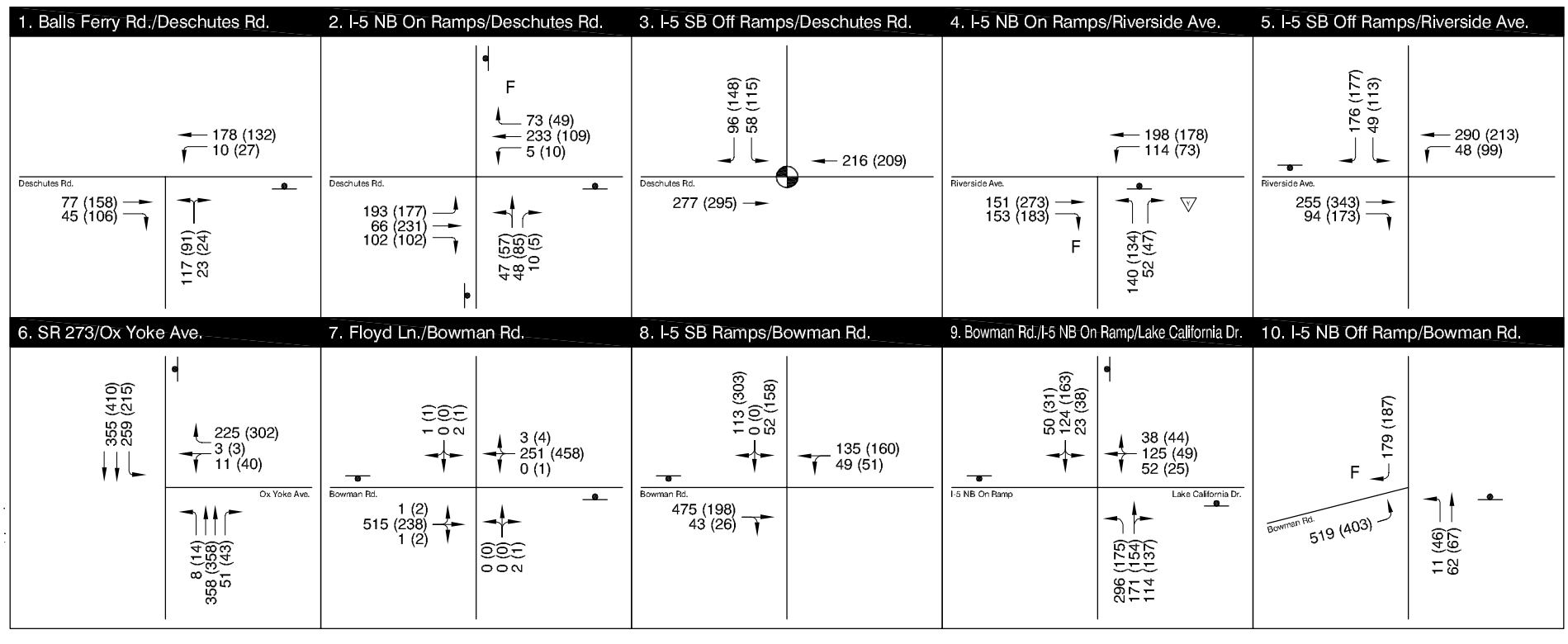


LEGEND

	- Turn Lane		- Traffic Signal
XX (YY)	- AM (PM) Peak Hour Traffic Volume		- Stop Sign
1	- Study Intersection	F	- "Free" Right Turn
	- Yield	1,000	- Average Daily Traffic Volume

N

NOT TO SCALE



Source: FEHR & PEERS, 2/14/06

FIGURE 4.3-2
PEAK HOUR TRAFFIC VOLUMES, LANE CONFIGURATIONS, TRAFFIC CONTROL AND AVERAGE DAILY VOLUMES EXISTING CONDITIONS

PMC

TABLE 4.3-2

INTERSECTION LEVEL OF SERVICE – EXISTING CONDITIONS

Intersection	Control	AM Peak		PM Peak	
		Delay	LOS	Delay	LOS
1. Balls Ferry / Deschutes	Side street stop	11.2	B	11.7	B
2. Deschutes / I-5 NB ramp	All way stop	10.9	B	10.7	B
3. Deschutes / I-5 SB ramp	Signalized	5.3	A	6.1	A
4. Riverside / I-5 NB ramp	Side street stop	15.9	C	16.1	C
5. Riverside / I-5 SB ramp	Side street stop	12.7	B	17.3	C
6. SR-273 / Ox Yoke	Side street stop	12.5	B	15.1	C
7. Floyd Lane / Bowman	Side street stop	15.0	C	13.8	B
8. Bowman / I-5 SB ramp	Side street stop	13.6	B	22.0	C
9. Bowman / I-5 NB on ramp	All way stop	12.4	B	10.3	B
10. Bowman / I-5 NB off ramp	Side street stop	144.5	F	41.8	E

Notes:
Shaded areas indicate deficiency.
Delay measured in seconds per vehicle.
Delay for side-street stop unsignalized intersections reported for worst-case approach. Delay for all-way stop intersections reported for the average of all approaches.
LOS = Level of Service

Source: Fehr & Peers, 2006

The intersection of Bowman Road and I-5 northbound off-ramp operates at LOS F and LOS E, during the AM and PM peak hours respectively. All other intersections operate acceptably during the peak hours.

Freeway Ramp Merge Diverge Analysis

The results of the freeway ramp merge/diverge analysis are summarized in **Table 4.3-3, Freeway Ramp Merge/Diverge-Existing Conditions**. Only those interchanges that will be affected by the proposed project were analyzed.

TABLE 4.3-3

FREEWAY RAMP MERGE/DIVERGE – EXISTING CONDITIONS

Segment	Merge or Diverge	AM Peak		PM Peak	
		Density[1]	LOS[2]	Density[1]	LOS[2]
1. Northbound I-5 at Deschutes	Merge	24.5	C	24.5	C
2. Southbound I-5 at Deschutes	Diverge	28.4	D	28.4	D

1. Density in passenger cars per mile per lane.
2. LOS = Level of Service. LOS computed using HCS 2000 software for the merge/diverge analysis consistent with HCM 2000 methodologies.

Source: Fehr & Peers, 2006

The southbound off-ramp is currently operating unacceptably (LOS D) during the AM and PM peak hours. This indicates that, during peak hours, densities on the freeway on- and/or off-ramp at this location are approaching "at capacity" operations (defined as

LOS E). The northbound merge of traffic from Deschutes Road with traffic on I-5 is operating at acceptable levels.

Accident Data Analysis

Shasta County provided accident data for the March 2002 to March 2005 time period for study roadway segments and intersections. **Table 4.3-4, Accident Data Summary, Roadway Segments-2002 to 2005,** summarizes the data for roadway segments, and **Table 4.3-5, Accident Data Summary, Intersections-2002 to 2005,** summarizes the data for intersections.

TABLE 4.3-4

ACCIDENT DATA SUMMARY, ROADWAY SEGMENTS – 2002 TO 2005

Segment	Injury Collision	Fatal Collision	Total Collision
1. SR-273 – South Street to Deschutes Road	47	0	64
2. Main Street – Shasta County Line to Front Street	3	0	8

Source: Traffic Collision History Report, Shasta County Department of Public Works, Traffic Engineering Division

SR-273 between South Street and Deschutes Road experienced a total of 64 accidents over the three-year period. Forty-five percent of these accidents were rear-end collisions, and thirty-eight percent were broadside collisions.

TABLE 4.3-5

ACCIDENT DATA SUMMARY, INTERSECTIONS – 2002 TO 2005

Intersection	Injury Collision	Fatal Collision	Total Collision
1. Balls Ferry Road / Deschutes Road	0	0	5
2. Riverside Avenue / I-5 NB ramp	7	0	12
3. SR-273 / Ox Yoke Avenue	29	1	36

Source: Traffic Collision History Report, Shasta County Department of Public Works, Traffic Engineering Division

The intersection of SR-273 and Ox Yoke Avenue experienced a total of 36 accidents over the three-year period, with one fatality. Seventy five percent of the accidents at the intersection were broadside collisions, including the fatality. Eleven percent of the accidents were rear end collisions. A traffic signal is currently being installed at this intersection by Caltrans. In general, the installation of a traffic signal will significantly reduce the number of broadside accidents, but it can increase the number of rear-end accidents.

4.3.2 REGULATORY CONTEXT

STATE

California Department of Transportation (Caltrans)

Caltrans policies are applicable to I-5 and SR-273, and are summarized in the Caltrans' Guide for the Preparation of Traffic Impact Studies (State of California Department of Transportation, December 2002). These guidelines identify when a traffic impact study is required, what should be included in the study, analysis scenarios, and guidance on acceptable analysis methodologies.

Caltrans endeavors to maintain a target service level of LOS C on State highway facilities. However, this may not always be feasible and a lower service level may be acceptable.

Regional Transportation Planning Agency (RTPA)

The Shasta County Regional Transportation Planning Agency (RTPA) is the agency responsible for transportation planning for the Shasta County region, including the three cities and the unincorporated area. The planning process is in compliance with the laws and guidelines developed by Caltrans and the Federal Department of Transportation. This responsibility includes development and adoption of transportation policy direction, review and coordination of transportation planning, preparation and endorsement of an Overall Work Program (OWP), a Regional Transportation Plan (RTP), a Regional Transportation Improvement Plan (RTIP), and a Federal Transportation Improvement Plan (FTIP). (RTPA, 2006)

COUNTY

Shasta County General Plan

The Shasta County General Plan Circulation Element sets forth future plans for the transportation system in the County. Policies and implementation programs pertaining to transportation are shown below:

<u>Development Standards and Improvements</u>

Policy C-6a- Future road and street development including future right-of-way shall comply with the adopted County Development Standards.

Policy C-6d- New commercial and industrial development accessing arterials and collectors shall provide access controls for public safety by means such as limiting the location and number of driveway access points and controlling ingress and egress turning movements.

Policy C-6j- New development shall provide circulation improvements for emergency access by police, fire, and medical vehicles; and shall provide for escape by residents/occupants in accordance with the Fire Safety Standards.

Policy C-6k- Shasta County shall adopt the following Level of Service (LOS) standards for considering any new roads:

- Rural arterials and collectors – *LOS C*
- Urban/suburban arterials and collectors – *LOS C*

For the purposes of this analysis, LOS C is considered the minimum acceptable level of service standard for roadways and intersections.

Policy C-6l - New development, which may result in exceeding LOS E on existing facilities, shall demonstrate that all feasible methods of reducing travel demand have been attempted to reach LOS C. New development shall not be approved unless traffic impacts are adequately mitigated. Such mitigation may take the form of, but not be limited to the following:

- Provision of capacity improvements to the specific road link to be impacted, the transit system, or any reasonable combination;
- Provision of demand reduction measures included as part of the project design or project operation or any feasible combination.

<u>Railroads/ Truck Traffic</u>

Policy-C8- To ensure that adequate provision for expanding opportunities for rail transport and trucking service are accommodated in the County's overall transportation plans.

Policy-C8b- Working in conjunction with Caltrans the County shall designate and provide signed truck routes, ensure that adequate pavement depth, lane widths, loading areas, bridge capacities, vertical height of overpasses and utility lines, and turn radii are maintained on the designated truck routes, and prohibit commercial truck traffic from non-truck routes except for deliveries.

Policy-C8c- Adequate truck access to off-street loading areas in commercial and industrial areas shall be provided in all new development applications.

Based on these policies (and Caltrans policies), LOS C is considered the minimum acceptable operating LOS for roadway segment and intersection analysis.

4.3.3 STANDARDS OF SIGNIFICANCE

THRESHOLDS OF SIGNIFICANCE

The County has determined that a project may have significant impacts on traffic and circulation if it does any of the following[1]:

- Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections).
- Exceed, either individually or cumulatively, a level of service standard established by the Shasta County Public Works for designated roads or highways. Generally these standards are:

Intersections

- An intersection that operates acceptably (LOS A, B, or C) without the project is degraded to an unacceptable LOS (D, E, or F) due to the additional traffic from the project.
- An intersection that is operating at an unacceptable LOS without the project, experiences an increase of 5 or more seconds of control delay due to the addition of project traffic.

Roadway Segments

- A roadway segment that operates acceptably (LOS A, B, or C) without the project is degraded to an unacceptable LOS (D, E, or F) due to the additional traffic from the project.
- A roadway segment that operates unacceptably experiences an increase in its daily volume to capacity ratio (V/C) of 0.05 or greater due to the addition of project traffic.

Freeway Ramp Merge, Diverge

- A freeway ramp that is operating at an acceptable level (LOS A, B, or C) deteriorates to an unacceptable level (LOS D, E, or F) due to the addition of project traffic.
- A freeway ramp that is operating at an unacceptable level experiences an increase of 10 or more passenger car equivalents (PCE's).

Access, Design & Parking

- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency access.

- Result in inadequate parking capacity.
- Conflict with adopted policies, plans or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

4.3-4 METHODOLOGY

Roadway Segments

Roadway segments were analyzed by comparing the average daily traffic (ADT) volume to daily volume thresholds. **Table 4.3-6, Roadway Segment Daily Volume Thresholds,** displays the daily volume thresholds for various facility types. These thresholds are used as guidelines to identify the need for new or upgraded facilities. In general, intersection operations analysis provides a more realistic assessment of traffic conditions on a road than the roadway segment analysis.

TABLE 4.3-6

ROADWAY SEGMENT DAILY VOLUME THRESHOLDS

Facility Type	Daily Volume Threshold (Two Way Volume)				
	LOS A	LOS B	LOS C	LOS D	LOS E
Freeway (4 Lanes)	24,000	28,000	32,000	36,000	40,000
Minor Arterial (4 lanes)	22,000	25,000	29,000	32,500	36,000
Major Collector (2 lanes)	11,000	12,500	14,500	16,000	18,000
Minor Collector (2 lanes)	9,000	10,500	12,000	13,500	15,000
Local Street (2 lanes)	2,200	2,600	3,000	3,400	3,800
Notes: All volume thresholds are approximate and assume ideal roadway characteristics. Actual thresholds for each LOS listed above may vary depending on a variety of factors including (but not limited to) roadway curvature and grade, intersection or interchange spacing, driveway spacing, percentage of trucks and other heavy vehicles, lane widths, signal timing, on-street parking, volume of cross traffic and pedestrians, etc.					

Source: Highway Capacity Manual, Transportation Research Board, 2000

Intersections

Both signalized and unsignalized intersections were analyzed using the methodology contained in Chapter 17 of the *Highway Capacity Manual – Special Report 209* (Transportation Research Board, 2000). The LOS is based on the average control delay expressed in seconds per vehicle. At two-way or side street stop controlled intersections, level of service is calculated for each movement, not for the intersection as a whole. For approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. At all-way stop-controlled intersections, LOS is based on the average delay experienced on all approaches. **Table 4.3-7, Intersection Level of Service Definitions**, summarizes the relationship between delay and LOS for signalized and unsignalized intersections.

TABLE 4.3-7

INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description	Average Control Delay (seconds/vehicle)	
		Signalized Intersections	Unsignalized Intersections
A	Represents free flow. Individual users are virtually unaffected by others in the traffic stream.	≤ 10.0	≤10.0
B	Stable flow, but the presence of other users in the traffic stream begins to be noticeable	10.1 – 20.0	10.1 – 15.0
C	Stable flow, but the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.	20.1 – 35.0	15.1 – 25.0
D	Represents high-density, but stable flow.	35.1 – 55.0	25.1 – 35.0
E	Represents operating conditions at or near the capacity level.	55.1 – 80.0	35.1 – 50.0
F	Represents forced or breakdown flow.	> 80.0	> 50.0

Source: Highway Capacity Manual, Transportation Research Board, 2000.

Traffix 7.7 software was used to analyze the intersections. A peak hour factor (PHF) of 0.92, a loss time of 4 seconds per critical movement, and a passenger car equivalent (PCE)[1] of 3.0 was used for heavy trucks.

Freeway Facilities

Freeway Ramp Merge/Diverge Analysis

Freeway ramp merge/diverge analyses were conducted at the Deschutes Road/I-5 interchange using the methodologies contained in Chapters 24 and 25 of the *Highway Capacity Manual* (Transportation Research Board, 2000). These methodologies correlate the LOS to the expected density of vehicles in passenger cars per mile per lane (pc/mi/ln). **Table 4.3-8, Freeway Ramp Merge/Diverge Level of Service Definitions,** summarizes the relationship between density and LOS for freeway merge/diverge operations.

TABLE 4.3-8

FREEWAY RAMP MERGE/DIVERGE LEVEL OF SERVICE DEFINITIONS

Level of Service	Density (pc/mi/ln)*
A	≤ 10.0
B	> 10.0 and ≤ 20.0
C	> 20.0 and ≤ 28.0
D	> 28.0 and ≤ 35.0
E	> 35.0
F	Demand Exceeds Capacity

* Density measured in passenger cars per mile per lane.

Source: Highway Capacity Manual, Transportation Research Board, 2000.

TRAVEL DEMAND FORECASTS

Approved/Pending Projects

Based on correspondence with staff from Shasta County, the City of Anderson, and the City of Red Bluff, a list of "approved/pending" projects located within the study area was identified. The approved/pending projects include large projects (Phase I of the Vineyards at Anderson residential development, Anderson Marketplace Commercial development) as well as several smaller projects. In the absence of previously conducted studies for the other projects, the *ITE Trip Generation Manual (*Seventh edition*)* was used to estimate their trip generation.

The daily, AM peak hour, and PM peak hour traffic volume forecasts for the following scenarios were developed:

Proposed Project – Trip generation and distribution information for the proposed project is based on information provided by the project proponent. Assignment of project traffic to roadways was based on routes identified by the project sponsor to access the project site.

Baseline-No Project- Existing Conditions with traffic from approved projects within the traffic study area. Approved projects in the area are summarized in **Appendix 4.3-1**.

Baseline- Plus Project – Existing Conditions with traffic from approved projects within the traffic study area plus project traffic.

Cumulative (2025) No Project – Year 2025 conditions developed using the Shasta County Travel Demand Forecasting model.[3] Land use and highway network assumptions were updated to account for pending projects in the area and roadway improvements identified by the Regional Transportation Planning Authority (RTPA). It should be noted that the RTPA is currently in the process of developing a *Southern Region Planning Study and Traffic Impact Fee Program* to implement roadway improvements in South Shasta County. Discussions with the RTPA indicated that this

program is not complete, and therefore identified roadway improvements do not yet have full funding and their construction should not be assumed in Cumulative Conditions.

Cumulative Plus Project – Cumulative (Year 2025) No Project conditions plus traffic from the proposed project.

Roadway Network Modifications

The only modification to the roadway network for the Cumulative scenario is the signalization of the SR-273 and Ox Yoke Avenue intersection, which is currently under construction by Caltrans.

PROPOSED PROJECT

Gravel trucks will utilize the existing unimproved private road as the main access point for both ingress and egress to the site. Gravel trucks approach the site entrance from the northwest and southeast directions off Balls Ferry Road. The unimproved road access is also the only emergency vehicle access.

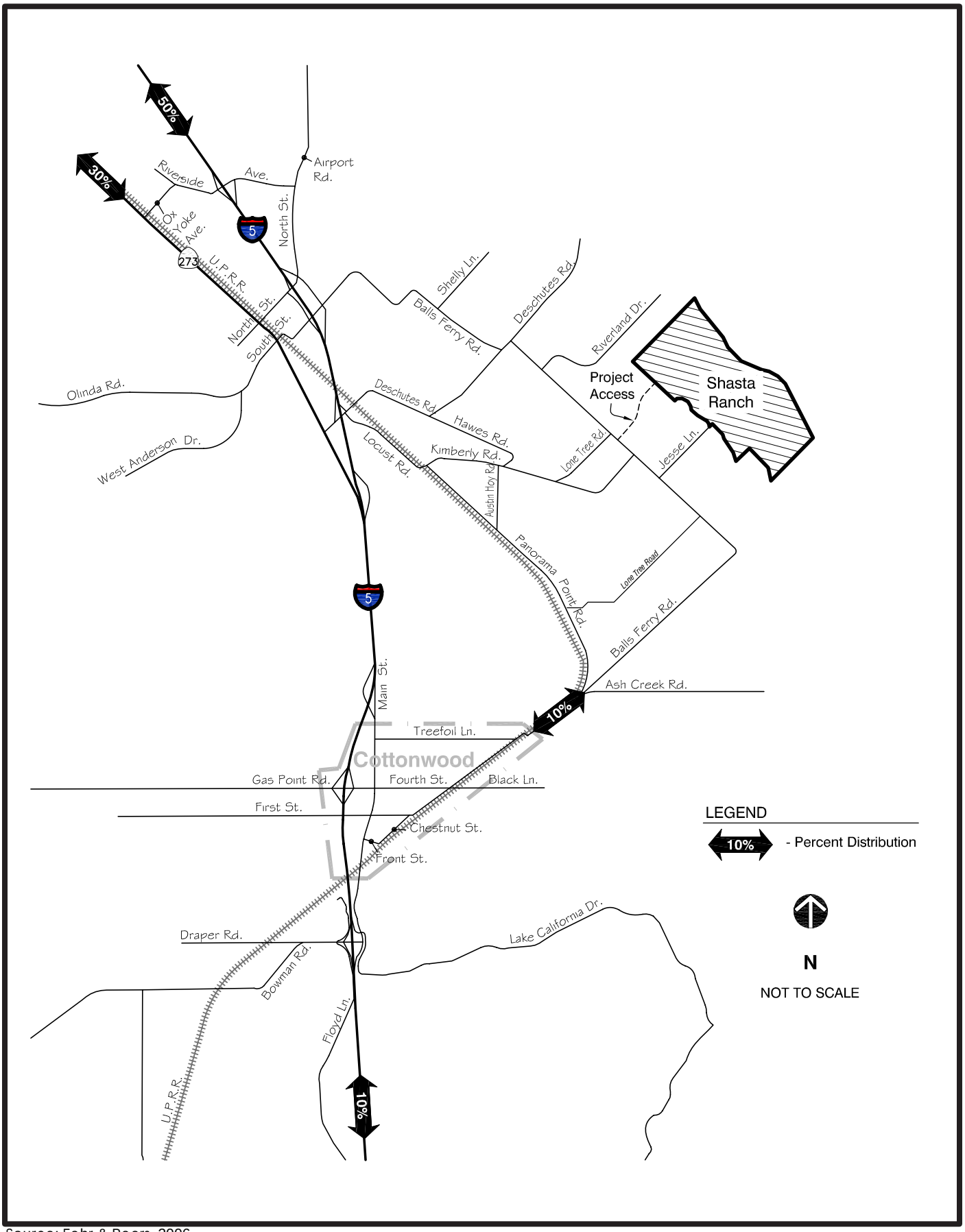
Photo 4.3-3: Primary access road off Balls Ferry Road heading east to the project site.

Photo 4.3-4: Primary access road leaving the project site heading west towards Balls Ferry Road.

Project Trip Estimates

Trip generation for the proposed project was estimated based on information provided by the project applicant regarding the amount of gravel that will be extracted and processed per day. This information was used to estimate the number of truck trips entering and exiting the site during the AM and PM peak hours, and over an entire day. It is assumed that the site will employ eight people, and that all employees will arrive during the AM peak hour and leave during the PM peak hour. The estimated project trip generation for the AM and PM peak hours of adjacent street traffic, and the average daily traffic generated by the proposed project is presented in **Table 4.3-9 Vehicle Trip Generation Summary for Shasta Ranch Mining and Reclamation Project**. Project trip distribution for both employee trips and truck trips are illustrated on **Figure 4.3-3, Auto Percent Distribution** and **4.3-4, Truck Percent Distribution**. Project trip

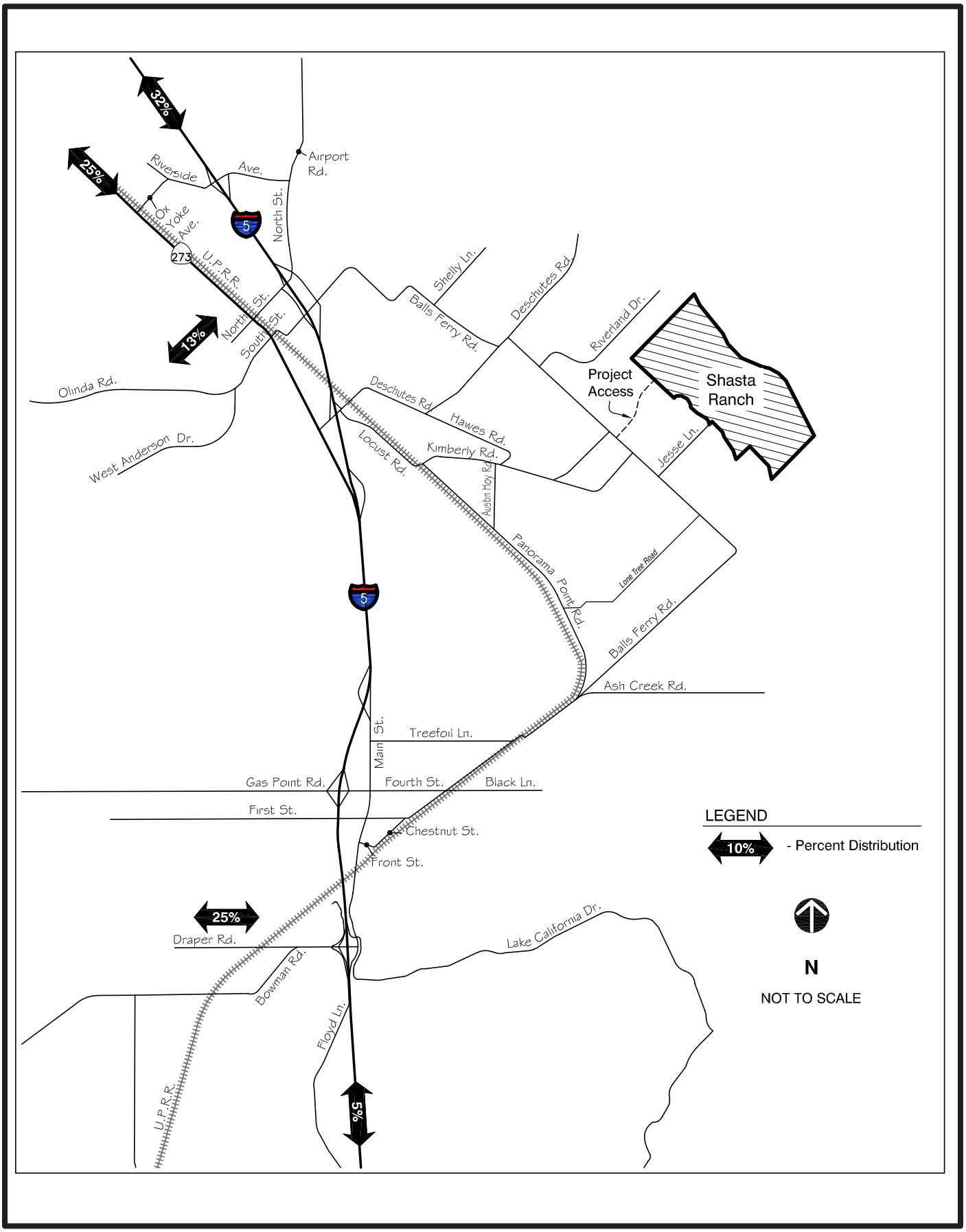
generation numbers were calculated consistent with other aggregate mining operations in Northern California.



Source: Fehr & Peers, 2006
Transportation Consultants

FIGURE 4.3-3
AUTO PERCENT DISTRIBUTION

PMC



Source: Fehr & Press, 2006
Transportation Consultants

FIGURE 4.3-4
TRUCK PERCENT DISTRIBUTION

PMC

TABLE 4.3-9

VEHICLE TRIP GENERATION SUMMARY FOR SHASTA RANCH MINING & RECLAMATION PROJECT

Time Period	Truck Trips		Other Vehicle Trips[1]		TOTAL	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
AM Peak Hour	6	6	8	2	14	8
PM Peak Hour	6	6	2	8	8	14
Daily	64	64	20	20	84	84

1. Other vehicle trips are vehicle trips made by the employees to and from the site.

Source: Shasta Ranch Gravel Operations TIS, June 14, 2005.

The distribution of project trips was also estimated using information from the project applicant, and is based on the expected demand for product excavated from the site.

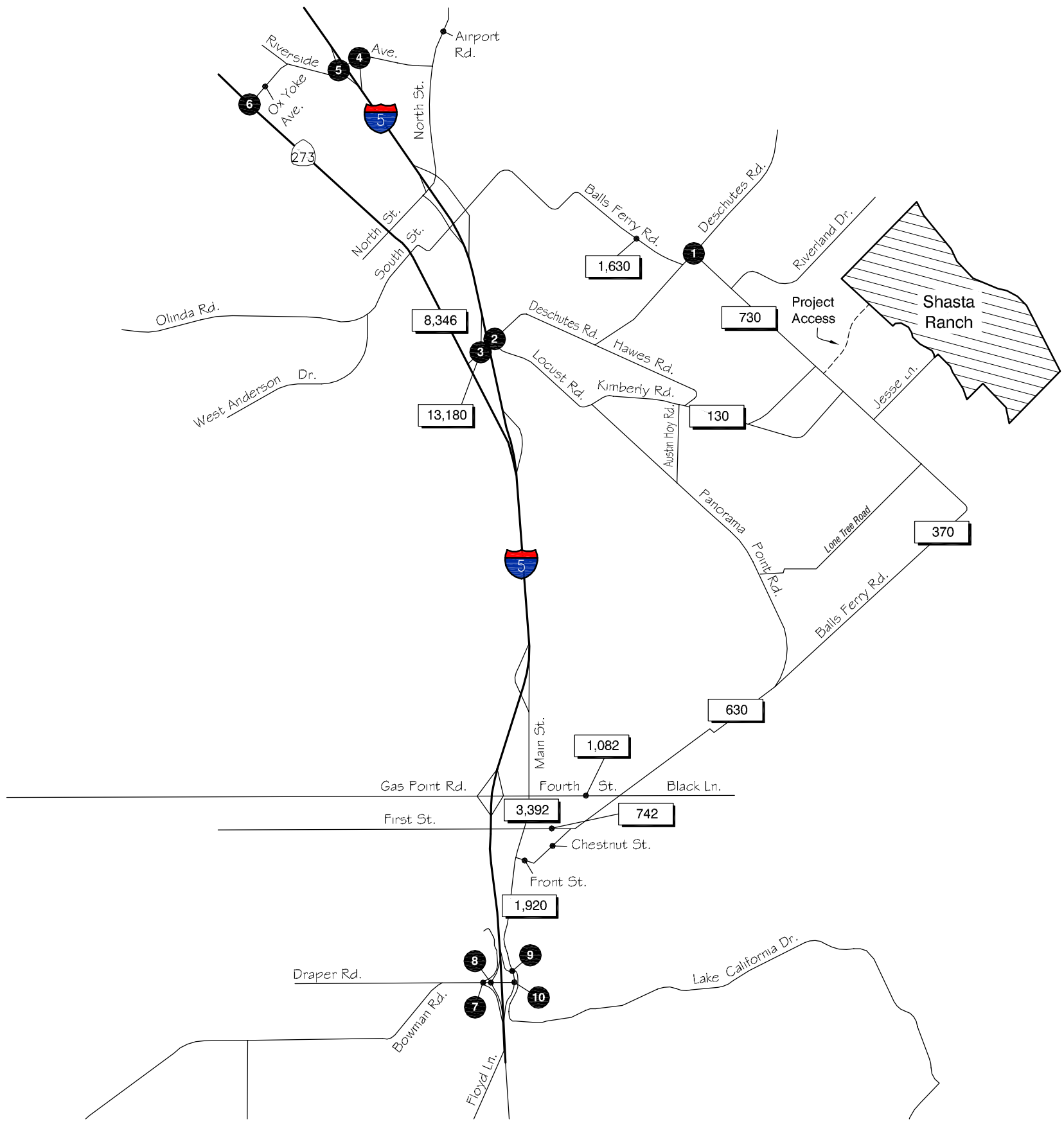
Using the trip generation and trip distribution estimates described above (**Table 4.3-9, Vehicle Trip Generation Summary for Shasta Ranch Mining and Reclamation Project**), project trips were assigned to the surrounding roadway network based on expected truck routes used to access the site.

Baseline Conditions

Baseline operations of the study area roadways and intersections are discussed below.

Roadway Segments

The existing daily roadway segment traffic volumes shown on **Figures 4.3-5, Peak Hour Traffic Volumes, Lane Configurations, Traffic Controls, and Average Daily Traffic Volumes-Baseline No Project,** and **Figure 4.3-6, Peak Hour Traffic Volumes, Lane Configurations, Traffic Controls, and Average Daily Traffic Volumes-Baseline Plus Project** were compared to the roadway segment thresholds summarized in **Table 4.3-6, Roadway Segment Daily Volume Thresholds** to analyze traffic operations on the study area roadway segments. **Table 4.3-10, Roadway Level of Service-Baseline Conditions,** presents the Baseline conditions roadway segment operations with and without the proposed project. Under *Baseline No Project* and *Baseline Plus Project* conditions, all roadway segments are expected to operate acceptably.

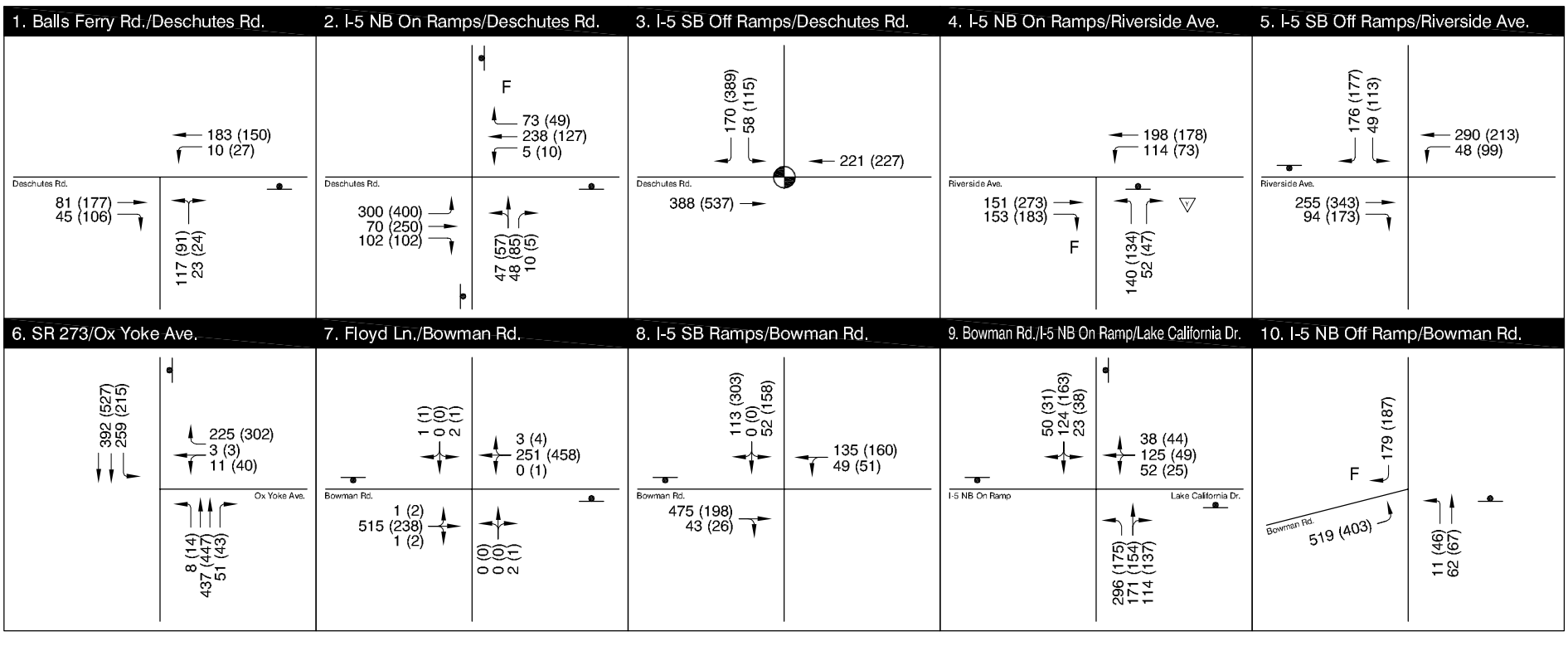


LEGEND

	- Turn Lane		- Traffic Signal
XX (YY)	- AM (PM) Peak Hour Traffic Volume		- Stop Sign
1	- Study Intersection	F	- "Free" Right Turn
▽	- Yield	1,000	- Average Daily Traffic Volume

N

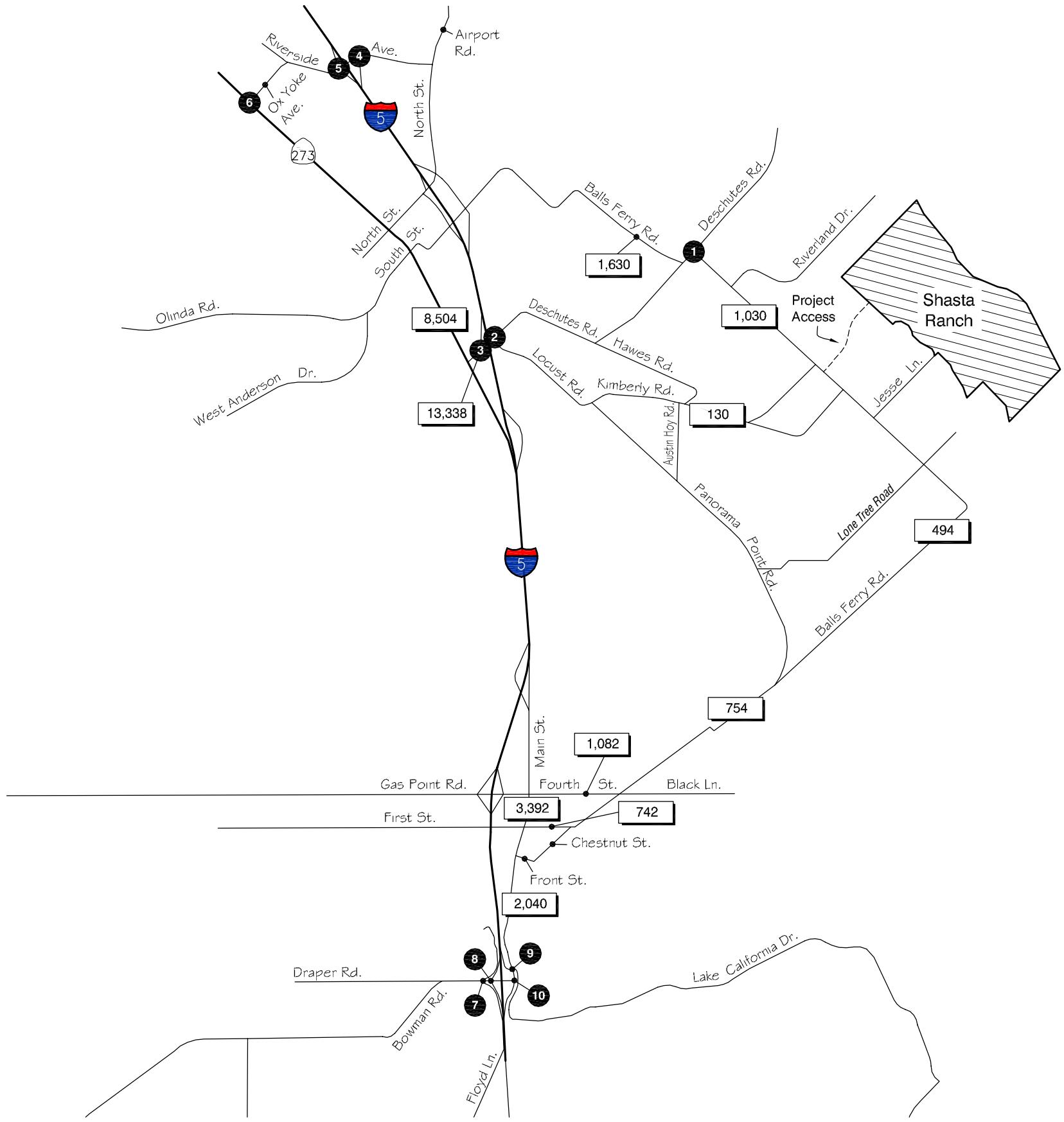
NOT TO SCALE



Source: FEHR & PEERS, 2/14/06

FIGURE 4.3-5
PEAK HOUR TRAFFIC VOLUMES, LANE CONFIGURATIONS, TRAFFIC CONTROL, AND AVERAGE DAILY TRAFFIC VOLUMES

PMC

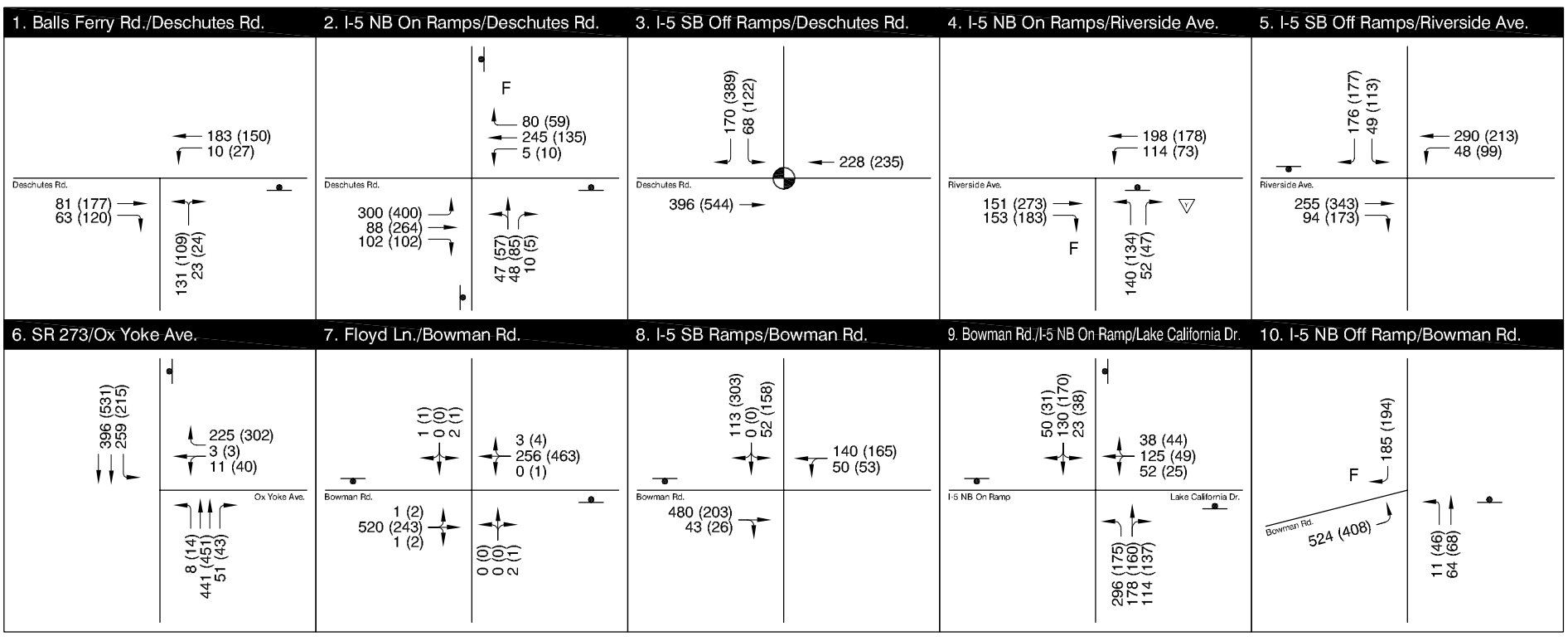


LEGEND

	- Turn Lane		- Traffic Signal
XX (YY)	- AM (PM) Peak Hour Traffic Volume		- Stop Sign
1	- Study Intersection	F	- "Free" Right Turn
▽	- Yield	1,000	- Average Daily Traffic Volume

N

NOT TO SCALE



Source: FEHR & PEERS, 2/14/06

FIGURE 4.3-6
PEAK HOUR TRAFFIC VOLUMES, LANE CONFIGURATIONS, TRAFFIC CONTROL, AND AVERAGE DAILY TRAFFIC VOLUMES-BASELINE PLUS PROJECT

PMC

TABLE 4.3-10

ROADWAY LEVEL OF SERVICE – BASELINE CONDITIONS

Roadway Segment	Lanes	Baseline No Project			Baseline Plus Project			V/C Difference
		Volume	V/C	LOS	Volume	V/C	LOS	
1. Balls Ferry Road – Deschutes to Kimberly	2	730	0.05	A	1,030	0.07	A	0.02
2. Balls Ferry Road – Kimberly to Panorama Point	2	370	0.02	A	494	0.03	A	0.01
3. Deschutes Road – SR-273 to Locust	4	13,180	0.37	A	13,338	0.37	A	0.00
4. Kimberly Road – Balls Ferry to Locust	2	130	0.01	A	130	0.01	A	0.00
5. SR-273 – South to Deschutes	4	8,346	0.21	A	8,504	0.21	A	0.00
6. Balls Ferry Road – Panorama Point to Fourth	2	630	0.04	A	754	0.05	A	0.01
7. Balls Ferry Road – Deschutes to Shelly Lane	2	1,630	0.11	A	1,630	0.11	A	0.00
8. Fourth Street – Main to Balls Ferry	2	1,082	0.07	A	1,082	0.07	A	0.00
9. First Street – Main to Chestnut	2	742	0.05	A	742	0.05	A	0.00
10. Main Street – Fourth to First	2	3,392	0.19	A	3,392	0.19	A	0.00
11. Main Street – Shasta County Line to Front	2	1,920	0.11	A	2,040	0.11	A	0.00

Notes: Volume to capacity ratio (V/C) measures the actual volume of vehicles observed or counted on any street segment in relation to the throughput capacity of the facility. Any measure higher than about 0.80 indicates congestion. The number can exceed 1.00, indicating an overloaded situation with stop and go traffic.
V/C Difference = Baseline Plus Project V/C – Baseline V/C

Source: Fehr & Peers, 2006

Intersections

The AM and PM peak hour intersection turning movement forecasts shown on **Figures 4.3-5, Peak Hour Traffic Volumes, Lane Configurations, Traffic Controls, and Average Daily Traffic Volumes-Baseline No Project** and **Figure 4.3-6, Peak Hour Traffic Volumes, Lane Configurations, Traffic Controls, and Average Daily Traffic Volumes-Baseline plus Project**, were used to analyze traffic operations at the study intersections under Baseline Plus Project conditions. **Table 4.3-11, Intersection Level of Service,** presents Baseline intersection operation with and without the traffic from the proposed project. Under the Baseline Plus Project conditions, the Bowman Road / I-5 northbound on-ramp intersection operates unacceptably (LOS E or F). All other intersections within the study area operate at acceptable levels of service.

TABLE 4.3-11

INTERSECTION LEVEL OF SERVICE – BASELINE CONDITIONS

Intersection	Control	Baseline No Project				Baseline Plus Project				Change in Delay	
		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak	PM Peak
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		
1. Balls Ferry / Deschutes	Side street stop	11.3	B	12.1	B	11.6	B	12.5	B	0.3	0.4
2. Deschutes / I-5 NB ramp	All way stop	12.8	B	15.8	C	12.9	B	16.0	C	0.1	0.2
3. Deschutes / I-5 SB ramp	Signalized	6.1	A	14.5	B	6.1	A	14.7	B	0.0	0.2
4. Riverside / I-5 NB ramp	Side street stop	15.9	C	16.1	C	15.9	C	16.1	C	0.0	0.0
5. Riverside / I-5 SB ramp	Side street stop	12.7	B	17.3	C	12.7	B	17.3	C	0.0	0.0
6. SR-273 / Ox Yoke	Side street stop	13.5	B	17.6	C	13.5	B	17.7	C	0.0	0.1
7. Floyd Lane / Bowman	Side street stop	15.0	C	13.8	B	15.2	C	13.9	B	0.2	0.1
8. Bowman / I-5 SB ramp	Side street stop	13.6	B	22.0	C	13.7	B	22.7	C	0.1	0.7
9. Bowman / I-5 NB on ramp	All way stop	12.4	B	10.3	B	12.5	B	10.4	B	0.1	0.1
10. Bowman / I-5 NB off ramp	Side street stop	**144.5**	**F**	41.8	E	**161.2**	**F**	43.9	E	**16.7**	2.1

Notes:
Change in Delay = Baseline Plus Project Delay – Baseline Delay
Shaded areas indicate deficiency.
Bold Type indicates significant project impact.
Delay measured in seconds per vehicle.
Delay for side-street stop unsignalized intersections reported for worst-case approach. Delay for all-way stop intersections reported for the average of all approaches.
LOS = Level of Service

Source: Fehr & Peers, 2006

Freeway Ramp Merge/Diverge

Table 4.3-12, Freeway Ramp Merge/Diverge-Baseline Conditions, presents freeway ramp merge/diverge operating conditions for the Baseline scenario with and without the project. During the AM peak hour, the project will add 7 PCE (or approximately two heavy vehicle) trips to the northbound on-ramp at the Deschutes Road / I-5

interchange, and 10 PCE (or approximately three heavy vehicle) trips to the southbound off ramp. During the PM peak hour, the project will add 10 PCE (or approximately three heavy vehicle) trips to the northbound on-ramp, and 7 PCE (or approximately two heavy vehicle) trips to the southbound off ramp.

TABLE 4.3-12

FREEWAY RAMP MERGE/DIVERGE – BASELINE CONDITIONS

Segment	Merge or Diverge	Baseline				Baseline Plus Project			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Density	LOS	Density	LOS	Density	LOS	Density	LOS
Northbound I-5 at Deschutes	Merge	25.4	C	**30.1**	**D**	25.4	C	**30.2**	**D**
Southbound I-5 at Deschutes	Diverge	**28.4**	**D**	28.4	D	**28.4**	**D**	28.4	D

1. Density in passenger cars per mile per lane.
2. LOS = Level of Service. LOS computed using HCS 2000 software for the merge/diverge analysis consistent with HCM 2000 methodologies.

Source: Fehr & Peers, 2006

Under Baseline Plus Project conditions, the southbound off ramp is expected to operate unacceptably during the AM Peak Hour, and both the northbound on ramp and the southbound off ramp are expected to operate unacceptably during the PM Peak Hour.

The addition of project traffic has minimal effect on the density measurement as the project represents a small percentage of the total traffic at this location.

Cumulative Conditions

Roadway Segments

The daily roadway segment traffic volumes shown on **Figures 4.3-7 and 4.3-8** were compared to the roadway segment thresholds summarized in **Table 4.3-7** to analyze traffic operations on the study area roadway segments. **Table 4.3-13** presents the Cumulative conditions roadway segment operations with and without the proposed project. Under Cumulative Plus Project conditions, all roadway segments operate acceptably.

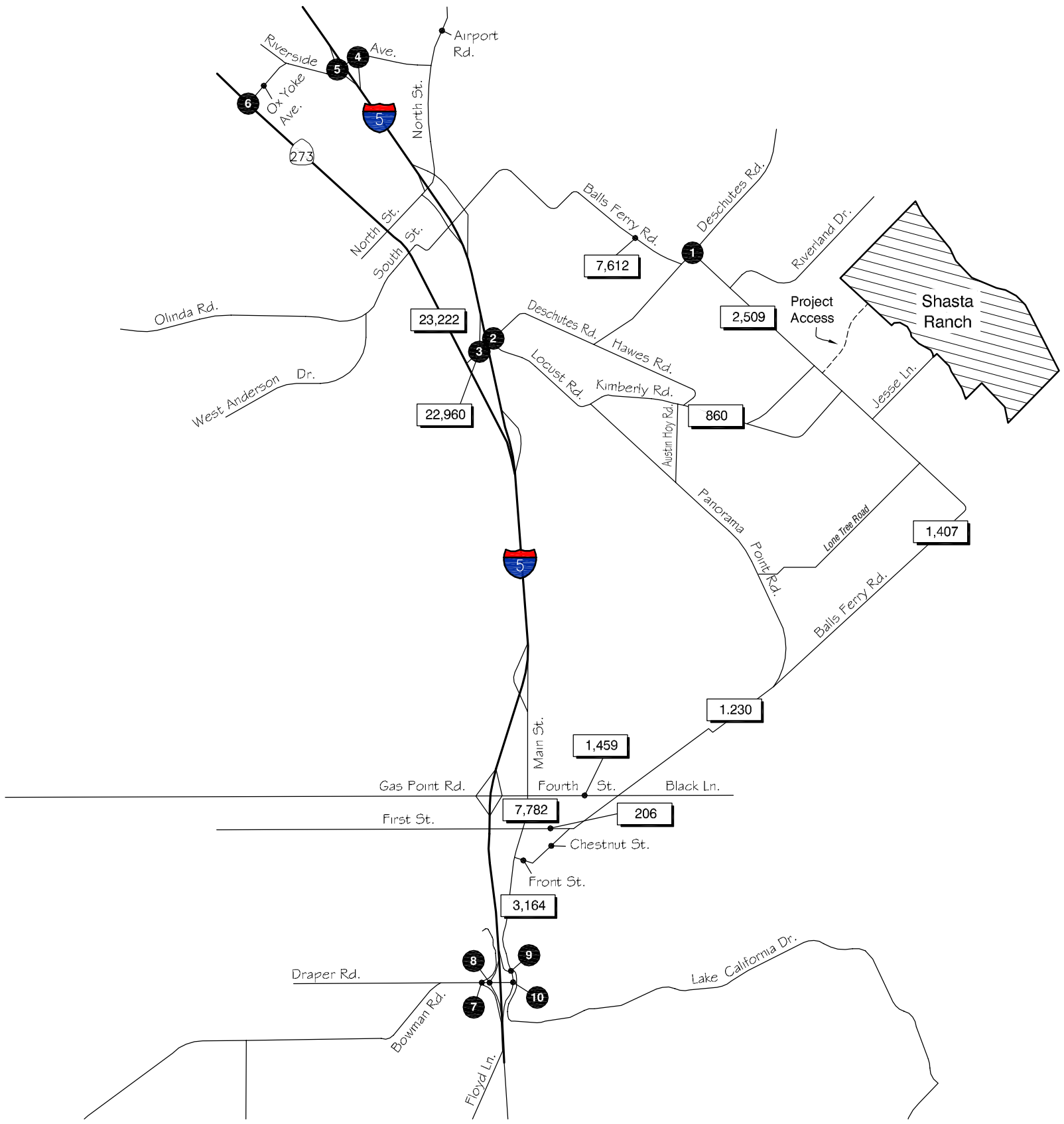
TABLE 4.3-13

ROADWAY LEVEL OF SERVICE – CUMULATIVE CONDITIONS

Roadway Segment	Lanes	Cumulative			Cumulative Plus Project			V/C Difference
		Volume	V/C	LOS	Volume	V/C	LOS	
1. Balls Ferry Road – Deschutes to Kimberly	2	2,509	0.17	A	2,809	0.19	A	0.02
2. Balls Ferry Road – Kimberly to Panorama Point	2	1,407	0.09	A	1,531	0.10	A	0.01
3. Deschutes Road – SR-273 to Locust	4	22,960	0.64	B	23,118	0.64	B	0.00
4. Kimberly Road – Balls Ferry to Locust	2	860	0.06	A	860	0.06	A	0.00
5. SR-273 – South to Deschutes	4	23,222	0.58	A	23,380	0.58	A	0.00
6. Balls Ferry Road – Panorama Point to Fourth	2	1,230	0.08	A	1,354	0.09	A	0.01
7. Balls Ferry Road – Deschutes to Shelly Lane	2	7,612	0.51		7,612	0.51	A	0.00
8. Fourth Street – Main to Balls Ferry	2	1,459	0.10	A	1,459	0.10	A	0.00
9. First Street – Main to Chestnut	2	206	0.01	A	206	0.01	A	0.00
10. Main Street – Fourth to First	2	7,782	0.43	A	7,782	0.43	A	0.00
11. Main Street – Shasta County Line to Front	2	3,164	0.18	A	3,284	0.18	A	0.00

Notes: Volume to capacity ratio (V/C) measures the actual volume of vehicles observed or counted on any street segment in relation to the throughput capacity of the facility. V/C ratios of 1.00 indicate that a roadway is operating at capacity. If demand exceeds capacity (V/C > 1.00) will likely result in stop-and-go conditions.
V/C Difference = Cumulative Plus Project V/C – Cumulative V/C

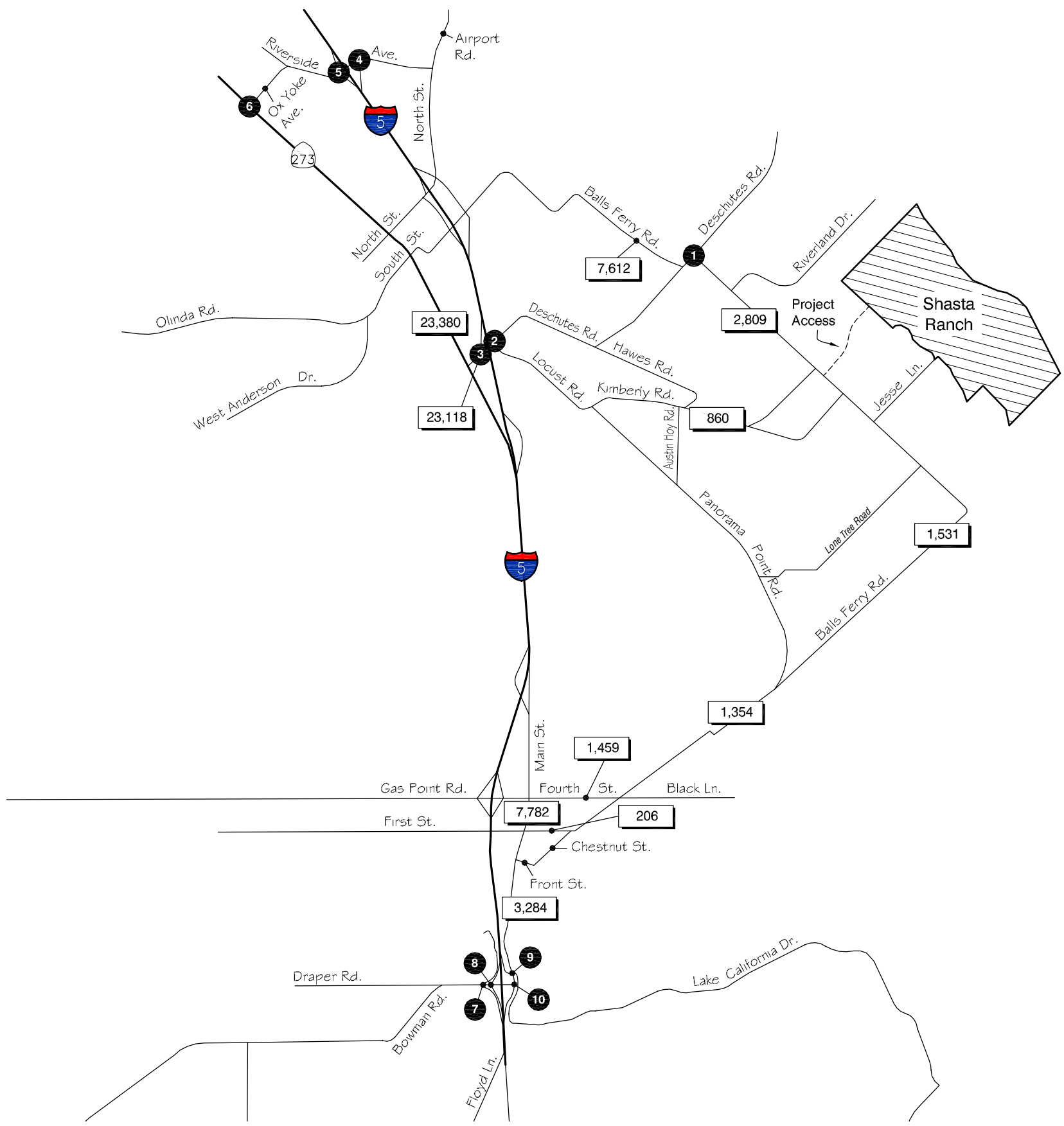
Source: Fehr & Peers, 2006

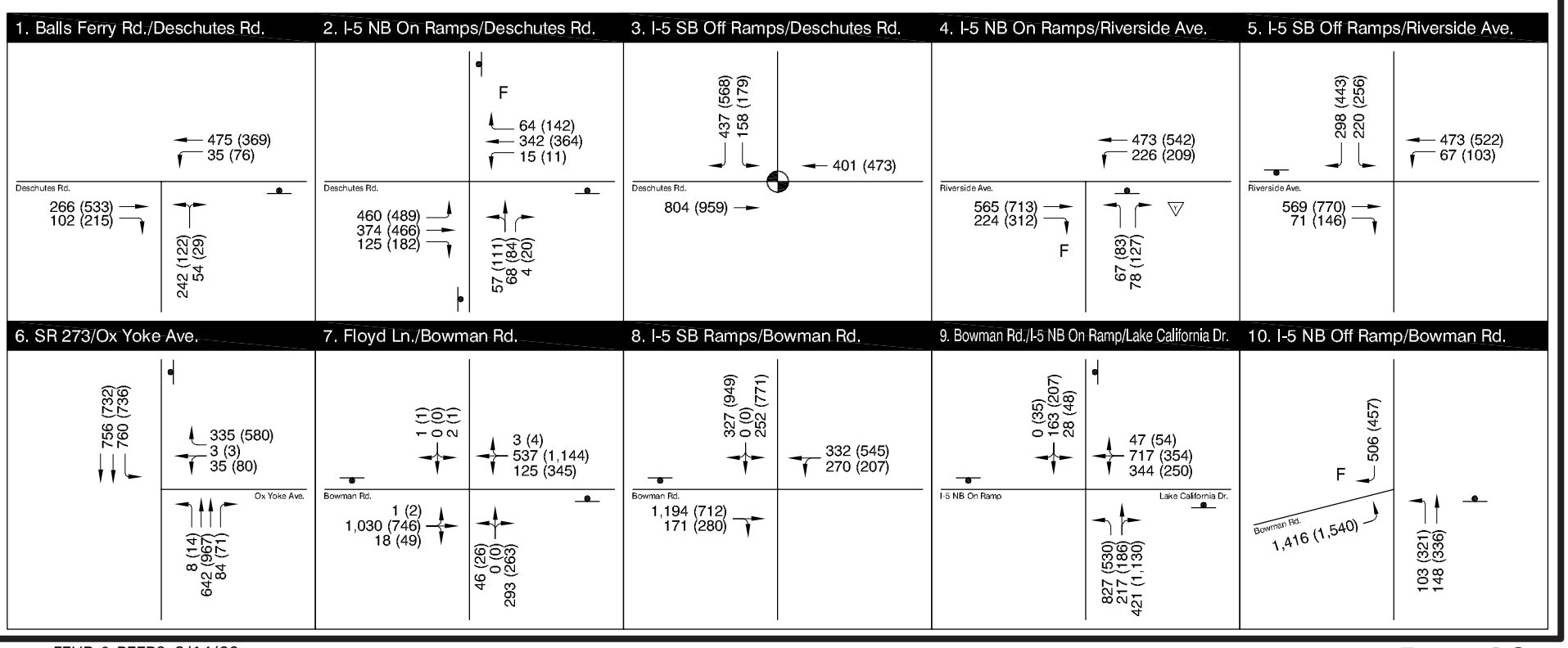


Source: FEHR & PEERS, 2/14/06

FIGURE 4.3-7
PEAK HOUR TRAFFIC VOLUMES, LANE CONFIGURATIONS, TRAFFIC CONTROL, AND AVERAGE DAILY TRAFFIC VOLUMES-CUMULATIVE NO PROJECT

PMC





Source: FEHR & PEERS, 2/14/06

FIGURE 4.3-8
PEAK HOUR TRAFFIC VOLUMES, LANE CONFIGURATIONS, TRAFFIC CONTROL, AND AVERAGE DAILY TRAFFIC VOLUMES-CUMULATIVE PLUS PROJECT

PMC

Intersections

The AM and PM peak hour intersection turning movement forecasts shown on **Figures 4.3-7 and 4.3-8** were used to analyze traffic operations at the study intersections under Cumulative conditions. **Table 4.3-14** presents Cumulative intersection operation with and without the traffic from the proposed project. Under the Cumulative Plus Project conditions, 8 of the 10 study intersections will operate unacceptably (LOS D, E, or F) during the AM peak hour and all 10 of the study intersections will operate unacceptably during the PM peak hour.

TABLE 4.3-14

INTERSECTION LEVEL OF SERVICE – CUMULATIVE CONDITIONS

Intersection	Control	Cumulative				Cumulative Plus Project				Change in Delay	
		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak	PM Peak
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		
1. Balls Ferry / Deschutes	Side street stop	36.0	E	30.7	D	40.0	E	35.2	E	0.4	4.5
2. Deschutes / I 5 NB ramp	All way stop	22.1	C	33.8	D	22.7	C	35.4	E	0.6	1.6
3. Deschutes / I-5 SB ramp	Signalized	35.0	D	97.7	F	36.0	D	98.8	F	1.0	1.1
4. Riverside / I-5 NB ramp	Side street stop	41.1	E	76.7	F	41.1	E	76.7	F	0.0	0.0
5. Riverside / I-5 SB ramp	Side street stop	77.6	F	**> 120**	**F**	77.6	F	**> 120**	**F**	0.0	**N/A**
6. SR-273 / Ox Yoke	Signalized	25.4	C	84.9	F	25.5	C	85.9	F	0.1	1.0
7. Floyd Lane / Bowman	Side street stop	**> 120**	**F**	**> 120**	**F**	**> 120**	**F**	**> 120**	**F**	**N/A**	**N/A**
8. Bowman / I-5 SB ramp	Side street stop	**> 120**	**F**	**> 120**	**F**	**> 120**	**F**	**> 120**	**F**	**N/A**	**N/A**
9. Bowman / I-5 NB on ramp	All way stop	**> 120**	**F**	**> 120**	**F**	**> 120**	**F**	**> 120**	**F**	**N/A**	**N/A**
10. Bowman / I-5 NB off ramp	Side street stop	**> 120**	**F**	**> 120**	**F**	**> 120**	**F**	**> 120**	**F**	**N/A**	**N/A**

Notes:
Change in Delay = Cumulative Plus Project Delay – Cumulative Delay
Shaded areas indicate deficiency.
Bold Type indicates significant impact.
Delay measured in seconds per vehicle.
Delay for side-street stop unsignalized intersections reported for worst-case approach. Delay for all-way stop intersections reported for the average of all approaches.
LOS = Level of Service
N/A = Not Applicable, as HCM 2000 methodology cannot accurately identify delay under over-saturated conditions at unsignalized intersections.

Source: Fehr & Peers, 2006

All of the study intersections, except for Deschutes / I-5 NB ramp and SR-273 / Ox Yoke operate at unacceptable levels during the AM peak hour. All of the study intersections operate at unacceptable levels during the PM peak hour. Project traffic may increase delay by more than 5 seconds at several of the stop controlled intersections such as

Floyd Lane and Bowman Road, where intersections are over-capacity and the methodology cannot accurately predict delay at these locations.

Intersection Improvements

The following improvements are identified for advanced planning purposes. They identify improvements for the study intersections to operate at an acceptable level. Please note that this information is provided to identify ultimate improvements at the locations to adequately serve Cumulative traffic levels, but do not represent improvements that are required as mitigation for the proposed project.

1. Balls Ferry/Deschutes – Install traffic signal, which will improve capacity at the intersection (signals have more capacity than stop-controlled intersections). This would provide LOS B operations during the AM and PM peak hours. This improvement has been identified by the City of Anderson as meeting the long-term traffic needs in the area.

2. Deschutes/I-5 Northbound Ramp – There is an on-going Project Study Report (PSR) for implementation of a roundabout at this location. As part of the PSR process, the City of Anderson has concluded that roundabouts at this location will meet the long-term traffic demands at this

3. Deschutes/I-5 Southbound Ramp - There is an on-going PSR/PR for implementation of a roundabout at this location. As part of the PSR/PR process, the City of Anderson has concluded that roundabouts at this location will meet the long-term demands at this location.

4. Riverside/I-5 Northbound Ramp – Install traffic signal. This would provide LOS B operations during the AM and PM peak hours.

5. Riverside/I-5 Southbound Ramps - Install traffic signal. This would provide LOS C operations during the AM and PM peak hours.

6. SR-273/Ox Yoke – Provide westbound right-turn green arrow concurrent with southbound left-turn phase (otherwise known as an overlap right-turn movement). This would require prohibiting southbound U-turns at the intersection. With the improvement, the intersection would operate at LOS C during the PM peak hour.

7. Floyd/Bowman – Significant improvements to this intersection are required, including widening of Bowman Road to a four-lane facility with dedicated left- and right-turn lanes on all approaches. With these improvements, including installation of a traffic signal, the intersection would operate at an acceptable level.

8. Bowman/I-5 Southbound Ramps – Install signal. Widen Bowman over crossing to four-lanes. Widen southbound approach to consist of two right-turn lanes (with

overlap phase) and two left-turn lanes. Provide dedicated left- and right-turn lanes on eastbound and westbound approaches. With these improvements, the intersection would operate at LOS C during the AM and PM peak hours.

9. Bowman/I-5 Northbound Ramps – Install signal. Widen the eastbound left and southbound right approaches to two lanes. With these improvements the intersection would operate at LOS B during the AM peak hour, and LOS C during the PM peak hour.

10. I-5 Northbound Ramp / Lake California Drive – Install signal. Widen northbound approach to consist of two left-turn lanes and provide two dedicated right turn lanes. Provide dedicated left- and right-turn lanes on southbound and westbound approaches. With these improvements the intersection would operate at LOS C during the AM and PM peak hours.

Freeway Ramp Merge/Diverge

Table 4.3-15 presents freeway ramp merge/diverge operating conditions for the Cumulative scenario. During the AM peak hour, the project will add 7 Passenger Car Equivalent (PCE) trips to the northbound on-ramp at the Deschutes Road / I-5 interchange, and an additional 10 PCE trips to the southbound off ramp. During the PM peak hour, the project will add 10 PCE trips to the northbound on-ramp, and 7 PCE trips to the southbound off ramp.

TABLE 4.3-15

FREEWAY RAMP MERGE/DIVERGE – CUMULATIVE CONDITIONS

Segment	Merge or Diverge	Cumulative				Cumulative Plus Project			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Density	LOS	Density	LOS	Density	LOS	Density	LOS
Northbound I-5 at Deschutes	Merge	26.7	C	**31.5**	**D**	26.8	C	**31.6**	**D**
Southbound I-5 at Deschutes	Diverge	**28.4**	**D**	28.4	D	**28.4**	**D**	28.4	D

1. Density in passenger cars per mile per lane.
2. LOS = Level of Service. LOS computed using HCS 2000 software for the merge/diverge analysis consistent with HCM 2000 methodologies.

Shaded indicates deficiency.
Bold Type indicates significant impact.

Source: Fehr & Peers, 2006

Under Cumulative Plus Project conditions, the southbound off ramp operates unacceptably during the AM Peak Hour, and both the northbound on ramp and the southbound off ramp operate unacceptably during the PM Peak Hour.

The addition of project traffic has minimal effect on the density measurement and ramp LOS.

GENERAL PLAN POLICY CONSISTENCY

Table 4.3-16 presents a summary of the proposed project's consistency with adopted Shasta County General Plan policies.

TABLE 4.3-16

SHASTA COUNTY GENERAL PLAN TRANSPORTATION RELATED POLICY SUMMARY

Policy Category	Policy No.	Policy Description	Is Project Consistent with Policy?
Development Standards & Improvements	Policy C-6a	Future road and street development including future right-of-way shall comply with the adopted County Development Standards.	**N/A** No new roads are proposed.
	Policy C-6d	New commercial and industrial development accessing arterial and collectors shall provide access controls for public safety by means such as limiting the location and number of driveway access points and controlling ingress and egress turning movements.	**Yes**. Single access point.
	Policy C-6j	New development shall provide circulation improvements for emergency access by police, fire, and medical vehicles; and shall provide for escape by residents/occupants in accordance with the Fire Safety Standards.	**Yes**.
Railroads & Truck Traffic	Policy-C8	To ensure that adequate provision for expanding opportunities for rail transport and trucking service are accommodated in the County's overall transportation plans.	**N/A**
	Policy-C8b	Working in conjunction with Caltrans the County shall designate and provide signed truck routes, ensure that adequate pavement depth, lane widths, loading areas, bridge capacities, vertical height of overpasses and utility lines, and turn radii are maintained on the designated truck routes, and prohibit commercial truck traffic from non-truck routes except for deliveries.	**Yes.** **With Mitigation**
	Policy-C8c	Adequate truck access to off-street loading areas in commercial and industrial areas shall be provided in all new development applications.	**Yes**

4.3.5 IMPACTS AND MITIGATION MEASURES

Roadways

Impact 4.3.1 The project may cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system or the project may exceed, a level of service standard established by the county (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, congestion at intersections or the level of service). This impact is considered ***potentially significant, therefore subject to mitigation.*** **[PSM]**

The existing roadways serving the project site were developed prior to the County's current design standards for lane widths. The existing level of service on the roadways in the study area is adequate (See **Table 4.3-10**) and remains adequate even under cumulative plus project conditions (See **Table 4.3-13**). The fact that the level of service does not change as a result of the project is a reflection of the relatively low number of trips associated with the quarry.

The project will add truck traffic onto the adjacent roadways, which lack adequate shoulders and have smaller travel lanes than would be required for any new roadways built in Shasta County. Currently, the Balls Ferry Road, Kimberly Road, and Locust Road are adequate for the existing residential-oriented traffic, but the addition of trucks associated with the project onto these roadways will increase congestion and slow traffic speeds. Also, in the opinion of the traffic engineer the fact that these roads lack a shoulder or turn outs and there is no emergency parking lane or area for pedestrians to walk along the roadway, creates a potentially unsafe roadway for the mix of traffic. This impact is considered ***potentially significant, therefore subject to mitigation.***

Intersections

Mitigation Measures:

MM 4.3.1 The owner, applicant or successor in interest, shall improve the shoulder width from the Deschutes Road and Balls Ferry Road intersection southeast along Balls Ferry Road to 4th Street, Locust Road from Deschutes Road to Kimberly Road, and Kimberly Road from Locust Road to Balls Ferry Road. Alternatively, the project applicant could consolidate truck routes in this area to Deschutes Road and Balls Ferry Road, which would only require the addition of shoulders to Balls Ferry Road.

The identified roadway improvements shall meet the Shasta County Public Works roadway development standards as directed by the traffic engineer to ensure that vehicles can be comfortably accommodated on the roadway system, with shoulders providing areas for vehicle turn-out, and lane widths adequate such that two vehicles can pass each other in opposite directions, etc.

Timing/Implementation: The improvement shall be implemented prior to operation of trucks on the study roadway segments.

Enforcement/Monitoring: Shasta County is responsible for ensuring implementation of the identified mitigation measure.

MM 4.3.1 would require that roadways providing access to the proposed project be brought up to current County Design Standards as specified for road width and shoulders. As mitigated, this impact is reduced to a ***less than significant*** level.

Impact 4.3.2 The project may cause an intersection that operates acceptably (LOS A, B, or C) to degrade to an unacceptable LOS (D, E, or F) due to the additional traffic from the project. Or if an intersection is already operating at an unacceptable LOS without the project, the project may cause an increase of 5 or more seconds of control delay due to the addition of project traffic. This impact is considered ***potentially significant, therefore subject to mitigation***. **[PSM]**

With the exception of the Bowman/I-5 Interchange, all of the intersections in the study area operate acceptably under baseline conditions and will continue to operate acceptably with the proposed project. (See **Table 4.3-11**) The project adds less than a second delay for all intersections except the Bowman Road/I-5 north bound off ramp during the am peak hour which adds 16.2 seconds, and 2.1 seconds during the pm peak hour. The am peak hour exceeds the threshold for significance and is considered a significant impact.

Mitigation Measure **MM 4.3.2a** restricts use of the Bowman Road/I-5 interchange during the am peak hours of 7:00 am through 9:00 am, Monday through Friday on regular workdays. By avoiding this intersection altogether during these times, the project will not increase the delay at this location. Once the intersection improvements are completed, there is no need for the am peak hour avoidance and the mitigation measure is no longer required. **MM 4.3.2b** requires the project to contribute its pro-rata share of improvements at this location as project traffic will be using the intersection during other times of the day, and will ultimately benefit from the improvement as the am peak hour restriction would then be lifted. As mitigated, this impact is ***less than significant***.

Mitigation Measures:

MM 4.3.2(a) No project traffic may use the Bowman/Interstate 5 north bound off-ramp intersection during the am peak hours of 7:00 am to 9:00 am during Monday through Friday work days until improvements at this intersection have been completed. Once the improvements have been completed, this mitigation is no longer necessary.

Timing/Implementation: Ongoing. The restriction shall remain in place until the improvements to the intersection have been completed.

Enforcement/Monitoring: Shasta County Department of Resource Management, Planning Division

MM 4.3.2(b) The owner, applicant or successor shall enter into an agreement with the Tehama County to contribute a pro-rata share of the cost of improvements at the Bowman/Interstate 5 north bound off-ramp intersection. The pro-rata share shall be determined by the lead agency in conjunction with Tehama County.

Timing/Implementation: Prior to issuance of a permit to operate.

Enforcement/Monitoring: Shasta County Department of Resource Management, Planning Division.

Implementation of both **MM 4.3.2a** and **4.3.2b** will reduce the short-term impacts at this intersection to a **less than significant** by avoiding the intersection during the am peak hour until the improvements are completed and by contributing the project's fair share contribution to the improvements necessary to ensure an acceptable LOS.

Freeway

Impact 4.3.3 The project may cause a freeway ramp that is operating at an acceptable level (LOS A, B, or C) to deteriorate to an unacceptable level (LOS D, E, or F) due to the addition of project traffic. Or project traffic may increase traffic at a freeway ramp already operating at an unacceptable level 10 or more passenger car equivalents (PCE's). This impact is considered ***potential significant, therefore subject to mitigation.*** **[PSM].**

Table 4.3-12 shows the merge-diverge conditions at northbound Interstate 5 and Deschutes Road will remain unacceptable during PM peak hour, but will be largely unaffected by the project. During the AM peak hour, the project will add 7 PCE trips to the northbound on-ramp at the Deschutes Road / I-5 interchange, and an additional 10 PCE trips to the southbound off ramp. During the PM peak hour, the project will add 10 PCE trips to the northbound on-ramp, and 7 PCE trips to the southbound off ramp. The City of Anderson has been working toward upgrading the ramps at the Deschutes/Interstate 5 location to roundabouts designed to accommodate residential, commercial and industrial traffic. The City has been collecting fees for the improvement, and the roundabouts are included as mitigation in the Anderson Marketplace EIR (SCH #2002072103) and were conditions of approval for the Jack in the Box located at Factory Outlets Drive and State Route 273. The roundabouts are also discussed in the South Anderson Industrial Feasibility Study, (June 2004) a joint report considered by both Shasta County and the City of Anderson to research the opportunities and constraints for growth in this are of Shasta County. During the Notice

of Preparation period, the City of Anderson has requested that the proposed project contribute its fair share of the cost of improvements at this location.

Mitigation Measure **MM 4.3.3** requires participation in the funding mechanism for the improvements at Deschutes Road and Interstate 5 interchange. The assessed fee for the Deschutes Road interchange zone of benefit is $1,367 per dwelling unit equivalent (DUE). The proposed project generates 46 PCE PM peak hour trips, or represents approximately 46 DUEs. Therefore, the approximate fee would be $63,000. The exact fee will need to be determined by Shasta County in cooperation with the City of Anderson.

MM 4.3.3 The owner, applicant or successor shall enter into an agreement with the City of Anderson to contribute a pro-rata share for the cost of improvements at both the Deschutes Road and Interstate 5 intersections. The pro-rata share shall be determined by the lead agency in conjunction with the City of Anderson.

Timing/Implementation: Prior to issuance of a permit to operate.

Enforcement/Monitoring: Shasta County Department of Resource Management, Planning Division.

Implementation of **MM 4.3.3** will contribute toward the roundabouts intended by the City of Anderson for the Deschutes Road and Interstate 5 interchange. The roundabouts essentially provide for a continuous right turn lane and eliminate left turn lanes which cause delay at the onramps and affect the level of service. This increases efficiency of traffic movement by reducing the delay caused by left turns, and eliminates the need for drivers to seek gaps in the traffic to complete left turns onto and off of the on/off ramps. This mitigation measure will reduce this impact to ***less than significant*. [LS]**

Access, Design & Parking

Impact 4.3.4 The project may substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersection or incompatible uses (e.g., farm equipment), access or emergency access. This impact is considered ***less than significant*. [LS]**

The proposed project will comply with Shasta County General Plan Policy C-6a, which states that future road and street development including future right-of-way shall comply with the adopted County Development Standards. (See also Impact 4.3.1 and MM 4.3.1 regarding Balls Ferry Road) As a normal development condition, Shasta County will require that County Standard Road Connection, Type "D" Section A-A be constructed at the entry drive/Balls Ferry Road intersection. This existing county standard will ensure that access into the facility is compatible with traffic on Balls Ferry Road. As this is a requirement of encroachment approved by the county, no additional mitigation is necessary and this impact is considered ***less than significant*.**

Access to the project site has been consolidated to one access point. Volumes at this location do not meet standards for implementation of a traffic control signal (MUTCD signal warrant criteria) or dedicated left-turn lanes (based on volume requirements presented in American Association of State Highway Transportation Officials (See **Appendix 4.3.1**). Additionally, there is sufficient sight distance at the project site driveway. Therefore, this impact is considered ***less than significant*** **[LS].**

There is a single access point to the project, however the low number of employees, the non-flammable nature of the quarry material, suggest that a single access is easier to secure than multiple accesses to the project site. There is adequate area within the project site to accommodate truck loading and parking, therefore this impact is considered ***less than significant***.

4.3.6 CUMULATIVE IMPACTS AND MITIGATION MEASURES

Roadways

Impact 4.3.5 The project may cause a cumulative increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system or the project may exceed, a level of service standard established by the county (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, congestion at intersections or the level of service). This impact is considered ***less than significant.*** **[LS].**

As shown in **Table 4.3-13**, all study roadway sections will operate at acceptable levels of service under both cumulative and cumulative plus project conditions.

Intersections

Impact 4.3.6 The project may cumulatively cause an intersection that operates acceptably (LOS A, B, or C) to degrade to an unacceptable LOS (D, E, or F) due to the additional traffic from the project. Or if an intersection is already predicted to operate at an unacceptable LOS under cumulative conditions without the project, the project may cause an increase of 5 or more seconds of control delay due to the addition of project traffic. This impact is considered ***less than significant*** **[LS].**

All ten study intersections within the project study area are expected to operate at unacceptable levels of service under both the Cumulative No Project and the Cumulative Plus Project scenarios. (See **Table 4.3-14**) As nine of the ten study intersections function acceptably under the baseline plus project conditions, it is the background growth and not the project-related traffic that results in the unacceptable levels of service at the study intersections.

Table 4.3-14 illustrates changes in delay at each intersection except that if the delay is already over 120 seconds the methodology cannot accurately depict the delay directly attributable to the project. As noted in **Table 4.3-11**, with the exception of the

Bowman Road/Interstate 5 intersection the amount of delay attributable to the project is well below the 5-second threshold for significance. The project's impact on the Bowman Road/Interstate 5 intersection is discussed in Impact 4.3.2 and mitigation measures 4.3.2a and 4.3.2b address potential cumulative impacts associated with the proposed project.

While the Regional Transportation Planning Agency (RTPA) is studying the existing and proposed roadway network as part of a transportation impact mitigation fee analysis, the improvements included in the draft report do not include the study intersections. There is no county, city or other agency fee in place that has identified these improvements and established a fee. As noted in **Tables 4.3-10 and 4.3-13**, nearly all of the intersections are less than significant. The City of Anderson has requested that the project pay its pro-rata share of improvements at Riverside and Interstate 5, however the project-related traffic is negligible at this intersection. From a cumulative impact perspective, while the project will contribute to the further reduction in service at intersections already predicted to operate at an unacceptable level of service, the amount of delay attributable directly to project related traffic at the study intersections is less than significant. Therefore, this impact is considered ***less than significant***.

Interchanges

Impact 4.3.7 The project traffic may cause a freeway ramp that is operating at an acceptable level (LOS A, B, or C) to deteriorate to an unacceptable level (LOS D, E, or F) under cumulative plus project conditions. Or project traffic may increase traffic at a freeway ramp predicted to operate at an unacceptable level of service during cumulative plus project conditions, by adding 10 or more passenger car equivalents (PCE's). This impact is considered ***potentially significant, therefore subject to mitigation*. [PSM]**

Implementation of the proposed project will result in the addition of 10 PCE's (or approximately three heavy vehicles) to the southbound off-ramp of the I-5/Deschutes Road interchange, which is currently operating at an unacceptable LOS D during the AM Peak Hour under Baseline Plus Project conditions and is predicted to operate at an unacceptable "LOS D" during the AM Peak Hour under Cumulative conditions. This impact is discussed under **Impact 4.3.3**, with a mitigation measure **MM 4.3.1** that requires participation in the zone of benefit for the Deschutes Road/Interstate 5 roundabouts contemplated by the City of Anderson. Upon completion, the roundabouts are designed to ensure an adequate level of service under cumulative plus project conditions. Once the City of Anderson completes improvements at this intersection, this impact will be ***less than significant*. [LS]**

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Traffix 7.7 software

Conversation with Regional Transportation Planning Agency (RTPA) on December 6, 2005 (Thomas Hays).

Shasta County Department of Public Works, Contact Al Cathy on December 14, 2005.

Department of Transportation, Caltrans. Contact Marcelino Gonzales on December 5, 2005.

Shasta County Travel Demand Forecasting Model, p.15

Endnotes

[1] The LOS thresholds were developed using Caltrans thresholds and/or thresholds used in other studies within the County. The thresholds are setup to identify what amount of traffic is considered significant. The following thresholds are consistent with established thresholds used throughout northern California.

[2] An adjustment factor to account for the additional space taken up by heavy vehicles, as well as the difference in operating capabilities of heavy vehicles compared with passenger cars.

[3] Although the County is currently in the process of revising the travel demand-forecasting model, conversations with Regional Transportation Planning Agency (RTPA) staff indicated that the new model would not be available until after this project was complete.

ACRONYMS

ADT	Average Daily Traffic
CALTRANS	California Department of Transportation
City	City of Anderson
County	Shasta County
EIR	Environmental Impact Report
HCM	Highway Capacity Manual
I-5	Interstate 5
ITE	Institute of Transportation Engineers
LOS	Level of Service
NB	North Bound
Pc/mi/ln	Passenger Car per mile per lane
PCE	Passenger Car Equivalents
PHF	Peak Hour Factor
PSR	Project Study Report
ROW	Right-of-Way
RTPA	Regional Transportation Planning Authority
SB	South Bound
SR	State Route
VC	Volume to Capacity Ratio

This chapter summarizes existing air quality conditions in the project vicinity and includes an analysis of the potential impacts of the project's mining and reclamation activities on local and regional air quality. The evaluation is based upon an air quality analysis conducted by Ambient, Inc.

4.4.2 ENVIRONMENTAL SETTING

NORTHERN SACRAMENTO VALLEY AIR BASIN

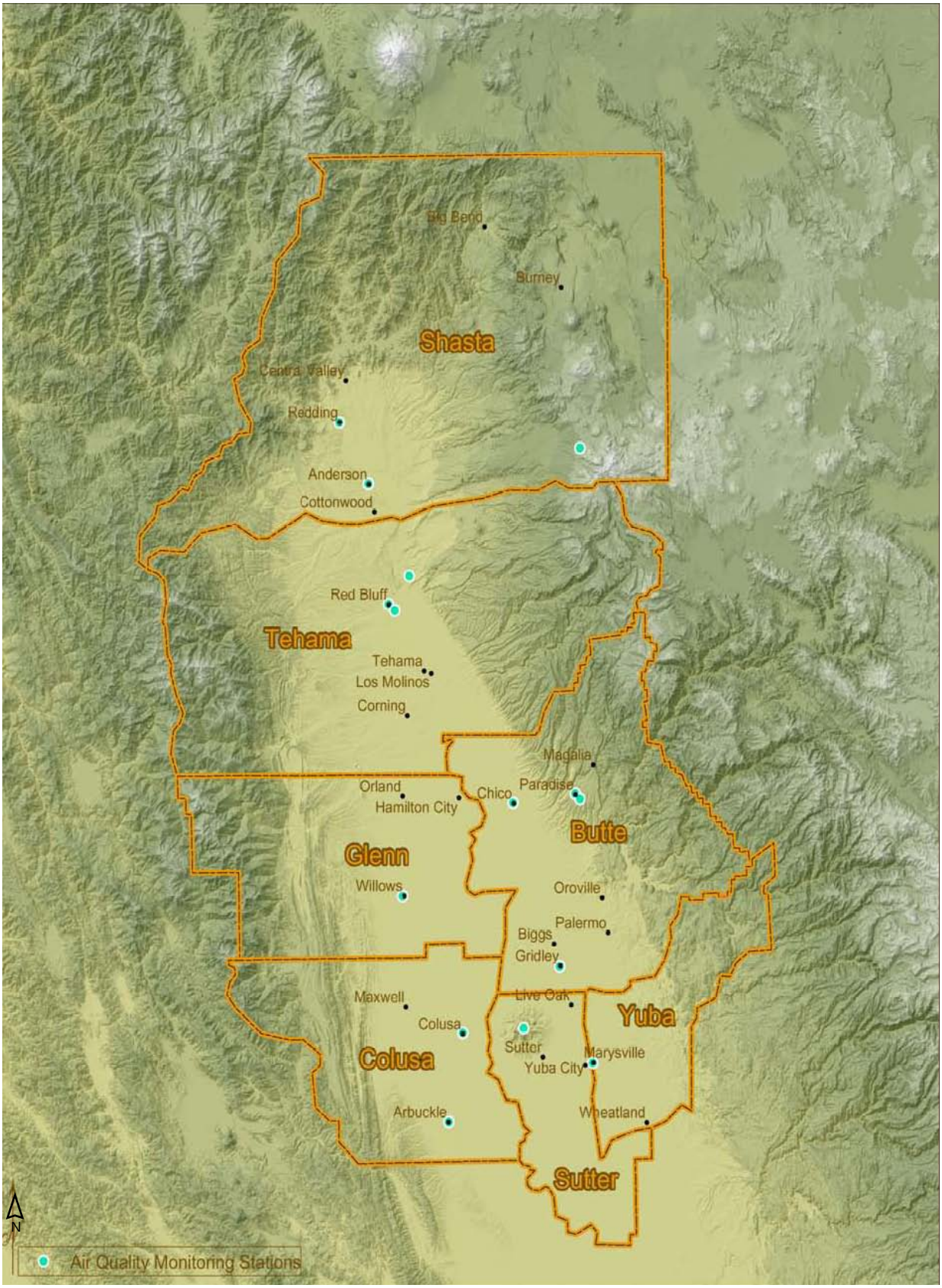
Shasta County sits at the northern end of the Northern Sacramento Valley Air Basin (NSVAB). The NSVAB is depicted in **Figure 4.4-1, Northern Sacramento Valley Air Basin and Ambient Air Quality Monitoring Stations** and, as shown, consists of a total of seven counties. The NSVAB is bounded on the north and west by the Coastal Mountain Range and on the east by the southern portion of the Cascade Mountain Range and the northern portion of the Sierra Nevada Mountains. These mountain ranges reach heights in excess of 6,000 feet with peaks rising much higher. This provides a substantial physical barrier to locally created pollution as well as that transported northward on prevailing winds from the Sacramento Metropolitan area (NSVAB 2004).

The valley is often subjected to inversion layers that, coupled with geographic barriers and high summer temperatures, create a high potential for air pollution problems. Generally, Shasta County experiences moderate to very poor capability to disperse pollutants nearly 80 percent of the time. This is, in large measure, due to relatively stable atmospheric conditions which acts to suppress vertical air movement. Extremely stable atmospheric conditions referred to as "inversions" act as barriers to pollutants. In valley locations under 1,000 feet elevation, such as the Redding Metropolitan area, they create a "lid" under which pollutants are trapped. Dust and other pollutants can be trapped within these inversion layers and will not disperse until atmospheric conditions become unstable. This situation creates concentrations of pollutants at or near the ground surface and as a result poses significant health risks for plants, animals, and people (NSVAB 2004).

REGIONAL CLIMATE AND ATMOSPHERIC CONDITIONS

The climate of the Northern Sacramento Valley Air Basin, as with all of Central California, is dominated by the strength and location of a semi-permanent, subtropical high-pressure cell over the northeastern Pacific Ocean. Climate is also affected by the temperature moderating effects of the nearby oceanic heat reservoir. Warm summers, cool winters, rainfall, daytime onshore breezes, and moderate humidity characterize regional climatic conditions. In summer when the high-pressure cell is strongest, temperatures are very warm and humidity is low. The daily incursion of the sea breeze into the Central Valley, however, creates persistent breezes that moderate the summer heat. In winter, when the high-pressure cell is weakest, conditions are characterized by occasional rainstorms interspersed with stagnant conditions and occasional heavy fog. Airflow patterns in the basin can be characterized by one of eight directional types, the most frequent being northwesterly. The northwesterly flow is predominant in spring and summer, but seasonal variations do occur

(refer to **Figure 4.4-2, Local Wind Speed and Direction - Redding, CA**). Calm conditions dominate the winter months.



Source: Feather River Air Quality Management District 2006

FIGURE 4.4-1
NORTHERN SACRAMENTO VALLEY AIR BASIN AND AMBIENT AIR QUALITY MONITORING STATIONS

PMC

Terrain features create various microclimates. The pattern of mountains and hills within the basin is primarily responsible for the wide variations of rainfall, temperatures, and localized winds that occur throughout the region. Temperature variations have an important influence on basin wind flow, dispersion along mountain ridges, vertical mixing and photochemistry. Because the temperature moderating marine influence decreases with distance, monthly and annual temperature variations are greater inland than along the coast.

Precipitation is highly variable seasonally. Summer months are often dry, averaging less than one inch in total precipitation per month. Rainfall is most abundant during the winter months and increases with elevation. Annual rainfall is lowest in the inland valleys, higher in the coastal and inland foothills, and highest in the mountains.

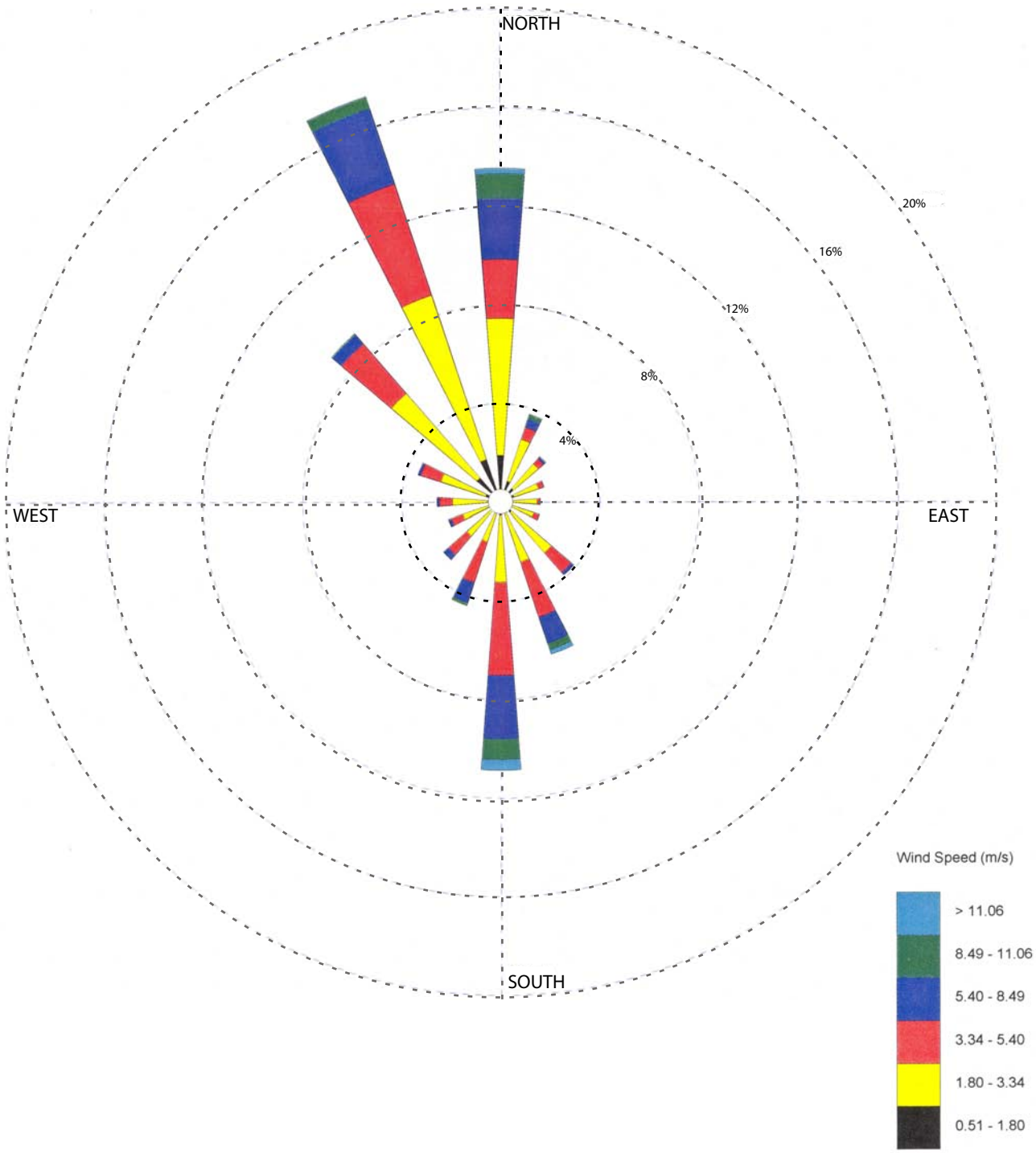
LOCAL CLIMATE

Temperature and precipitation data were taken from the Redding monitoring station, which is located approximately 13 miles north of the project site. The project area generally experiences moderate temperatures and humidity levels. Temperatures range from an average January low of 36.8 degrees Fahrenheit (°F) to an average July high of 98.6 °F. Rainfall in the project area averages 28.5 inches annually and occurs predominantly from November to May (WRCC 2006). Winds in the study area average approximately 7.1 mph annually. As depicted in **Figure 4.4-2, Local Wind Speed and Direction - Redding, CA,** the predominant wind flow is from the north-northwest (ARB 2006, NWS 2006).

METEOROLOGICAL INFLUENCES ON AIR QUALITY

Regional airflow patterns have an effect on air quality patterns by directing pollutants downwind of sources. Localized meteorological conditions, such as light winds and shallow vertical mixing, as well as topographical features, such as surrounding mountain ranges, create areas of high pollutant concentrations by hindering dispersal. An inversion layer is produced when a layer of warm air traps cooler air close to the ground. Such temperature inversions hamper dispersion by stratifying contaminated air near the ground.

The conditions that form high ambient air concentrations of ozone (O_3) are sunshine, early-morning stagnation in source areas, high surface temperatures, strong and low morning inversions, greatly restricted vertical mixing during the day, and daytime subsidence that strengthens the inversion layer. In the winter, temperature inversions dominate during the night and early morning hours but frequently dissipate by afternoon. At this time, the greatest air pollution sources are derived from carbon monoxide (CO) and oxides of nitrogen (NO_X). High CO concentrations occur on winter days with strong surface inversions and light winds. Carbon monoxide transport is extremely limited. High NO_2 levels usually occur during the autumn or winter on days with summer-like weather conditions. These conditions include low inversions, limited daytime mixing, and stagnant windflow conditions.



Depicts direction wind is blowing from.
Based on meteorological data obtained from the Redding/AAF monitoring station (Station #24257) 1987-1989.

Source: ARB, 2006

FIGURE 4.4-2
LOCAL WIND SPEED AND DIRECTION
REDDING, CA

PMC

COMMON AIR POLLUTANTS

Common air pollutants of regional concern within the basin are discussed separately below and summarized in **Table 4.4-1**.

Ozone

Ozone is a colorless, odorless gas that is present in the troposphere in concentrations of a few tenths of a part per million (ppm) or less. Ozone is not usually emitted directly by pollutant-generating sources, rather it is created by atmospheric reactions between organic compounds (such as solvents and unburned fuels) and NO_X (a product of combustion processes). Because ozone is created over time as these gases mix in the presence of sunlight, and because these gases are emitted by hundreds of sources in a geographical area, ozone concentrations tend to be higher downwind of the primary sources. Peak ozone concentrations also typically occur during the summer months, when longer days allow the chemical reactions to continue over a longer period of time.

Adverse health effects resulting from ozone exposure range from mild irritation of the eyes, nose, and throat to possible impairment of lung functions. Other effects include aggravation of respiratory and cardiac diseases, and pulmonary dysfunction. Ozone, the primary constituent of photochemical smog, is a severe irritant to all mucous membranes and primarily affects the respiratory system.

Fine Particulate Matter

Atmospheric particulates are made up of fine solids or liquids such as soot, dust, aerosols, fumes and mists. A large portion of the total suspended particulate matter (TSP) in the atmosphere is fine particulate matter less than or equal to 10 micrometers in diameter (PM_{10}). Particulate matter 2.5 micrometers or less is referred to as $PM_{2.5}$. The California Air Resources Board (ARB) estimates that PM_{10} comprises approximately 64 percent of TSP matter. These small particulates cause the greatest health risk because they can penetrate the defenses of the human respiratory system more easily than other TSP matter.

Sources of particulate matter include directly emitted particulates (e.g., fugitive dust and smoke), finely divided aerosols (chiefly organic compounds), and byproducts of secondary reactions of emitted sulfates and nitrates in the atmosphere.

The health effects of particulate matter (PM) depend on the nature of the particulate matter. For example, health effects may be associated with metals, polycyclic aromatic hydrocarbons, and other toxic substances adsorbed onto fine particulates, fine dust particles of silica, or asbestos. This is often referred to as the piggybacking effect. Generally, health effects associated with particulate matter may result from both short-term and long-term exposures to elevated levels of particulate matter. These effects may include reduced lung function, aggravation of asthma and bronchitis symptoms, respiratory disease and increased mortality.

Carbon Monoxide

Carbon monoxide (CO) is a product of incomplete combustion, principally from automobiles and other mobile sources of pollution. Industrial sources typically contribute less than 10 percent to ambient CO levels. Peak CO levels are typically localized near areas of high motor vehicle traffic, particularly during winter months when calm conditions are common.

Carbon monoxide enters the bloodstream through the lungs by combining with hemoglobin, the substance that normally carries oxygen to the cells. It combines with hemoglobin much more readily than oxygen does, resulting in a drastic reduction in the amount of oxygen available to the cells. The symptoms of CO exposure at higher levels include dizziness, headaches, slowed reactions, and fatigue. Exposure is especially harmful to people with heart or lung disease, or anemia.

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is a natural trace constituent of the troposphere. The major anthropogenic sources of NO_2 are combustion devices, such as boilers, gas turbines, and stationary and mobile reciprocating internal combustion engines. Combustion devices primarily emit nitric oxide (NO), which reacts in the atmosphere to form NO_2. The combined emissions of NO and NO_2 are referred to as NO_X, which are reported as equivalent NO_2. Because NO_2 reacts with reactive organic gases (ROG) to form ozone and is also generated by the reactions that form photochemical smog, the concentrations of NO_2 in a particular geographical area may not be representative of the local NO_X emission sources. NO_2 concentrations tend to be higher close to major source areas and lower in downwind areas because of the interrelationship between O_3 and NO_2 levels.

Inhalation is the most common route of exposure to NO_2. Because NO_2 has relatively low solubility in water, its principal site of toxicity is the lower respiratory tract. The severity of the health effects depends mainly on the concentration inhaled and less on the duration of exposure. An individual may experience a variety of acute symptoms, including coughing, difficulty breathing, vomiting, headache, and eye irritation during or shortly after exposure. Severe, symptomatic NO_2 intoxication after acute exposure has been linked on occasion with prolonged respiratory impairment with symptoms of chronic bronchitis, and with decreased lung function.

Sulfur Dioxide

Sulfur dioxide (SO_2) is produced by the combustion of any fuel containing sulfur. The major health effects of SO_2 are on the upper respiratory tract. Only a small portion of inhaled SO_2 penetrates the lower respiratory tract because it is water soluble. Sulfur dioxide is a respiratory irritant with bronchoconstriction occurring with inhalation of SO_2 at 5 ppm or more. On contact with the moist mucous membranes, SO_2 produces sulfurous acid, which is a direct irritant. Concentration rather than duration of the exposure is the more important determinant of respiratory effects. High concentrations of SO_2 may cause edema of the lungs or glottis and can produce respiratory paralysis.

TOXIC AIR CONTAMINANTS

Aside from the specific air pollutants described above, toxic air contaminants (TACs) are a broad regulatory category of airborne pollutants with the potential to impact the human environment. TACs include those air pollutants that are believed to result in an increase in mortality or serious illness, or that may pose a present or potential hazard to human health. Health effects commonly associated with TACs include cancer, birth defects, neurological damage, damage to the body's natural defense system, and diseases that lead to death. TACs can be separated into carcinogens and noncarcinogens based on the nature of the physiological degradation associated with exposure to the pollutant. For regulatory purposes, carcinogens are assumed to have no safe threshold below which health impacts will not occur. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

TABLE 4.4-1

CRITERIA AIR POLLUTANTS
SUMMARY OF COMMON SOURCES AND EFFECTS

Pollutant	Description	Sources	Health Effects	Welfare Effects
Carbon Monoxide	Colorless, odorless gas	Motor vehicle exhaust, indoor sources include kerosene heaters and wood-burning stoves.	Headaches, reduced mental alertness, heart attack, cardiovascular diseases, impaired fetal development and death.	Contributes to the formation of smog.
Sulfur Dioxide	Colorless gas that dissolves in water vapor to form an acid, and interacts with other gases and particulates in the air	Coal-fired power plants, petroleum refineries, manufacture of sulfuric acid and smelting of ores containing sulfur.	Eye irritation, wheezing, chest tightness, shortness of breath and lung damage.	Contributes to the formation of acid rain, impairs visibility, impairs plant photosynthesis, degrades water quality, and results in aesthetic damage to buildings.
Nitrogen Dioxide	Reddish brown, highly reactive gas	Motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuels.	Susceptibility to respiratory infections, irritation of the lung and respiratory symptoms (e.g., cough, chest pain, difficulty breathing).	Contributes to the formation of smog and acid rain, degrades water quality, contributes to global warming and impairs visibility.
Ozone	Gaseous pollutant when it is formed in the troposphere	Vehicle exhaust and certain other fumes. Formed from the combination of reactive organic gases and oxides of nitrogen in the presences of sunlight.	Eye and throat irritation, coughing, respiratory tract problems, asthma and lung damage.	Plant and ecosystem damage.

Lead	Metallic element	Metal refineries, lead smelters, battery manufacturers, iron and steel producers and use of leaded fuels by racing and aircraft industries.	Anemia, high blood pressure, brain and kidney damage, neurological disorders, cancer and a lowered IQ.	Affects plants, animals, and aquatic ecosystems.
Particulate Matter	Very small particles of dust, soot, or other matter, including tiny droplets of liquids	Diesel engines, power plants, industries, windblown dust and wood stoves.	Eye irritation, asthma, bronchitis, lung damage, cancer, heavy metal poisoning and cardiovascular effects.	Impairs visibility, impairs plant photosynthesis, and results in atmospheric deposition and aesthetic damage to buildings.

Source: ARB 2005; EPA 2005

There are hundreds of different types of TACs, with varying degrees of toxicity. Sources of TACs are most commonly associated with industrial processes, such as petroleum refining or chrome plating operations; commercial operations, such as gasoline stations and dry cleaning establishments; and motor vehicle exhaust. Within regard to mining-related projects, diesel-exhaust particulate matter (DEPM) is typically considered the mobile-source TAC of primary concern. Extended exposure to diesel exhaust can result in cancer, respiratory effects, and other health problems, and longer exposure periods can increase the risk of contracting diesel-related health problems. Fine particles from diesel exhaust aggravate respiratory illnesses such as bronchitis, emphysema, and asthma. Small particles, such as those in diesel exhaust, are particularly hazardous because they penetrate deeper into the recesses of the lungs, and tend to remain in the lungs and surrounding lymph nodes rather than being cleared efficiently from the body.

Other TACs of potential concern related to gravel mining projects include crystalline silica, asbestos and radon. Exposure to airborne concentrations of crystalline silica and asbestos via inhalation can result in respiratory health effects (e.g., pulmonary hypertension, lung cancer, asbestosis, and mesothelioma). Geologic studies of the project site have not identified the presence of asbestos containing soils on the project site (Kleinfelder 2005). In addition, the project site is not located in an area mapped by the State of California as an area of potential or known deposits of asbestos containing soil (CDC 2000).

Radon is a naturally occurring gas emitted from the decay of radioactive materials in rocks and soils. Increased concentrations of radon can occur in structures located over such soils, which can result in increased health risks to occupants. In response to radon concerns,

the U.S. Geological Society and the U.S. EPA have evaluated the radon potential in the U.S. and have categorized areas based on potential for accumulations of radon gas to occur within structures. As part of this effort, three classifications or zones have been developed. Shasta County is located within the lowest classification and is considered to have a "low potential" of occurrence (U.S. EPA 2006[b]). In addition, implementation of the proposed project would not result in the construction of occupied structures where the accumulation of radon gas would be of concern. Refer to **Section 4.8, Mineral, Geology and Soils** and **Section 4.12, Hazards and Hazardous Materials** of this EIR for a more detailed discussion of geologic hazards specific to this project, including the project's potential for disturbance of contaminated soils.

TACs are regulated through implementation of federal and state laws. Federal law uses the term "hazardous air pollutants" (HAPs) to refer to the same types of compounds referred to as TACs under state law. Both terms encompass essentially the same compounds. For purposes of this report, "TACs" will be used when referring to these pollutants. It is important to note that TACs are not considered criteria pollutants in that the CAA and CCAA do not address them specifically through the setting of NAAQS or CAAQS. However, enforcement of the NAAQS or CAAQS for the control of criteria pollutants, such as ozone and particulate matter, can result in reducing airborne emissions of TACs. Regulatory requirements pertaining to the evaluation and control of TACs are discussed in **4.4.3 Regulatory Context**.

ODOROUS AIR EMISSIONS

The sensory perception of odors has four major dimensions: detectability, intensity, character and hedonic tone. The odor detectability threshold consists of the detection threshold and recognition threshold. The detection threshold is the lowest concentration of an odor that will elicit a sensory response; at this concentration there is an awareness of the presence of an added substance, but not necessarily an odor sensation. The recognition threshold is the minimum concentration that is recognized by a population as having a characteristic odor quality. Odor intensity refers to the perceived strength of the odor sensation. Odor character is how the substance smells (e.g., fishy, rancid) or what it smells like (e.g., hay, sewer, turpentine, ammonia). Hedonic tone is a category judgment of the relative pleasantness or unpleasantness of the odor, and is influenced by factors such as subjective experience and frequency of occurrence. Each of these elements plays a role in the identification of odor impacts.

There are no requirements for the control of odors in federal, state, or local air quality regulations. Offensive odors rarely cause any physical harm; however, they still can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and regulatory agencies. Odor impacts on residential areas and other sensitive receptors, such as daycare centers and schools, are of particular concern. Major sources of odor-related complaints by the general public commonly include wastewater treatment facilities, landfill disposal facilities, food processing facilities, agricultural activities, and various industrial activities (e.g., petroleum refineries, chemical and fiberglass manufacturing, painting/coating operations, feed lots/dairies, composting facilities, landfills, and transfer stations). Sand and gravel

processing plants are not considered major odor sources; however, asphalt batch plants, which are sometimes associated with sand and gravel plants, may result in detectable increases in nuisance odors at nearby receptors.

SENSITIVE RECEPTORS

One of the most important reasons for air quality regulations and standards is the protection of those members of the population who are most sensitive to the adverse health effects of air pollution, termed "sensitive receptors." The term "sensitive receptors" refers to specific population groups, as well as the land uses where they would reside for long periods. Commonly identified sensitive population groups are children, the elderly, the acutely ill, and the chronically ill. Commonly identified sensitive land uses are residences, schools, playgrounds, childcare centers, retirement homes or convalescent homes, hospitals, and clinics.

Sensitive receptors located within the vicinity of the proposed project consist of single-family residential dwellings generally located to the south, west, and north of the project site. The nearest residential dwellings are located within approximately 100 feet of the project site boundary. Sensitive receptors located along the proposed haul route also consist primarily of single-family residential dwellings located at varying distances from the roadway, the nearest of which are located within approximately 60 feet of the nearest travel lane. (See **Figure 4.7-1**)

4.4.3 REGULATORY CONTEXT

AMBIENT AIR QUALITY STANDARDS

Federal

At the federal level, the U.S. Environmental Protection Agency (EPA) has been charged with implementing national air quality programs. The U.S. EPA air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was signed into law in 1970. Congress substantially amended the CAA in 1977 and again in 1990.

The CAA required EPA to establish the national ambient air quality standards (NAAQS), and to also establish deadlines for their attainment. Two types of NAAQS have been established: primary standards, which protect public health, and secondary standards, which protect public welfare from non-health-related adverse effects, such as visibility restrictions.

The CAA Amendments of 1990 made major changes in deadlines for attaining NAAQS and in the actions required of areas of the nation that exceed these standards. Under the CAA, state and local agencies in areas that exceed the NAAQS are required to develop and implement air pollution control plans designed to achieve and maintain the NAAQS established by EPA. States may also establish their own standards, provided that state standards are at least as stringent as the NAAQS. California has established California ambient air quality standards (CAAQS) pursuant to California Health and Safety Code

Section 39606(b) and its predecessor statutes. The NAAQS and CAAQS are presented in **Table 4.4-2, Summary of Ambient Air Quality Standards**.

The CAA requires states to develop an air quality control plan referred to as the State Implementation Plan (SIP). The SIP contains the strategies and control measures that California will use to attain the NAAQS. EPA approved the California SIP in September 1996. The SIP became effective on February 7, 1997. Pursuant to the recently adopted SIP, the State of California will strive for compliance with federal ozone standards by the year 2010. This will be accomplished using a combination of performance standards and market-based programs that will speed the introduction of cleaner technology and expand compliance flexibility (ARB 2006).

State of California

The California Air Resources Board (ARB) is the agency responsible for coordination and oversight of state and local air pollution control programs and for implementing the California Clean Air Act (CCAA) of 1988. The CCAA requires that all air districts in the state endeavor to achieve and maintain CAAQS by the earliest practical date. The CCAA mandates that districts focus particular attention on reducing emissions from transportation and area-wide emission sources, and the act provides districts with new authority to regulate indirect sources. Each district plan is to achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors. Air districts in violation of CAAQS are required to prepare an Air Quality Attainment Plan (AQAP) that includes measures for attaining the CCAA mandates.

Regional

Shasta County Air Quality Management District

The project site is located in the jurisdiction of the Shasta County Air Quality Management District (AQMD). The AQMD is designated by law to adopt and enforce regulations to achieve and maintain ambient air quality standards. The AQMD, along with other air districts in the Northern Sacramento Valley Air Basin (NSVAB), have committed to jointly prepare the NSVAB Air Quality Attainment Plan for the purpose of achieving and maintaining healthful air quality throughout the air basin. The Plan was initially adopted in 1994 and updated on a triennial basis. The most recent update occurred in 2003 and was formally adopted in March of 2004. The triennial updates of the NSVAB Air Quality Attainment Plan address the progress made in implementing the AQAP and propose modifications to the strategies necessary to attain the California ambient air quality standard for the 1-hour ozone standard at the earliest practicable date. Like previous updates of the Air Quality Attainment Plan, the 2003 AQAP focuses on adoption and implementation of control measures for stationary sources, area wide sources, indirect sources, and addresses public education and information programs. The 2003 AQAP also addresses the effect that pollutant transport has on the NSVAB's ability to meet and attain the State standards (NSVAB 2004).

TABLE 4.4-2
SUMMARY OF AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards [a, d]	National Standards [b, d]	
			Primary [e]	Secondary [f]
Ozone (O_3)	1-hour	0.09 ppm (180 µg/m³)	–	Same as Primary
	8-hour	0.070 ppm (137 µg/m³) [c]	0.08 ppm (157 µg/m³)	
Particulate Matter (PM_{10})	AAM	20 µg/m³	50 µg/m³ [f]	Same as Primary
	24-hour	50 µg/m³	150 µg/m³	–
Fine Particulate Matter ($PM_{2.5}$)	AAM	12 µg/m³	15 µg/m³	Same as Primary
	24-hour	No Standard	65 µg/m³	–
Carbon Monoxide (CO)	1-hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	None
	8-hour	9 ppm (10 mg/m³)	9 ppm (10 mg/m³)	
	8-hour - Lake Tahoe	6 ppm (7 mg/m³)	–	
Nitrogen Dioxide (NO_2)	AAM	–	0.053 ppm (100 µg/m³)	Same as Primary
	1-hour	0.25 ppm (470 µg/m³)	–	
Sulfur Dioxide (SO_2)	AAM	–	0.03 ppm (80 µg/m³)	–
	24-hour	0.04 ppm (105 µg/m³)	0.14 ppm (365 µg/m³)	–
	3-hour	–	–	0.5 ppm (1,300 µg/m³)
	1-hour	0.25 ppm (655 µg/m³)	–	–
Lead	30-day Average	1.5 µg/m³	–	–
	Calendar Quarter	–	1.5 µg/m³	Same as Primary
Sulfates	24-hour	25 µg/m³	No Federal Standards	
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m³)		
Vinyl Chloride	24-hour	0.01 ppm (26 µg/m³)		

TABLE 4.4-2
SUMMARY OF AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards [a, d]	National Standards [b, d]	
			Primary [e]	Secondary [f]
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient of 0.23 per kilometer — visibility of 10 miles or more (0.07—30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70%.		

[a] California standards for O_3, CO (except Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, PM (PM_{10} and $PM_{2.5}$), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded.

[b] National standards (other than O_3, PM, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of daily concentrations, average over three years, are equal to or less than the standard.

[c] This concentration was approved by the Air Resources Board on April 28, 2005 and is expected to become effective in early 2006.

[d] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 ton.

[e] The levels of air quality necessary to protect the public health.

[f] The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

AAM = Annual Arithmetic Mean

$\mu g/m^3$ = Micrograms per Cubic Meter

mg/m^3 = Milligrams per Cubic Meter

ppm = Parts per Million

Source: ARB 2006; EPA 2006(a)

Shasta County General Plan

The Shasta County General Plan also includes various air quality related objectives and policies. These objectives and policies are intended to help protect and improve the County's air quality and to help the County attain and maintain federal and state ambient air quality standards. The objectives and policies most applicable to the proposed project are summarized in **Table 4.4-3** (Shasta County 1998).

AMBIENT AIR QUALITY MONITORING

As depicted in **Figure 4.4-1**, air pollutant concentrations in Shasta County are measured at monitoring stations located in Redding and Anderson. The Anderson-North Street air monitoring station is the closest in proximity to the proposed project site, measuring ambient concentrations of ozone and PM_{10}. Ambient concentrations of $PM_{2.5}$ are measured at the Redding-Health Department Roof air monitoring station. **Table 4.4-4** provides a summary of the air quality monitoring data obtained from these stations for the past three years of available data (2003-2005). As indicated in **Table 4.4-4**, state and federal standards for ozone have been exceeded on several occasions over the past three years of available data (i.e., 2003-2005). The state standard for PM_{10} was exceeded on two occasions during this same time period.

ATTAINMENT STATUS DESIGNATIONS

An attainment designation for an area signifies that pollutant concentrations did not violate the standard for that pollutant in that area. A nonattainment designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation(s) was caused by an exceptional event, as defined in the criteria.

All Northern Sacramento Valley air districts have been designated as nonattainment areas for the state standards for PM_{10}. Moreover, all of Northern Sacramento Valley air districts, with the exception of Colusa and Glenn counties, have been designated as nonattainment areas for the state standard for ozone. Colusa and Glenn counties have been designated as nonattainment transitional areas for ozone. In 1997, Butte and Glenn counties were designated as nonattainment transitional areas for the state ozone standard of 0.09 parts per million with one hour averaging time. This classification has since been amended, with Butte County reverting back to nonattainment for ozone. The nonattainment transitional designation is made by operation of law if, during a single calendar year, the state standard is not exceeded more than three times at any monitoring location within the district.

TABLE 4.4-3

SHASTA COUNTY GENERAL PLAN RELEVANT OBJECTIVES & POLICIES

Objectives	
AQ	To protect and improve the County's air quality in accordance with Federal and State clean air laws in order to: (1) safeguard human health, and (2) minimize crop, plant, and property damage.
AQ	To meet the requirements of the: (1) Federal Clean Air Act, and (2) the California Clean Air Act as soon as feasible.
Policies	
AQ-1c	The County will work with the AQMD to develop standards to minimize exposure of the public to toxic air pollutant emissions and noxious odors from industrial, manufacturing, and processing facilities.
AQ-1e	The County shall require new air pollution point sources such as, but not limited to, industrial, manufacturing, and processing facilities to be located an adequate distance from residential areas and other sensitive receptors.
AQ-2d	The County will work to accurately determine and fairly mitigate the local and regional air quality impacts of projects proposed in the unincorporated portions of Shasta County.
AQ-2b	Land use decisions, where feasible, should contribute to the improvement of air quality. New projects shall be required to reduce their respective air quality impacts to below levels of significance, or proceed as indicated in Policy AQ-2e.
AQ-2c	Shasta County shall ensure that air quality impacts identified during CEQA review are: (1) consistently and fairly mitigated, and (2) mitigation measures are feasible
AQ-2e	Shasta County will cooperate with the AQMD in assuring that new projects with stationary sources of emissions of non-attainment pollutants or their precursors that exceed 25 tons per year shall provide appropriate emission offsets. A comparable program that offsets indirect emissions of these pollutants, exceeding 25 tons per year from development projects, shall also be utilized to mitigate air pollution impacts. An Environmental Impact Report will be required for all projects that have unmitigated emissions of non-attainment pollutants exceeding 25 tons per year.
AQ-2-f	Shasta County shall require appropriate Standard Mitigation Measures and Best Available Mitigation Measures on all discretionary land use applications as recommended by the AQMD in order to mitigate both direct and indirect emissions of non-attainment pollutants.
AQ-2g	Significance thresholds as proposed by the AQMD for emissions shall be utilized when appropriate for: (1) Reactive Organic Gases (ROG) and Oxides of Nitrogen (NO_x), both of which are precursors of ozone, and (2) inhalable particulate matter (PM_{10}) in determining mitigation of air quality impacts

Source: Shasta County General Plan 1998

TABLE 4.4-4

SUMMARY OF AMBIENT AIR QUALITY DATA

Pollutant Standards	2003	2004	2005
Anderson-North Street Air Monitoring Station			
Ozone (O_3)			
Maximum concentration (1-hr/8-hr, ppm)	0.113/0.096	0.115/0.092	0.105/0.084
Number of days state standard exceeded	9	3	2
Number of days national standard (1-hr/8-hr) exceeded	0/6	0/2	0/0
Respirable Particulate Matter (PM_{10})			
Maximum daily concentration (National/State, µg/m³)	53.0/52.0	49.0/47.0	36.0/37.0
Number of days state standard exceeded	2	0	0
Number of days national standard exceeded	0	0	0
Redding-Health Department Roof Air Monitoring Station			
Fine Particulate Matter ($PM_{2.5}$)			
Maximum 24-hour concentration (National/State, µg/m³)	34.0/34.0	26.0/26.0	20.0/20.0
Number of days national standard exceeded	0	0	0

Source: ARB 2006
Notes:
µg/m³ Micrograms per Cubic Meter
ppm Parts per Million

TOXIC AIR CONTAMINANTS

Federal

Title III of the CAA requires the U.S. EPA to promulgate national emissions standards for hazardous air pollutants (NESHAP) for certain categories of sources that emit one or more pollutants identified as HAPs. Emission standards may be different between "major sources" and "area sources" of TACs. (Major sources are defined as stationary sources with potential to emit more than 10 tons per year [tpy] of any TAC or more than 25 tpy of any combination of TACs; all other sources are considered area sources.) The emission standards are to be promulgated in two phases. In the first phase (1992-2000), EPA developed technology-based emission standards designed to produce the maximum

emission reduction achievable. These standards are generally referred to as requiring maximum achievable control technology. For area sources, the standards may be different, based on generally available control technology. In the second phase (2001-2008), EPA is required to promulgate health risk-based emissions standards where such standards are deemed necessary to address risks remaining after implementation of the technology-based NESHAP standards.

State of California

The Tanner Toxics Act (Assembly Bill 1807)

The Tanner Toxics Act established the California toxic air contaminant control program (Assembly Bill [AB] 1807, California Health and Safety Code Section 39666 *et seq*.) to identify and control TACs. Under the Tanner Toxics Act, ARB is required to identify a substance as a TAC based on the review of the scientific data and the recommendations by both the California Office of Environmental and Health Hazard Assessment (OEHHA) and the Scientific Review Panel. After designation, ARB investigates appropriate measures to limit emissions of the TACs. These measures may include emission limitations, control technologies, operation and maintenance requirements, closed system engineering, cost, or substitution of compounds. ARB then prepares a report on the appropriate degree of regulation and adopts air toxics control measures. These control measures are the minimum regulations that must be imposed by each of the local air districts in the form of regulations. Districts must adopt rules that are at least as stringent as state rules.

Air Toxics "Hot Spots" Information and Assessment Act

The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588) is a state law enacted in 1987. The law requires certain facilities to submit information regarding emissions of more than 550 TACs to their local air pollution control districts. The act addresses public concerns that emissions from individual facilities might cause local concentration of air toxics "hot spots" at a level where individuals may be exposed to an excess risk of adverse health effects. The program requires facilities to notify all exposed persons if it is determined that there is a significant health risk. AB 2588 was amended in 1993 by Senate Bill (SB) 1731, Facility Toxic Air Contaminant Risk Reduction Audit and Plan. In accordance with SB 1731, local air districts are required to establish a program to reduce risks from existing facilities that are deemed to pose a significant health risk.

4.4.4 THRESHOLDS OF SIGNIFICANCE

The AQMD has adopted air quality thresholds for determination of impact significance for projects subject to CEQA review. These thresholds are consistent with the New Source Review Rule 2-1 adopted by the Air Pollution Control Board in 1993 as required by the CCAA (Shasta County 1998). The thresholds of significance are summarized in **Table 4.4-5**.

TABLE 4.4-5

SHASTA COUNTY THRESHOLDS OF SIGNIFICANCE

Shasta County Air Quality Thresholds	Emissions (lbs/Day)		
	NO_X	ROG	PM_{10}
Level "A" Thresholds	25	25	80
Level "B" Thresholds	137	137	137

Apply Standard Mitigation Measures (SMM) to all projects based on potential air quality impacts.

Apply SMM and appropriate Best Available Mitigation Measures (BAMM) when a project exceeds Level "A" thresholds. The appropriate type and number of BAMM applied to a project will be based on the unique characteristics of the project. BAMM will be selected from a list of measures kept updated by the Shasta County Planning Division (SCPD) and the Shasta County Air Quality Management District (AQMD).

Apply SMM, BAMM, and special BAMM (when project exceeds Level "B" thresholds) based on their emission reduction potential to lower project emissions below Level "B" thresholds. The AQMD will advise the SCPD of the efficiency of proposed emission measures as part of the effort to reduce project emissions below Level "B" thresholds.

If application of the above procedures results in reducing project emissions below Level "B" thresholds, the project can proceed with an environmental determination of a Mitigated Negative Declaration assuming other project impacts do not require more extensive environmental review.

If project emissions cannot be reduced to below Level "B" thresholds, emission offsets will be required. The SCPD may seek the assistance of the AQMD regarding other efforts and measures that could be used to reduce unmitigated emissions exceeding the 137 lbs. per day. If, after applying the emissions offsets, the project emissions still exceed the Level "B" threshold, an EIR will be required before the project can be considered for action by the reviewing authority.

Sources: Shasta County 1998

In addition to the above thresholds, the proposed project would have a significant impact on air quality if it would:

- violate any ambient air quality standard; or
- substantially contribute to an existing or projected violation of an ambient air quality standard; or
- expose sensitive receptors (i.e., individuals with respiratory diseases, the young, the elderly) to substantial pollutant concentrations; or
- expose members of the public to frequent objectionable odors; or if

- TACs would exceed or contribute to an exceedance of the action level for cancer risk (10 in a million) or a hazard index risk level of one or higher for the maximally exposed individual (MEI).

4.4.5 IMPACTS AND MITIGATION MEASURES

Impact 4.4.1 Estimated increases in onsite short-term construction-related emissions of NO_X, and PM_{10} would exceed applicable thresholds. This impact is considered ***potentially significant subject to mitigation*. [PSM]**

Construction activities are a source of short-term emissions that may have a substantial, temporary impact on local air quality. Short-term increases in emissions of regional criteria pollutants and their precursors are typically greatest during initial site preparation (e.g., land clearing, ground excavation, etc.), as this phase usually entails greater soil disturbance and the use of more large diesel-powered mobile equipment than other phases. Construction-generated emissions generally vary substantially from day to day, depending on the level of activity, the specific operations, and weather conditions.

Initial construction activities, prior to operation, would include grading of the processing area followed by installation of concrete footings and stationary equipment. Initial grading off the processing area is anticipated to take less than 2 days and would likely involve the use of one grader and one compactor. Following site compaction, footings will be prepared and concrete pads poured upon which to place the crusher equipment. This phase is anticipated to occur over an approximate one-week period and would likely involve the use of concrete and gravel trucks and front-end loaders. Once footings have been constructed, the crusher equipment and support facilities will be delivered to the site and set on the footings. Installation of the equipment is anticipated to occur over an approximate 3-day period and would require the use of a front-end loader and a truck crane to set the conveyor belts and stands. Paving of site access roads would also occur during this initial construction period. Equipment typically required for paving activities often include the use of a paver and a roller (AQMD 2004). All levees proposed as part of the project would be constructed, subsequent to the initial construction phase, with overburden derived from the Phase 1 mining area and concurrent with normal operational activities. The proposed project does not identify specific hours of day during which construction activities would occur.

Predicted short-term construction related emissions were calculated, based on the above described equipment requirements and include exhaust and fugitive emissions. Emissions were calculated based on fleet average equipment exhaust emission factors for year 2005, on-road vehicle exhaust emission factors derived from the Emfac2002 emissions model, and fugitive dust emission factors obtained from the U.S. EPA (U.S. EPA 1995). Because the schedule for paving has not yet been identified and to ensure a conservative analysis, emissions were calculated assuming that paving of the site access road would occur subsequent to completion of other onsite construction activities.

Short-term construction-generated emissions are summarized in **Table 4.4-6**. Depending on the specific activities conducted, uncontrolled emissions of NO_x would range from approximately 22 to 57 lbs/day. Emissions of NO_x were primarily associated with the operation of onsite diesel-powered off-road equipment. Emissions of PM_{10} would range from approximately 625 lbs/day to 1,036 lbs/day and were primarily associated with fugitive dust generated by vehicle travel on the site access road. Initial construction-generated emissions of PM_{10} would exceed the AQMD's recommended "Level B" significance threshold. As a result, this impact is considered ***potentially significant subject to mitigation***. **[PSM]**

TABLE 4.4-6

SUMMARY OF UNCONTROLLED CONSTRUCTION-GENERATED EMISSIONS[1]

Construction Phase	Emissions (lb/day)				
	Exhaust			Fugitive	Total
	ROG	NO_X	PM_{10}	PM_{10}	PM_{10}
Site Grading	4.0	57.1	1.9	622.9	624.8
Placement of Footings	1.6	21.8	0.7	1035.0	1035.7
Equipment Installation	2.2	29.4	0.9	690.0	690.9
Paving	7.3	28.5	0.9	1035.0	1035.9
AQMD Significance Thresholds (Level ~~A/~~B):	137	137	--	--	137
Exceeds Threshold?	No	Yes	--	--	Yes

[1] Calculated emissions include onsite and offsite exhaust emissions and fugitive dust emissions. To be conservative, calculations assume paving of the access road will follow equipment installation and that all construction phases will entail vehicle travel on an unpaved access road. Based on onsite equipment usage, as described in text., calculations assume 10 construction employee vehicle trips/day/phase average trip length of 10 miles. Phases involving the placement of footings and paving also assume 5 material truck trips/day and average trip length of 7.25 miles. Trip lengths were derived from the Burden2002 emissions inventory for Shasta County.

Refer to Appendix 4.4-1 for additional assumptions and emissions modeling.

Source: AMBIENT Air Quality & Noise Consulting 2006

Mitigation Measures:

MM 4.4.1(a): The applicant shall submit a construction dust mitigation plan to the AQMD for review and approval. The plan shall be deemed adequate and approved by the AQMD for mitigating onsite emissions of fugitive PM_{10} before implementation of the proposed project. This plan shall specify the methods used to control dust and particulate matter, demonstrate the availability of needed equipment and personnel, and identify a responsible individual who can authorize the implementation of additional measures, if needed. Dust control measures shall include

County-recommended Best Available Mitigation Measures (BAMM), including, but not limited to, the following:

1. All disturbed areas, including storage piles, that are not being actively used shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, or vegetative ground cover.

2. Alternatives to open burning of vegetative material on the project site shall be used by the project applicant unless otherwise deemed infeasible by the AQMD. Among suitable alternatives are chipping, mulching, or conversion to biomass fuel.

3. The applicant shall be responsible for ensuring that all adequate dust control measures are implemented in a timely and effective manner during all phases of project development and construction.

4. All material excavated, stockpiled, or graded shall be sufficiently watered to prevent fugitive dust from leaving property boundaries and causing a public nuisance or a violation of an ambient air standard. Watering shall occur at least twice daily with complete site coverage, preferably in the mid-morning and after work is completed each day.

5. All onsite unpaved roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.

6. Onsite vehicle speeds on unpaved surfaces shall be limited to 15 mph.

7. All land clearing, grading, earth moving or excavation activities on the project site shall be suspended when winds are expected to exceed 20 miles per hour.

8. All inactive portions of the development site shall be seeded and watered until a suitable grass cover is established. Seeding shall be with an approved native seed mix.

9. The applicant shall be responsible for applying Department of Public Works approved non-toxic soil stabilizers (according to manufacturers' specifications) to all inactive construction areas (previously graded areas which remain inactive for 96 hours), in accordance with the Shasta County Grading Ordinance.

10. When materials are transported offsite, all material shall be covered and effectively wetted to limit visible dust emissions, or at least 6 inches of freeboard space from the top of the container shall be maintained.

11. All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring.

12. The site access road shall be paved prior to conducting other onsite construction activities (e.g., grading of the processing area, construction of equipment footings, equipment installation).

Timing/Implementation: Prior to and during construction

Enforcement/Monitoring: Shasta County AQMD and Department of Resource Management

MM 4.4.1(b): To reduce short-term emissions from onsite mobile source construction equipment, (e.g., NO_x and PM_{10}), the applicant shall implement the following mitigation measures:

1. Idling time for all diesel-powered equipment shall be limited to no more than 5 minutes when not in use.

2. Heavy-duty (>50 horsepower) off-road vehicles to be used in the initial construction process, including owned, leased and subcontractor vehicles, shall achieve a minimum fleet-average 45 percent particulate reduction, compared to the most current ARB fleet average at the time of construction. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.

3. Onsite truck and equipment engines shall be maintained in good running condition, in accordance with manufacturer's specifications. Maintenance records demonstrating compliance shall be kept onsite by the applicant and shall be made available to AQMD upon request.

Timing/Implementation: Prior to and during construction operations

Enforcement/Monitoring: Shasta County AQMD and Department of Resource Management

Estimated construction-generated emissions, with mitigation, are summarized in **Table 4.4-7**. As depicted, mitigated emissions would be substantially reduced, but would still be anticipated to exceed the AQMD's significant thresholds for nearly all phases of initial construction. Reductions in PM_{10} were primarily associated with reduced vehicle travel on unpaved surfaces, associated with the mitigation requirement to pave the site access road prior to conducting other onsite construction activities (i.e., placement of footings,

equipment installation). Nonetheless, predicted short-term emissions of PM_{10} would still be anticipated to exceed AQMD significance thresholds. However, the County considers implementation of BAMM to be sufficient to reduce project-related impacts to a less-than-significant level. With implementation of recommended BAMM's, this impact is considered ***less than significant***. However, because emissions would continue to exceed the County's recommended threshold, the project's contribution to cumulative air quality impacts would still be considered significant. Refer to Impact 4.4.11 and 4.4.12 for discussion of cumulative air quality impacts.

TABLE 4.4-7

SUMMARY OF MITIGATED CONSTRUCTION-GENERATED EMISSIONS[1]

Construction Phase	Emissions (lb/day)				
	Exhaust			Fugitive	Total
	ROG	NO_X	PM_{10}	PM_{10}	PM_{10}
Site Grading	4.0	45.7	1.0	155.9	156.9
Placement of Footings	1.6	18.1	0.4	258.8	259.2
Equipment Installation	2.2	23.6	0.5	172.5	173.0
Paving	7.3	28.5	0.6	258.8	259.3
AQMD Significance Threshold (Level B):	137	137	--	--	137
Exceeds Thresholds?	No	No			Yes

[1] Calculated emissions include onsite and offsite exhaust emissions and fugitive dust emissions. Based on equipment and vehicle assumptions identified in Table 4.4-6. Assumes paving of the access road would precede other phases of construction.

Refer to Appendix 4.4-1 for addition assumptions and emissions modeling.

Source: AMBIENT Air Quality & Noise Consulting 2006

Impact 4.4.2 Operation of the proposed project would result in emissions of NO_x and PM_{10} that would exceed applicable thresholds. This impact is considered ***potentially significant subject to mitigation*. [PSM]**

As currently proposed, normal hours of operation for the proposed project would be from 7 a.m. to 4 p.m. Under maximum operating conditions, the proposed hours of operation would be from 6 a.m. to 6 p.m. Mining of the proposed site is anticipated to occur over an approximately 24 to 29 year period.

Long-term increases in regional criteria pollutants and ozone precursors attributable to the proposed mining operation would be associated primarily with the onsite generation of fugitive dust as a result of material handling and the onsite operation of stationary sources

of emissions (e.g., material crushers and screens), as well as mobile-source emissions associated with the onsite and offsite transport of materials. To reduce project-generated emissions, onsite equipment proposed as part of the project would be connected to the local electrical power grid. As a result, use of onsite diesel-powered electrical generators to power stationary equipment would not be required. The site access road, between Balls Ferry Road and the processing plant, would also be paved to reduce fugitive dust emissions generated by vehicle traffic and the track-out of material onto Balls Ferry Road.

The mining and reclamation activities of the proposed project would involve excavation, removal, and storage of topsoil and subsoil layers from the project site; removal of sand and gravel deposits; onsite transport of excavated materials; processing of excavated materials in the processing area; transport of materials from the processing area; subsequent grading and reapplication of blended topsoil and subsoil layers to mined areas for reclamation purposes. Operation of the processing plant, including the rock crushing plant, wash plant, conveyors, and power screen, would result in additional fugitive PM_{10} emissions. According to the project applicant, equipment would be relocated from the company's existing Cottonwood Sand & Gravel Plant, located in nearby Tehama County, to the project site, or would be of similar design and specifications.

Table 4.4-8 includes a summary of projected daily emissions associated with the proposed project. It is important to note that the emissions estimates presented in Table 4.4-8 represent maximum daily onsite emissions, assuming that reclamation, excavation, and processing activities are to occur simultaneously. Predicted daily emissions were calculated based, in part, on equipment emissions estimates derived from the Permit to Operate issued by the TCAPCD for the Cottonwood Creek Sand and Gravel Plant. Additional sources of emissions, including off-road equipment travel on unpaved surfaces, haul truck travel on paved and unpaved surfaces, and onsite material handling activities were also included in the emissions calculation. Emissions estimates presented in Table 4.4-8 represent the maximum estimated daily emissions, assuming maximum onsite activities and travel distances between the processing and proposed mining areas and assumes onsite reclamation activities would occur. Daily emissions would vary, by phase, depending on distance from the processing area.

As depicted in Table 4.4-8, the proposed project would result in combined daily emissions of approximately 20 lbs/day of ROG, 324 lbs/day or NO_x, and 590 lbs/day of PM_{10}. Emissions of NO_x are primarily associated with the operation of onsite off-road material haul trucks and material handling equipment. Mobile-source emissions occurring during future years are anticipated to decrease gradually due to continued improvements in mobile-source technology, fuel efficiency, and use of reformulated fuels. Emissions of PM_{10} were primarily associated with activities occurring within the processing area. As depicted in Table 4.4-8, emissions of NO_x and PM_{10} would exceed AQMD's "Level B" significance threshold.

The proposed project site is currently used for the production of agricultural row crops, which typically involves the occasional use of a tractor for tilling and plowing. These agricultural activities typically generate emissions of ROG, NO_x and PM_{10}. However, emissions associated with these activities are often sporadic and seasonal and do not

occur on a reoccurring daily basis. On days of the year when onsite agricultural activities would normally occur, the net increase in emissions attributable to the proposed project would likely be slightly less than the emissions noted in **Table 4.4-8**. Nonetheless, predicted net increases in emissions on these days would still be anticipated to exceed the AQMD's "Level B" significance thresholds. Because operational emissions attributable to the proposed project would exceed the AQMD's significance thresholds, this impact is considered ***potentially significant subject to mitigation.***

TABLE 4.4-8

MAXIMUM DAILY OPERATIONAL EMISSIONS

ACTIVITIES	EMISSIONS (lb/day)		
	ROG	NO_X	PM_{10}
Processing Activities [1]	5.86	87.53	254.3
Mining Activities [2]	6.92	105.89	89.07
Reclamation Activities [3]	3.24	45.22	26.00
On-road Vehicles (Onsite Travel) [4]	0.69	12.62	219.03
On-road Vehicles (Offsite Travel) [5]	2.77	72.47	1.73
Total Emissions	19.48	323.74	590.15
AQMD Significance Threshold (Level B):	*137*	*137*	*137*
Exceed AQMD Significance Thresholds?	No	Yes	Yes

[1] Based on emissions derived from the existing permit to operate issued by the TCAPCD for the Cottonwood Creek Sand & Gravel plant. Includes emissions generated by excavation equipment, material handling, storage piles, and unpaved surfaces. Stationary-source emissions include incorporation of BACT as identified by the TCAPCD for existing permit conditions, including the use of water spray bars on screens and transfer points. Assumes BACT required by the AQMD permitting requirements would achieve equivalent emission reductions.

[2] Assumes that processing, mining, and reclamation activities would occur simultaneously. Includes emissions generated by excavation equipment, material handling, and unpaved surfaces. For calculation of maximum daily emissions, estimated emissions associated with vehicle travel on unpaved haul roads are based on the maximum estimated haul distances between the existing processing area and proposed mining areas. Actual daily emissions will vary depending on various factors, including the actual location of mining within the proposed processing area, daily mining/processing rates, and the type of roadway base material and mitigation measures applied. Off-road equipment exhaust emissions are based on year 2005 fleet average estimates obtained from the ARB.

[3] Includes emissions generated by excavation equipment, material handling, and unpaved surfaces.

[4] Based on average on-site, one-way trip length of 1.5 miles. Assumes 64 one-way material haul trucks and 9 employee one-way trips per day.

[5] Based on average off-site, one-way trip length of 7.25 miles for Shasta County derived from the Burden2002 emissions model inventory; onsite one-way trip length of 1.5 miles. Assumes 64 one-way material haul trucks and 9 employee one-way trips per day.

Refer to Appendix 4.4-1 for detailed emissions calculations and assumptions.

Source: TCAPCD 2006; U.S. EPA AP-42 1995; AMBIENT Air Quality & Noise Consulting 2006

Mitigation Measures:

The following mitigation measure shall be implemented to reduce onsite PM_{10} emissions from fugitive sources:

MM 4.4.2(a): The applicant shall develop and implement a fugitive dust control plan (FDCP) for purpose of reducing project-related fugitive dust emissions associated with the long-term operation of the proposed project. At a minimum, the FDCP shall include those measures identified in Mitigation Measure 4.4-1(a), and shall be submitted to and approved by the AQMD before implementation of the proposed project.

Timing/Implementation: Prior to project implementation

Enforcement/Monitoring: Shasta County AQMD and Department of Resource Management

The following mitigation measures shall be implemented to reduce onsite mobile-source emissions from off-road equipment:

MM 4.4.2(b): Heavy-duty (>50 horsepower) off-road vehicles to be used at this facility, including owned, leased and subcontractor vehicles, shall achieve a minimum fleet-average 20 percent NO_x reduction, compared to the most current ARB fleet average at the time of construction. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.

Timing/Implementation: During mining operational period

Enforcement/Monitoring: Shasta County Department of Resource Management

MM 4.4.2(c): Off-road and on-road vehicles, including owned, leased and subcontractor vehicles, shall comply with all applicable rules and regulations, including applicable diesel-risk reduction program rules and air toxic control measures (ATCMs) for diesel particulate matter. The ARB is currently in the process of adopting rules pertaining to the use of off-highway and on-highway vehicles, including those used in the mining industry. These rules are anticipated to establish emission standards for new engines and to require the use of best-available control technologies, which includes use of alternative diesel fuels or retrofit technologies such as diesel oxidation catalysts or diesel particulate filters. In the event these rules are not in effect at the time the project is

implemented, off-road and on-road vehicles, including owned, leased and subcontractor vehicles shall be equipped with applicable ARB-certified diesel PM reduction technologies, including but not limited to diesel oxidation catalysts, diesel particulate filters, or use alternative diesel fuels. Prior to operation, the AQMD shall be consulted to determine applicable control measures to be implemented.

Timing/Implementation: During mining operational period

Enforcement/Monitoring: Shasta County Department of Resource Management.

MM 4.4.2(d): Off-road and on- road vehicles, including owned, leased and subcontractor vehicles, shall use the lowest sulfur-content fuel available.

Timing/Implementation: During mining operational period

Enforcement/Monitoring: Shasta County Department of Resource Management.

MM 4.4.2(e): The applicant shall comply with all AQMD rules and regulations, including AQMD Rule 2-1, New Source Review. Rule 2-1 requires, in part, that the applicant comply with measures to reduce operational emissions of PM_{10}, including but not limited to, the installation of spray bars on screens and transfer points. Rule 2-1 also requires the applicant to provide offsets for any increase in cumulative emissions, including emissions of NO_X and PM_{10}, associated with the operation of any new or modified emission sources that exceed 25 tons per year (137 lbs/day equivalent) (AQMD 2006).

Based on the analysis conducted for this project, annual emissions offsets to be provided by the applicant would total approximately 25.4 tons of NO_X and 3.4 tons of PM_{10}. Based on discussions with the AQMD, emission offsets may be obtained by purchase of emission credits or through implementation of AQMD-approved emission reduction measures.

Timing/Implementation: Prior to mining operations

Enforcement/Monitoring: Shasta County AQMD and Department of Resource Management

Implementation of Mitigation Measures MM 4.4.2(a) through MM 4.4.2(e) would result in substantial reductions in project-generated PM_{10}. The largest reduction in emissions of PM_{10} would be attributable to implementation of measures to reduce fugitive dust generated by material handling activities as well as vehicle travel on unpaved surfaces. In accordance with County requirements, offsets would be required for project-generated emissions of criteria pollutants or precursors from stationary or areas sources that exceed 25 tons per

year (137 lbs/day equivalent). Depending on the specific activities conducted, fugitive dust emissions would be reduced by approximately 75 percent overall. To a lesser extent, reductions of mobile-source PM_{10} from onsite equipment would also contribute to reductions in overall project-generated PM_{10}.

Measures have also been incorporated to reduce emissions, including emissions of ozone precursor pollutants and PM_{10}, generated by mobile sources and to reduce the project contribution to existing and projected regional nonattainment conditions. As previously discussed, quantification of emissions from off-road equipment were based on ARB's year 2005 fleet-average emission factors, which are based on a mix of older and newer equipment meeting various emission standards established by the U.S. EPA, phased in over a period of years. The phase-in of new emissions levels is commonly referred to as "tiers". Tier 1 standards, phased in from 1996 to 2000, set the first limits on emissions. The phasing in of Tier 2's more stringent standards began in 2001 and will conclude in 2006. Tier 3, emissions standards will be phased in between 2005 and 2008. Tier 1 through Tier 3 standards are primarily met through improvements in engine design. The most stringent Tier 4 standards will be phased-in between 2008 and 2015 and would require an additional 90-percent reduction in emissions of NO_x and PM_{10}, in comparison to Tier 3 levels. Tier 4 emission reductions will likely be achieved by implementation of aftermarket engine and fuel technologies, such as advanced exhaust gas recirculation (EGR) and particulate filters.

In meeting the new emissions requirements, diesel fuel is a critical part of the solution. The lower sulfur content of diesel fuel, such as low and ultra-low sulfur diesel fuel, produces fewer sulfate emissions, and most importantly enables use of emissions reduction equipment such as particulate traps and catalytic converters to lower emissions of PM_{10} and NO_x. Low and ultra-low sulfur diesel fuel has several beneficial effects. It inherently produces less particulate matter from combustion and enables advanced NO_x after treatment technology. Even at Tier 3, however, sulfur levels above 500 ppm can be an issue with certain NO_x reduction solutions, such as cooled EGR. At Tier 4, most NO_x after treatment will require ultra-low sulfur fuel (15 ppm). NO_x absorbers are not tolerant to fuel sulfur. PM after treatment (particulate filters) may not be permanently damaged by fuel sulfur, but the higher level of sulfur may render the PM filter less effective.

In addition to the above discussed improved exhaust and fuel standards, various other technologies and alternative fuels are also available that could further reduce mobile source emissions. Typical emissions reduction technologies and associated reductions for off-road equipment are summarized as follows:

- *Catalytic converter with a diesel oxidation catalyst (DOC).* A ceramic or metal monolith coated with a precious metal, a DOC oxidizes pollutants to produce carbon dioxide and water. DOCs are reported to remove more than 90 percent of CO, 70 to 85 percent of hydrocarbons, and 20 to 40 percent of particulate matter from the exhaust stream.

- *Selective catalytic reduction (SCR) system.* Designed to combat oxides of nitrogen, SCRs add aqueous urea to the exhaust stream, which then passes through a

catalytic converter where the catalyst removes up to 90 percent of NO_x from the exhaust.

- *Diesel particulate filters (DPFs).* Made of ceramic materials, silicon carbide, or high-temperature paper, DPFs have porous walls with holes measured in microns that trap particles larger than the holes. Some are strictly mechanical and must be replaced frequently. Others have catalysts that oxidize trapped particulates. Mechanical DPFs remove only particulates; catalytic DPFs can remove from the exhaust stream approximately 85 to 90 percent of particulate matter (MSHA 2005).

- *Biodiesel fuel*. Biodiesel is a clean burning alternative fuel, produced from domestic, renewable resources. Biodiesel contains no petroleum, but it can be blended with petroleum diesel to create a biodiesel blend. Biodiesel and biodiesel blends typically indicate the percentage of biodiesel present (e.g. B20 has 20-percent biodiesel fuel, whereas B100 is pure biodiesel). While use of biodiesel and biodiesel blends can reduce particulate matter emissions by approximately 10 to 48 percent, depending on the percentage of biodiesel used, biodiesel use can also result in increased NO_x emissions of up to 30 percent depending on engine and fuel characteristics (ARB 2006).

Depending on the equipment and technology employed, implementation of emission control technologies can reduce exhaust emissions of NO_x and PM_{10} from individual off-road equipment by up to approximately 90 percent. As noted above, some technologies are limited in terms of reducing both NO_x and PM_{10} emissions and use of multiple technologies on a single piece of equipment may not be feasible. Some emission reduction options, such as use of biodiesel, though resulting in reduced PM may actually increase emissions of NO_x.

Operational emissions attributable to the proposed project, with implementation of the above-discussed mitigation measures are summarized in **Table 4.4-9**. Based on the modeling conducted, implementation of the above mitigation measures would reduce emissions of NO_x to approximately 276 lbs/day. Emissions of PM_{10} would be reduced to approximately 155 lbs/day. As noted above, overall reductions in PM_{10} were primarily associated with measures intended to reduce fugitive dust; whereas, mitigated reductions in NO_x were primarily associated with measures intended to reduce exhaust emissions from onsite off-road equipment. In accordance with AQMD permitting requirements and Shasta County General Plan Policy AQ-2e, emissions offsets would be required for emissions in excess of 25 tons/year (137 lbs/day equivalent).

In accordance with the Shasta County General Plan, emissions offsets would be required prior to issuance of a permit to operate from the AQMD. Based on the analysis conducted for this project, annual emissions offsets to be provided by the applicant would total approximately 25.4 tons of NO_X and 3.4 tons of PM_{10}. (equivalent daily emissions offsets of 139 lbs/day and 40.4 lbs/day, respectively) Based on discussions with the AQMD, emission offsets may be obtained by purchase of emission credits or through implementation of AQMD-approved emission reduction measures, such as the paving of unpaved road

surfaces or the retrofit/repower of diesel-powered engines. With implementation of proposed mitigation measures and required emissions offsets, this impact is considered ***less than significant*. [LS]**

TABLE 4.4-9

DAILY OPERATIONAL EMISSIONS WITH MITIGATION*

ACTIVITIES	EMISSIONS (lb/day)		
	ROG	NO_X	PM_{10}
Processing Activities	5.86	70.03	65.86
Mining Activities	6.92	84.72	24.96
Reclamation Activities	3.24	36.17	7.78
On-road Vehicles (Onsite Travel)	0.69	12.62	55.03
On-road Vehicles (Offsite Travel)	2.77	72.47	1.73
Total Emissions	19.48	276.01	155.36
AQMD Significance Threshold (Level B):	*137*	*137*	*137*
Exceed AQMD Significance Thresholds?	No	Yes	Yes

*Does not include emissions offsets.
Source: AMBIENT Air Quality & Noise Consulting 2006

Impact 4.4.3 Vehicle trips attributable to the proposed project would generate carbon monoxide. This impact is considered ***less than significant*. [LS]**

The primary mobile-source criteria pollutant of local concern is carbon monoxide. Concentrations of CO are a direct function of vehicle idling time and, thus, traffic flow conditions. Transport of this criteria pollutant is extremely limited; CO disperses rapidly with distance from the source under normal meteorological conditions. Under certain meteorological conditions, however, CO concentrations close to congested intersections that experience high levels of traffic and elevated background concentrations may reach unhealthy levels, affecting nearby sensitive receptors (e.g., residents, school children, hospital patients, the elderly, etc.). Given the high traffic-volume potential, areas of high CO concentrations, or "hot spots", are typically associated with signalized intersections that are projected to operate at unacceptable levels of service (LOS E or worse). In such instances, localized CO modeling is typically recommended to determine potential impacts to nearby sensitive receptors (Caltrans 1997).

Based on the traffic analysis prepared for this project, signalized intersections in the project vicinity are projected to operate at LOS B, or better under "baseline-plus-project" conditions. Although the stop-controlled intersection of the I-5 northbound offramp at Bowman Road is projected to operate at LOS E under p.m. peak-hour conditions, the nearest receptor located in the vicinity of this intersection is a commercial use parking lot located in excess of 200 feet from the intersection. Given the relatively low traffic volumes at this stop-controlled intersection, low background concentrations, and distance to the nearest receptor, predicted CO concentrations at this intersection are not anticipated to exceed ambient air quality standards. In addition, traffic mitigation has been included in

the project to signalize this intersection. With mitigation, this intersection would improve LOS B, or better. For these reasons, the project's contribution of localized concentrations of mobile-source CO, under near-term conditions, would be considered ***less than significant*. [LS]**

Under future conditions, with project implementation, projected LOS at the signalized intersections of Deschutes Road and the I-5 SB Ramp, as well at SR-273 and Ox Yoke Road would deteriorate to LOS F under P.M. peak-hour conditions. Localized mobile-source CO concentrations at these intersections were modeled using the Caline4 computer model, based on traffic data obtained from the traffic analysis prepared for this project. To ensure a conservative analysis, background concentrations used in the model for future conditions were based on the maximum CO concentrations measured at the nearest monitoring station during the last three years of available data.

Predicted maximum 1-hour and 8-hour CO concentrations at these two signalized intersections are summarized in **Table 4.4-10**. As shown, predicted maximum 1-hour and 8-hour CO concentrations would not exceed the more stringent CAAQS. As a result, the project's contribution of localized concentrations of mobile-source CO, under future conditions, would be considered **less than significant**. **[LS]**

Mitigation Measures:

None Required.

TABLE 4.4-10

PREDICTED CO CONCENTRATIONS FUTURE CUMULATIVE CONDITIONS, WITH PROJECT

Intersection	Predicted Maximum Concentration (ppm) [1]	
	1-Hour	8-Hour
Deschutes Road & I-5 SB Offramp [2]	4.1	2.5
SR-273 & Ox Yoke Road	4.0	2.5
California Ambient Air Quality Standards:	20.0	9.0

1. Based on modeling conducted using the Caline4 computer model. Background concentrations are based on the maximum CO concentrations measured at the nearest stations during the last 3 years of available data. 8-hour contribution derived from modeled 1-hour contribution assuming a k-factor of 0.8. Based on year 2025 emission factors derived from Emfac2002 emission model for Shasta County
2. Includes NB & SB I-5 vehicle traffic.

Refer to Appendix 4.4-1 for modeling assumptions and model output files.

Source: AMBIENT Air Quality & Noise Consulting 2006

Impact 4.4.4 Implementation of the proposed project could result in increased PM_{10} concentrations at nearby sensitive receptors that would exceed state or federal standards. This impact is considered ***significant and unavoidable.*** **[SU]**

As discussed earlier in this section, localized concentrations of PM_{10} can result in adverse health effects to nearby sensitive receptors. Health effects associated with airborne particulates are typically associated with the respiratory system and have been attributable to increases in asthma-related occurrences. National and state ambient air quality standards for airborne particulates have been established to protect sensitive population groups from the effects of airborne particulates.

Dispersion modeling was conducted to determine localized impacts of PM_{10} at nearby receptors attributable to the proposed project. Dispersion modeling was conducted using the EPA-approved ISCST3 model, based on meteorological data obtained from the ARB for the Redding/AAF monitoring station. The Redding/AAF monitoring station is the closest meteorological monitoring station to the project site and is considered generally representative of local meteorological conditions in the project area. Modeling was conducted for each phase of the proposed project assuming compliance with AQMD requirements for the control of PM_{10}. To ensure a conservative analysis, predicted concentrations of PM_{10} were computed by adding the modeled operational emissions to the highest background concentrations measured at the Anderson monitoring station during the last four years of available data (i.e., 2002-2005). Operating hours for onsite activities were assumed to occur between the hours of 6 a.m. and 6 p.m. daily.

The maximum predicted 24-hour and annual PM_{10} concentrations modeled for proposed project conditions are summarized in **Table 4.4-11**. As indicated, predicted concentrations of PM_{10} attributable to the proposed project (without background concentrations) would not exceed either the State or National ambient air quality standards at the nearest sensitive receptor. However, when added to the background concentrations, predicted concentrations at the maximum exposed receptor would exceed the more conservative 24-hour and annual California ambient air quality PM_{10} standards.

Based on the modeling conducted, maximum PM_{10} concentrations attributable to the proposed project were found to occur at receptors located adjacent to and south (downwind) of the project site. The sources that dominated these impacts were associated with activities conducted within the processing area. To a somewhat lesser extent, emissions generated by offsite and onsite haul trucks transporting mined material within and near the facility and off-road material handling activities also contributed to increased concentrations of airborne PM_{10}. Predicted PM_{10} concentrations are anticipated to be highest during initial excavation of the mining areas, due to the anticipated high silt content of the overburden materials. Concentrations of PM_{10} at nearby receptors would likely decrease as mining increases in depth due to anticipated decreases in silt content, as well as increases in moisture content. Because the proposed project would contribute to increased concentrations of PM_{10} that would exceed applicable standards at nearby receptors, this impact is considered ***potentially significant subject to mitigation*. [PSM]**

TABLE 4.4-11

MAXIMUM PM_{10} CONCENTRATIONS AT NEARBY RECEPTORS

Averaging Period	Modeled Impacts ($\mu g/m^3$)[1]	Highest Background Concentration ($\mu g/m^3$)[2]	Maximum PM_{10} Impacts ($\mu g/m^3$)	Ambient Air Quality Standards ($\mu g/m^3$)	
				State	National
24-Hour	45.12	60	105.12	50	150
Annual	8.97	26	34.97	30	50

1. Based on highest predicted concentration at maximum exposed receptor. Assumes compliance with AQMD rules and regulations for the control of fugitive dust emissions. Includes emissions generated by excavation equipment, material handling, storage piles, and unpaved surfaces. Stationary-source emissions include incorporation of BACT in accordance with existing permit requirements, including the use of water spray bars on screens and transfer points.
2. Based on the highest measured concentration obtained from the Anderson air monitoring station during the last four years of available data.

Source: AMBIENT Air Quality & Noise Consulting 2006

Mitigation Measures:

Apply Mitigation Measure **MM 4.4.2(a)**.

Implementation of mitigation measure MM 4.4.2(a) would require implementation of best available mitigation measures in compliance with AQMD requirements. No additional measures have been identified that would reduce predicted localized concentrations of PM_{10} at nearby receptors to a less than significant level. As a result, this impact is considered ***significant and unavoidable***. **[SU]**

Impact 4.4.5 Project related activities would result in particulate deposition on nearby agricultural crops. The accumulation of dust on the leaves of nearby agricultural plants and orchards may result in reduced crop yields associated with decreased rates of plant photosynthesis and may affect the health of nearby sensitive plant species. This impact is considered ***potentially significant subject to mitigation***. **[PSM]**

Emissions of fugitive dust generated during mining may result in the transmission of dust to nearby agricultural crops and orchards. The nearest areas currently under agricultural production include orchards located adjacent to and south (downwind) of the proposed Phase 2 mining area.

The accumulation of dust on the leaves of nearby agricultural plants may result in reduced crop yields associated with decreased rates of plant photosynthesis. In addition, a repeated or long-term accumulation of dust on the leaves of plants may encourage the development or increased activity of spider mites (Britton 1998). Increased spider mite activity is most noticeable within approximately 100 feet downwind of dust-generating activities (Ballanti and Kasimatis 1997).

The nearest agricultural production crops consist of orchards located adjacent to the southern boundary of the project site and downwind of the proposed Phase 2 mining area. Given that these orchards are located within approximately 100 feet of the Phase 2 mining area, increased deposition of particulate matter on these nearby orchards may occur. As a result, this impact is considered ***potentially significant subject to mitigation.***

As discussed earlier in this report, the long-term and repeated deposition of particulate matter on plants may affect plant photosynthesis and promote the increased development of some parasites. The application of standard fugitive-dust control mitigation measures, such as the application of water or soil stabilizers, are typically considered to be effective in reducing dust-related impacts on plants (Britton 1998, Ballanti and Kasimatis 1997). Implementation of Mitigation Measure 4.4-1(a) would require implementation of "best available mitigation measures", which would further reduce emissions of PM_{10} and would result in overall reductions of PM_{10} of approximately 75 percent or more. In addition, based on the dispersion modeling conducted and assuming implementation of proposed mitigation measures, predicted concentrations of PM_{10} in the vicinity of these nearest orchards are not anticipated to exceed the national secondary (welfare-based) annual ambient air quality standards for PM_{10}. As previously discussed, these secondary standards have been established for the purpose of protecting human welfare, which includes damage to agricultural crops (EPA 2006[a]). For these reasons, implementation of the proposed mitigation measures would be considered sufficient to

reduce long-term air quality impacts to nearby agricultural crops to ***less than significant*** levels.

Mitigation Measures:

Apply Mitigation Measure **MM 4.4.2(a)**.

With implementation of mitigation measures MM 4.4.2(a) noted above, this impact is considered ***less than significant***. **[LS]**

Impact 4.4.6 Predicted airborne concentrations of diesel exhaust particulate matter would result in predicted cancer risks that would exceed applicable standards. This impact is considered ***significant and unavoidable.*** **[SU]**

Air dispersion modeling is used to assess the risk of predicted concentrations of diesel exhaust in the vicinity of sensitive receptors. Risk-assessment practices rely on exposure estimates derived from a hypothetical maximally exposed individual. A maximally exposed individual is a hypothetical person who might spend a 70-year lifetime living at the point of greatest deposition from a plume of contaminant emissions from an industrial facility.

Multiple factors determine whether the exposure of a receptor to TACs would exceed the recommended action level for cancer (10 in a million for the maximally exposed individual) or chronic and acute hazard index risk levels (one or higher for the maximally exposed individual). The dose subjected to the maximally exposed individual is primarily a function of the concentration of a substance or substances in the environment and the extent of exposure that person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher dose for the maximally exposed individual. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time.

Air dispersion modeling using the U.S. EPA-approved ISCST3 model was conducted for the purpose of determining predicted concentrations of diesel-exhaust PM (DPM) in the vicinity of the project site and nearby sensitive receptors. For modeling purposes, facility and on-road hauling operations were assumed to occur during the proposed operating hours of 6 a.m. and 6 p.m. at a maximum of six days per week. Based on the predicted maximum DPM concentrations, a screening level health risk assessment was conducted for the purpose of determining carcinogenic and chronic health risks to nearby receptors associated with emissions of DPM. The estimated risk values are based on ground level concentrations at the nearest maximum affected sensitive receptor, based on the maximum average annual concentrations predicted to occur during mining of the proposed phases, including the subphases of Phase 1 (i.e., Phases 1a-1d). Health risks for DPM were calculated based on a 70-year exposure duration, based on the inhalation pathway calculation methodology recommended by the California Office of Environmental Health Hazard Assessment (OEHHA). The methods used for calculating carcinogenic risk, hazard indices, and cancer burden were based on conservative emission factors and assumptions to ensure that the results do not understate potential health risks. As a result, the following assessment should be considered a “screening level” assessment in that it predicts the upper boundary of risk and may overestimate future conditions. Therefore, actual human-health risks would not be anticipated to exceed

predicted levels and may, in actuality, be less. This health-conservative 70-year screening level approach to assessing risk is consistent with guidance provided by the U.S. EPA, OEHHA, and ARB.

As previously discussed, estimated risk values for this project analysis are calculated for a 70-year period of exposure in accordance with industry-accepted guidance documents from EPA, OEHHA, and ARB. These values are used in comparison to the threshold of 10 in 1 million (10×10^{-6}) for determining whether the proposed project would result in a significant health risk impact related to DPM. It is important to note, however, that the proposed project active life would range from approximate 24 to 29 years, rather than 70 years. The potential health risk resulting from the project, therefore, is more realistically represented by using a 30-year period of exposure rather than the 70-year period. For informational purposes, therefore, the 30-year risk value was also calculated, in addition to the 70-year value. This EIR, however, uses the health-conservative industry standard of 70 years of exposure as the basis of its impact conclusions.

Based on the modeling conducted, the peak DPM concentrations were estimated to occur at residences located south (downwind) of the processing and Phase 2 mining areas. The maximum exposed individual (MEI) was located approximately 2,300 feet south of the processing area, along the southwest boundary of the project site and within approximately 1,200 feet of the proposed Phase 2 mining area. Predicted concentrations at nearby receptors were primarily affected by onsite off-road equipment use, which were substantially greater than emissions estimated for the on-road haul trucks operating onsite. Based on the modeling conducted, onsite off-road equipment contributed roughly 83 percent of the total onsite DPM emissions.

The maximum modeled annual average concentration at the MEI and the corresponding cancer risks resulting from the modeled exposure levels are presented in **Table 4.4-12**. As shown, concentrations of DPM at the MEI would result in incremental cancer risk levels greater than 10 in 1 million. However, it is important to note that these results are conservatively high, as the screening risk assessment method used in this analysis does not account for future, lower emissions rates for off-road mobile equipment resulting from technological advances anticipated to occur in future years. Nonetheless, predicted airborne concentrations of DPM would result in an increased cancer risk to occupants of nearby residential dwellings that would exceed applicable standards. Because the proposed project would result in increased cancer risk to nearby sensitive receptors, this impact is considered ***potentially significant subject to mitigation.***

TABLE 4.4-12

PREDICTED DIESEL EXHAUST PARTICULATE MATTER HEALTH RISKS NEAR THE FACILITY

Average Annual Concentration at MEI [1] ($\mu g/m^3$)	Chronic Hazard Quotient	Cancer Risk [2] (70 years)	Cancer Risk [2] (30 Years)
0.44	0.17	181	77
Significance Threshold	1	10	10
Exceeds Threshold?	No	Yes	Yes

1. Annual average DPM concentration calculated over the life of the proposed project, including all proposed phases, processing activities, off-road equipment, and onsite travel of on-road and off-road haul trucks. MEI= Maximum Exposed Individual. MEI was located approximately 2,300 feet downwind (south) of the processing area, along the southwestern property line of the project site, approximately 1,200 feet from the Phase 2 mining area.

2. Depicts number of occurrences per million.

Source: AMBIENT Air Quality & Noise Consulting 2006

Mitigation Measures:

Apply Mitigation Measure **MM 4.4.2(b)**.

Implementation of Mitigation Measure 4.4-2(b) would reduce equipment emissions by up to 90 percent, depending on the specific technology implemented. However, as previously discussed, the effectiveness and feasibility of the technology implemented would depend on various factors, including equipment type, as well as engine and operating characteristics. At the low-end, concentrations of DPM would be reduced by approximately 45 percent. However, it is important to note that recent improvements in emission reduction technologies, such as diesel particulate filters, have increased their feasibility for use on off-road equipment. As a result, actual reductions in DEPM from onsite equipment would likely approach or achieve an approximate 85- to 90-percent reduction.

Predicted cancer risks were modeled for two mitigation scenarios to present a range of possible reductions from a low of approximately 45 percent to a high of approximately 90 percent. For the reasons previously discussed in Impact 4.4.6, predicted cancer risks for each of these mitigation scenarios were also calculated for both a 70-year period of exposure, as well as a 30-year period of exposure. Mitigated cancer risks are summarized in **Table 4.4-13**.

TABLE 4.4-13

MITIGATED DIESEL-EXHAUST PARTICULATE MATTER CANCER RISKS AT MAXIMUM EXPOSED INDIVIDUAL

	45% DPM Reduction		90% DPM Reduction	
	Cancer Risk 1 (70 years)	Cancer Risk 1 (30 Years)	Cancer Risk 1 (70 years)	Cancer Risk 1 (30 Years)
MEI [2]	113	49	46	20
Significance Threshold	10	10	10	10
Exceeds Threshold?	Yes	Yes	Yes	Yes

1. Depicts number of occurrences per million. Based on annual average DPM concentration calculated over the life of the proposed project, including all proposed phases, processing activities, off-road equipment, and onsite travel of off-road and on-road haul trucks.
2. MEI= Maximum Exposed Individual. MEI was located approximately 2,300 feet downwind (south) of the processing area, along the southwestern property line of the project site, approximately 1,200 feet from the Phase 2 mining area.

Source: AMBIENT Air Quality & Noise Consulting 2006

As depicted in **Table 4.4-13**, predicted cancer-risks would continue to exceed applicable thresholds of significance, even if a 90-percent reduction in DPM from onsite equipment were to be achieved. Though the contribution from onsite off-road equipment would be substantially reduced, emissions associated with on-road haul trucks traveling on the project site would continue to contribute to increased concentrations at nearby receptors that would exceed the significance threshold. On-road vehicles are regulated by ARB and, as a result, no additional mitigation measures have been identified that would reduce this impact to a less-than-significant level.

To address DPM from on-road sources, ARB created the Diesel Advisory Committee, which consists of staff from ARB, EPA, state and local agencies, industry representatives, environmental groups, and concerned members of the public. With the assistance of the Diesel Advisory Committee and its subcommittees, ARB developed the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (ARB 2000a) and the *Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines* (ARB 2000b). ARB approved these plans on September 28, 2000.

ARB is currently in the process of implementing the control measures identified in the diesel particulate matter program. During this control measure phase, specific statewide regulations designed to further reduce emissions of diesel particulate matter from diesel-fueled engines and vehicles will be evaluated and developed. The goal of each regulation is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce emissions of diesel particulate matter. Although the diesel particulate matter program is ongoing, there are existing

regulations that mandate lower emissions of particulate matter from new on-road diesel-fueled vehicles. These regulations will require substantial reductions in particulate matter and other emissions from on-road heavy duty diesel-fueled engines beginning with the 2004 model year. Additionally, more stringent standards will apply to engines starting in the 2007 model year because of the adoption of federal standards at the state level, resulting in particulate matter emissions of less than 0.01 gram per brake horsepower hour (gm/bhp-hr) for these types of engines. Off-road vehicles will come under more stringent regulations beginning with the 2005 model year. ARB is currently working on proposed regulations to include a particulate matter reduction requirement, which would require particulate matter emissions to be less than 0.02 gm/bhp-hr for these types of engines. Currently, according to ARB, particulate matter emissions from heavy-duty diesel engines are on the average of approximately 0.1 gm/bhp-hr without controls. In comparison to the reductions achieved with implementation of the 2004 standards, implementation of the upcoming 2007 standards will result in up to an 85 percent reduction in DEPM emissions from large diesel-powered engines, with overall reductions in DEPM-related health risks of approximately 70 percent by 2010 (ARB 2006).

Because health risk is determined based on an extended period of exposure, typically 70 years for the estimation of cancer risk, the predicted health risk impacts attributable to emissions of diesel particulate matter, as presented in this report, could be further offset by reductions in particulate matter emissions resulting from implementation of future regulations on diesel engines. As a result, this impact is considered ***significant and unavoidable*** for the foreseeable future**. [SU]**

Impact 4.4.7 Implementation of the proposed project would result in increased haul truck traffic along area roadways that could exceed applicable cancer-risk thresholds at nearby sensitive receptors. This impact is considered ***significant and unavoidable*** **[SU].**

The proposed project would contribute to offsite emissions of diesel exhaust particulate matter concentrations at receptors located along proposed haul routes. Based on the traffic analysis prepared for this project, a large majority of the on-road trucks would access the project site along the portion of Balls Ferry Road that extends south from the project site to I-5. However, actual vehicle distribution patterns would likely vary, from day to day, depending on the origin and destination of the trucks. Sensitive receptors located along the proposed haul routes consist primarily of residential dwellings, which are located at varying distances from the roadway. The nearest residential dwellings are located within approximately 60 feet of the roadway edge.

To ensure a conservative analysis, predicted DPM concentrations along the haul route were modeled assuming a maximum of 64 haul truck trips (128 one-way trips). Annual-average concentrations and corresponding cancer risks were modeled at three locations assuming average setback distances from the roadway edge of 50, 100, and 150 feet. Modeled concentrations and estimated carcinogenic risks are summarized in **Table 4.4-14**.

TABLE 4.4-14

SUMMARY OF DIESEL EXHAUST PARTICULATE MATTER CANCER RISKS ALONG HAUL ROUTE

Receptor Type	Setback Distance from Roadway (Feet)	Number of Haul Truck Trips	Maximum Annual Average Concentration ($\mu g/m^3$)	Non-Cancer Hazard Index	Cancer Risk (70-year)	Cancer Risk (30-year)
Residential Dwelling	50	128	0.256	0.05	106	45
Residential Dwelling	100	128	0.167	0.03	69	30
Residential Dwelling	150	128	0.134	0.03	56	24
Significance Threshold				1	10	10
Exceeds Threshold?				No	Yes	Yes

Source: AMBIENT Air Quality & Noise Consulting 2006

As previously discussed, estimated risk values for this analysis were calculated for a 70-year period of exposure in accordance with industry-accepted guidance documents published by the EPA, OEHHA and ARB. These values are used in comparison to the threshold of 10 in 1 million (10×10^{-6}) for determining whether the proposed project would result in a significant health risk impact related to diesel exhaust. It is important to note, however, that the proposed mine's active life would range from approximately 24 to 28 years, rather than 70 years. The potential health risks resulting from the project, therefore, are more realistically represented by using a 30-year period of exposure rather than the 70-year period. For informational purposes, therefore, the 30-year risk value is shown in **Table 4.4-14** in addition to the 70-year value. This analysis, however, uses the health-conservative industry standard of 70 years of exposure as the basis of this impact conclusion.

As shown in **Table 4.4-14**, predicted cancer risks at receptors located within 150 feet of haul routes would exceed the cancer risk threshold of 10 in one million, assuming a maximum of 128 one-way haul truck trips. Predicted concentrations and corresponding cancer risks would decrease with corresponding reductions in haul truck trips. However, even with an approximate one-third reduction in haul truck trips (i.e., 42 one-way haul truck trips), predicted 70-year cancer risks within approximately 150 feet of the haul route would still be projected to exceed the cancer threshold of 10 in one million.

OEHHA has recommended an ambient concentration of 5 $\mu g/m^3$ as the chronic inhalation REL for diesel exhaust. (The REL is the concentration at or below which no adverse health effects are anticipated.) No inhalation REL for acute (i.e., short-term) effects attributable to DPM has been determined by OEHHA. As shown in **Table 4.4-14**, the estimated chronic

hazard indices at the maximally exposed receptors located along the haul routes would not be anticipated to exceed the applicable noncancer hazard index of one.

Because the proposed project would result in increased concentrations of DPM along proposed haul routes that would exceed the applicable cancer risk threshold, this impact is considered ***potentially significant subject to mitigation***.

Mitigation Measures:

Apply Mitigation Measures **MM 4.4.2(c)** and **MM 4.4.2(d)**.

Implementation of MM 4.4.2(c) and MM 4.4.2(d) would apply to company-owned, leased and subcontracted vehicles and would help to reduce emissions of DPM attributable to on-road haul trucks. However, it is anticipated that a majority of the haul trucks would not be company owned and, therefore, would not be subject to these mitigation measures. Emissions from these non-company-owned vehicles would be subject to emission standards developed and enforced by the ARB. The predicted health risk impacts attributable to emissions of diesel particulate matter, as presented in this report, could be further offset by reductions in particulate matter emissions resulting from implementation of future regulations on diesel engines to be implemented by the ARB (see preceding discussion for Impact 4.4.6). As a result, this impact is also considered ***significant and unavoidable*** for the foreseeable future. **[SU]**

Impact 4.4-8 Project related activities could result in exposure of sensitive receptors to airborne concentrations of asbestos fibers. This impact is considered ***less than significant***. **[LS]**

The proposed project is not located within an area mapped by the State of California as likely having an occurrence of asbestos-containing mineral deposits (CDC 2000). In addition, onsite geologic reconnaissance of the proposed project site did not identified any onsite deposits of asbestos containing aggregate (Kleinfelder 2005). Although the likelihood of asbestos-containing aggregate to be present on the site is considered minimal, future mining within these areas may uncover previously unidentified deposits of such aggregate. In these cases, all future mining activities would be required to comply with applicable AQMD rules and regulations pertaining to asbestos. Compliance with these rules and regulations (e.g. AQMD Rule 3-22) would prevent nearby sensitive receptors from being exposed to increased concentrations of asbestos in comparison to baseline conditions. Due to the minimal likelihood that asbestos-containing aggregate is present in the project area, and because current applicable AQMD rules and regulations would protect public health in the unlikely event asbestos is uncovered, this impact is considered ***less than significant***. **[LS]**

Mitigation Measures:

None Required.

Impact 4.4.9 Future mining activities may expose sensitive receptors to airborne concentrations of crystalline silica. This impact is considered ***potentially significant subject to mitigation*. [PSM]**

Because of its abundance in the earth, silica, in both its crystalline and noncrystalline states, is present in nearly all mining operations. It is in the host rock, in the ore being mined, as well as in what geologists call the overburden, the soil and surface material above the bedrock. Most ores are mined from deposits containing crystalline silica. The most common form of crystalline silica is quartz. The mineralogy of the deposit and, to some extent, the processing of the ore determines the quartz content of the final product. Sand and gravel consist mostly of quartz, whereas the quartz content of crushed stone will vary from region to region.

Prolonged and excessive exposure to crystalline silica dust in mining environments can cause silicosis, a noncancerous lung disease. During the 1980s, studies were conducted that suggested that crystalline silica also was a carcinogen. As a result of these findings, crystalline silica has been regulated under the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (HCS). Under the HCS, OSHA-regulated businesses that use materials containing 0.1 percent or more crystalline silica must follow federal guidelines concerning hazard communication and worker training. Although the HCS does not require that samples be analyzed for crystalline silica, mineral suppliers or OSHA-regulated businesses may choose to do so if they wish to show that they are exempt from the requirements of the HCS.

The Mine Safety and Health Administration (MSHA) has proposed an HCS similar to the OSHA standard. The proposal is still under review following a public comment period. California passed the Safe Drinking Water and Toxic Enforcement Act of 1986, which includes crystalline silica of respirable size on its list of carcinogens. California s Air Toxic Hot Spots Act and Air Quality Act have the potential to restrict the emissions of crystalline silica. The State of California has not yet identified a risk values for the evaluation of health risks associated with crystalline silica, although one is currently being considered for adoption.

Mining activities may result in emissions of crystalline silica. Because mining would occur in close proximity to nearby residences, increased concentrations of crystalline silica at these residences could occur. As a result, this impact is considered potentially significant.

Mitigation Measures:

MM 4.4.9 If a crystalline silica risk value is adopted by ARB during the life of the project, the applicant shall comply with the AB 2588 facility prioritization and health risk assessment requirements. In accordance with AQMD requirements implementation of mitigation measures would be required to ensure that health risks to sensitive receptors remain within established acceptable levels of risk.

Timing/Implementation: During mining operational period

Enforcement/Monitoring: Shasta County AQMD and Department of Resource Management

Implementation of the above recommended mitigation measures would ensure that associated health effects on nearby sensitive receptors remain at or below established standards for acceptable risk. Implementation of these measures would be sufficient to reduce this impact to a level that is ***less than significant***. **[LS]**

Impact 4.4.10 Project implementation may result in exposure of sensitive receptors to nuisance odors. This impact is considered ***less than significant*****. [LS]**

Implementation of the proposed project would not involve the operation of any major odor sources typically associated with gravel mining and processing facilities, such as asphalt batch plants. Minor sources of odors would include the operation of onsite diesel-powered mobile equipment. However, emissions from onsite mobile sources would occur over a large area, and typically disperse rapidly with increased distance from the source. For these reasons, occupants of the nearest residences, which are located in excess of 700 feet downwind of onsite mining areas, would not be anticipated to be exposed to reoccurring and detectable increases in odors. (It is also important to note that implementation of Mitigation Measure 4.4-2(b) would substantially reduce diesel-exhaust emissions, which would further minimize any potential for detectable increases in intermittent odors to occur at downwind receptors.) As a result, this impact is considered ***less than significant***. **[LS]**

Mitigation Measures:

None Required.

4.4.6 CUMULATIVE IMPACTS AND MITIGATION

Impact 4.4.11 The proposed project could contribute, on a cumulative basis, to increased emissions of ozone precursors and particulate matter, thereby exacerbating the existing exceedance of state ambient air quality standards for ozone and respirable particulate matter. This impact is considered ***significant and unavoidable*****. [SU]**

The proposed project would cause increases in regional criteria pollutants and precursors (ROG, NO_x, and PM_{10}) during construction and operation of the project (Impacts 4.4-1 and 4.4-2). Short-term emissions would result from construction activities, construction employee trips to and from the site, and operation of heavy machinery during grading. Long-term increases in emissions would be primarily attributable to the operation of onsite off-road equipment. Mitigation has been incorporated to address these impacts; however, they would remain significant and unavoidable. These are regional impacts, and could combine with impacts of projects within the region to produce a significant and unavoidable cumulative impact.

One alternative considered to offset emission impacts was to purchase emission credits through an emission credit program approved by the Shasta County Air District. These credits are limited as they are not owned by the County but privately owned and contingent upon various factors including the number of credits available and costs per emission credit. Without knowing how many emission credits are available it is not known if there are enough credits for sale to meet the air quality emission thresholds. In addition costs vary upon the type of emission credit purchased. Since the number of credits are unknown and owned privately, participation in the program might not reduce impacts, therefore this impact would remain significant and unavoidable.

The proposed project, in conjunction with other cumulative projects, would contribute to and exacerbate current non-attainment of state ambient air quality standards within the NSVAB. Project-generated emissions, together with emissions from existing and reasonably foreseeable future development, would cumulatively contribute to existing and projected exceedances of state ambient air quality standards for ozone (O_3) and particulate matter (PM_{10}) within Shasta County. This cumulative impact is considered ***significant and unavoidable***. **[SU]**

Impact 4.4.12 The proposed project and cumulative projects could combine to increase emission levels of mobile and fugitive source particulate matter at nearby sensitive receptors that would exceed applicable standards. This impact is considered ***significant and unavoidable*****. [SU]**

Localized emissions of crystalline silica would be considered less than significant, with mitigation incorporated (Impact 4.4-9). In addition, potential exposure to airborne asbestos fibers (Impact 4.4-8) and odors from onsite equipment exhaust (Impact 4.4-10) would not be anticipated to result in significant impact to nearby receptors. Because these less than significant impacts are localized impacts and because there are no other related projects in the immediate project area that would contribute to these localized concentrations, on a cumulative basis, the projects cumulative contribution to localized concentrations of these pollutants would be considered ***less than significant***.

As discussed in Impact 4.4-3, predicted mobile-source CO concentrations at primarily affected intersections, under future cumulative conditions, would not exceed applicable ambient air quality standards. In addition, Shasta County is currently designated attainment of federal and state ambient air quality standards for CO. As a result, the

project's cumulative contribution to localized concentrations of CO would be considered ***less than significant***.

Predicted localized PM_{10} concentrations from fugitive emission sources could exceed the state ambient air quality standards at some nearby residences (Impact 4.4-4), resulting in increased health risks to occupants of these dwellings. In addition, the accumulation of dust on the leaves of nearby agricultural plants and orchards could result in decreased crop yields and decreased rates of plant photosynthesis (Impact 4.4-5). Mitigation incorporated into the project would reduce the severity of these impacts, but the project's contribution, on a cumulative basis, would remain significant. The project's cumulative contribution to localized concentrations of PM_{10} would be considered ***significant and unavoidable***.

According to air dispersion modeling conducted for the proposed project, airborne concentrations of diesel exhaust particulate matter generated by onsite activities (Impact 4.4-6) and by offsite haul trucks (Impact 4.4-7) would result in increased cancer risk to nearby sensitive receptors at levels that would exceed applicable standards. Project-generated emissions could combine with emissions from other nearby stationary and area sources, such as truck traffic on I-5, to produce a cumulative impact that is ***significant and unavoidable***. **[SU]**

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GLOSSARY

Acute Health Effect: An adverse heath effect that occurs over a relatively short period of time, (e.g., minutes, or hours.)

Adverse Health Effect: A health effect from exposure to air contaminants that may range from relatively mild temporary conditions, such as eye or throat irritation, shortness of breath, or headaches to permanent and serious conditions, such as birth defects, cancer or damage to lungs, nerves, liver, heart, or other organs.

Air Basin: An area of the state, often comprising several counties, which is designated by the Air Resources Board (ARB) based on similar meteorological and geographical conditions, with consideration given to political boundary lines when practical. Using these criteria, the ARB has divided the state into 15 air basins. Santa Barbara County is located in the South Central Air Basin, along with San Luis Obispo and Ventura Counties.

Air District: A political body responsible for managing air quality on a regional or county basis. California is divided into 35 air districts. (See also air pollution control district).

Air Monitoring: Sampling for and measuring of pollutants present in the atmosphere.

Air Pollutant: Any foreign and/or natural substance that is discharged, released, or over propagated into the atmosphere that may result in adverse effects on humans, animal, vegetation and/or materials. Also known as an air contaminant. Examples include but are not limited to, smoke, charred paper, dust, soot, grime, carbon, fumes, gases, odors, particulate matter, acids, or any combination thereof.

Air Pollution: Degradation of air quality resulting from unwanted chemicals or other materials in the air.

Air Pollution Control District (APCD): This is the local agency that has authority to regulate stationary, indirect, and area sources of air pollution and governing air quality issues. The APCD proposes and adopts local air pollution rules, enforces those rules, responds to air pollution related complaints, issues permits to polluting sources, inventories sources of air pollution emissions.

Air Quality Attainment Plan (AQAP): The comprehensive document, required under the California Clean Air Act (Health and Safety Code Section 40910 et. seq.), which details the programs and control measures to be implemented for the purpose of reducing emissions. Emissions ultimately must be reduced to the extent that measured concentrations of pollutants in the air will not exceed California ambient air quality standards.

Air Toxics: A generic term referring to a harmful chemical or group of chemicals in the air. Typically, substances that are especially harmful to health, such as those considered under EPA's hazardous air pollutant program or California's AB 1807 toxic air contaminant program, are considered to be air toxics. Technically, any compound that is in the air and has the potential to produce adverse health effects is an air toxic.

Airborne Toxic Control Measure (ATCM): A type of control measure, adopted by the ARB (Health and Safety Code Section 39666 et seq.), which reduces emissions of toxic air contaminants from non-vehicular sources.

Alternate Fuels: Any fuel used for vehicular sources other than standard gasoline or diesel fuels. These include ethanol, methanol, compressed natural gas, liquid petroleum gas and electricity. Alternative fuels are cleaner burning and help meet ARB's mobile and stationary emission standards.

Ambient Air: The air that is in the troposphere and is subjected to meteorological and climatic change. Often used interchangeably with "outdoor" air.

Ambient Air Quality Standard: Health and welfare based standards established by the state or federal government for clean outdoor air that identify the maximum acceptable average concentrations of air pollutants during a specified period of time.

ARB (California Air Resources Board): The State's lead air quality agency, consisting of a nine-member Governor-appointed board. It is responsible for attainment and maintenance of the State and federal air quality standards, and is fully responsible for motor vehicle pollution control. It oversees county and regional air pollution management programs.

Area-Wide Source: Stationary sources of pollution (e.g., water heaters, gas furnaces, fireplaces, and residential wood stoves) that are typically associated with homes and non-industrial sources. The emissions from these sources in themselves don't emit a significant amount of emissions, but when considered collectively with other similar sources become significant. The CCAA requires districts to include area-wide sources in the development and implementation of the AQAPs.

Atmosphere: The gaseous mass or envelope surrounding the earth. From ground level up, the atmosphere is further subdivided into the troposphere, stratosphere, mesosphere, and the thermosphere. Where air pollutants are emitted into a building not designed specifically as a piece of air pollution control equipment, such emission into the building shall be considered an emission into the atmosphere.

Attainment: Achievement of air quality standards.

Attainment Area: A geographic area which is in compliance with the National and/or California Ambient Air Quality Standards (NAAQS OR CAAQS) for a criteria pollutant under the Federal Clean Air Act or California Clean Air Act.

Attainment Plan: In general, a plan that details the emission reducing control measures and their implementation schedule necessary to attain air quality standards. In particular, the federal Clean Air Act requires attainment plans for nonattainment areas; these plans must meet several requirements, including requirements related to enforceability and adoption deadlines.

California Air Resources Board (ARB or CARB): The State's lead air quality agency consisting of an eleven-member board appointed by the Governor and several hundred employees. CARB is responsible for attainment and maintenance of the state and federal air quality standards, and is fully responsible for motor vehicle pollution control. CARB oversees county and regional air pollution management programs.

California Ambient Air Quality Standards (CAAQS): Standards set by the State of California for the maximum levels of air pollutants which can exist in the outdoor air without unacceptable effects on human health or the public welfare. These are more stringent than NAAQS.

California Clean Air Act of 1988 (CCAA): The amendments to the California Health and Safety Code resulting from the passage of Assembly Bill 2595. A California law passed in 1988 which provides the basis for air quality planning and regulation independent of federal regulations. A

major element of the Act is the requirement that local APCD's in violation of state ambient air quality standards must prepare attainment plans which identify air quality problems, causes, trends, and actions to be taken to attain and maintain California's air quality standards by the earliest practicable date.

California Environmental Protection Agency (Cal/EPA): A state government agency established in 1991 for unifying environmental activities related to public health protection in the State of California. There are six boards, departments, and offices under the organization of Cal/EPA including the California Air Resources Board (ARB), California Integrated Waste Management Board (IWMB), State Water Resources Control Board (SWRCB), and its nine Regional Water Quality Control Boards (DTSC), and Office of Environmental Health Hazard Assessment (OEHHA). The Cal/EPA boards, departments, and offices are directly responsible for implementing California environmental laws, or play a cooperative role with other regulatory agencies at regional, local, state and federal levels.

Chronic Health Effect: An adverse health effect which occurs over a relatively long period of time (e.g., months or years).

CO (Carbon Monoxide): A colorless, odorless gas resulting from the incomplete combustion of fossil fuels. Over 80% of the CO emitted in urban areas is contributed by motor vehicles. CO interferes with the blood's ability to carry oxygen to the body's tissues and results in numerous adverse health effects. CO is a criteria air pollutant. This is one of the six pollutants for which there is a national ambient standard.

Criteria Pollutants: Pollutants for which State or National Ambient Air Quality Standards exist. Criteria pollutants include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, sulfates, hydrogen sulfide, and particulate matter with a diameter of 10 microns or less.

Emission Factor: For stationary sources, the relationship between the amount of pollution produced and the amount of raw material processed or burned. For mobile sources, the relationship between the amount of pollution produced and the number of vehicle miles traveled. By using the emission factor of a pollutant and specific data regarding quantities of materials used by a given source, it is possible to compute emissions for the source. This approach is used in preparing an emissions inventory. EMFAC is the Emission Factor model used by ARB to calculate on-road mobile vehicle emissions. This model is part of ARB's overall on-road mobile source Mobile Vehicle Emission Inventory (MVEI) model.

Emission Offsets: A rule-making concept whereby approval of a new or modified stationary source of air pollution is conditional on the reduction of emissions from other existing stationary sources of air pollution. These reductions are required in addition to reductions required by BACT.

Environmental Protection Agency (EPA): The United States agency charged with setting policy and guidelines, and carrying out legal mandates for the protection of national interests in environmental resources.

Fugitive Dust: Dust particles which are introduced into the air through certain activities such as soil cultivation, off-road vehicles, or any vehicles operating on open fields or dirt roadways.

Hazardous Air Pollutant (HAP): An air pollutant listed under section 112 (b) of the Federal Clean Air Act as particularly hazardous to health. Emission sources of hazardous air pollutants are identified by USEPA, and emission standards are set accordingly.

Inversion: A layer of warm air in the atmosphere that prevents the rise of cooling air and traps pollutants beneath it.

Level of Service (LOS): A measure of the congested level on a highway facility or intersection based primarily on the comparison between the facility's capacity and the traffic volume it carries. Increasing levels of congestion are designated along a scale from A to F.

Mobile Source: Sources of air pollution such as automobiles, motorcycles, trucks, buses, off-road vehicles, boats and airplanes. (Contrast with stationary sources.)

NAAQS (National Ambient Air Quality Standards): Standards set by the federal EPA for the maximum levels of air pollutants which can exist in the outdoor air without unacceptable effects on human health or the public welfare. There are two types of NAAQS. Primary standards set limits to protect public health and secondary standards set limits to protect public welfare.

Nitrogen Oxides (Oxides of Nitrogen, NOx): A general term pertaining to compounds of nitric acid (NO), nitrogen dioxide (NO2), and other oxides of nitrogen. Nitrogen oxides are typically created during combustion processes, and are major contributors to smog formation and acid deposition. NO 2 is a criteria air pollutant, and may result in numerous adverse health effects; it absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility.

Nonattainment Area: A geographic area identified by the EPA and/or ARB as not meeting either NAAQS or CAAQS standards for a given pollutant.

Ozone: A strong smelling, pale blue, reactive toxic chemical gas consisting of three oxygen atoms. It is a product of the photochemical process involving the sun's energy. Ozone exists in the upper atmosphere ozone layer as well as at the earth's surface. Ozone at the earth's surface causes numerous adverse health effects and is a criteria air pollutant. It is a major component of smog.

Ozone Precursors: Chemicals such as hydrocarbons and oxides of nitrogen, occurring either naturally or as a result of human activities, which contribute to the formation of ozone, a major component of smog.

PM (Particulate Matter): Any material, except pure water, that exists in the solid or liquid state in the atmosphere, such as soot, dust, smoke, fumes, and aerosols. The size of particulate matter can vary from coarse, wind-blown dust particles to fine particle combustion products.

PM10 (Particulate Matter less than 10 microns): A major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the air sacs in the lungs where they may be deposited, resulting in adverse health effects. PM10 also causes visibility reduction and is a criteria air pollutant.

PM2.5 (Particulate Matter less than 2.5 microns): A major air pollutant consisting of tiny solid or liquid particles, generally soot and aerosols. The size of the particles (2.5 microns or smaller, about 0.0001 inches or less) allows them to easily enter the air sacs deep in the lungs where they may cause adverse health effects, as noted in several recent studies. PM2.5 also causes visibility reduction, but is not considered a criteria air pollutant at this time.

Reactive Organic Gases (ROG): A reactive chemical gas, composed of hydrocarbons, that react with nitrogen oxides and contribute to the formation of ozone. Also known as Volative Organic

Compounds (see VOC), or as Non-Methane Organic Compounds (NMOCs). The APCD considers all volatile compounds containing carbon ***except*** the following to be reactive: ethane, methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonates, methyl chloroform (TCA), methylene chloride (dichloromethane), CFC-11, CFC-12, HCFC-22, FC-23, CFC-113, CFC-114, CFC-115, HCFC-123, HCFC-134a, HCFC-141b, HCFC-142b.

Retrofit: Modification of a polluting device to make it less polluting.

Source: Something that produces air pollution emissions. Sources can be stationary or mobile, and anthropogenic or natural.

State Implementation Plan (SIP): A comprehensive plan prepared by each state, mandated by the federal Clean Air Act, which describes the existing air quality conditions and measures which will be taken to attain and maintain national ambient air quality standards.

Stationary Source: A non-mobile structure, building, facility, equipment installation or operation. Examples include oil production facilities, industrial coating operations, a rock crushing facility, and factories that use large amounts of solvents. A stationary source is classified as having a common production process, located on one or more adjacent properties, and is under the same or common ownership, operation, or control. (Contrast with mobile sources.)

Toxic Air Contaminant: An air pollutant, identified in regulation by the ARB, which may cause or contribute to an increase in deaths or in serious illness, or which may pose a present or potential hazard to human health. TACs are considered under a different regulatory process (California Health and Safety Code Section 39650 et seq.) than pollutants subject to CAAQS. Health effects due to TACs may occur at extremely low levels, and it is typically difficult to identify levels of exposure which do not produce adverse health effects. **United States**

Environmental Protection Agency (U.S. EPA): The federal agency charged with setting policy and guidelines, and carrying out legal mandates for the protection of national interests in environmental resources.

ACRONYMS

AQMD	Air Quality Management District
µgm/m3	micrograms/cubic meter
AAQS	Ambient air quality standards
ADT	Average daily trips
AQAP	Air Quality Attainment Plan
CAA	Clean Air Act (federal)
CAAA	Clean Air Act Amendments (federal)
CAAQS	California Ambient Air Quality Standards
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCAA	California Clean Air Act
CEQA	California Environmental Quality Act
CO	Carbon monoxide
EPA	Environmental Protection Agency
LOS	Level of service
mg/m3	milligrams/cubic meters
NAAQS	National Ambient Air Quality Standards
NO_2	Nitrogen dioxide
NO_X	Oxides of nitrogen
O_3	Ozone
PM	Particulate matter
$PM_{2.5}$	Particulate matter smaller than or equal to 2.5 microns
PM_{10}	Particulate matter smaller than or equal to ten microns
ppm	Parts per million
ROG	Reactive organic gases

SHAAQMD	Shasta County Air Quality Management District

This section addresses potential impacts of the project on biological resources. Biological resources include vegetation communities, wildlife communities, sensitive species and sensitive habitats. Information for this section is based upon a biological study conducted and prepared by North State Resources and included as **Appendix 4.5-1**. For a more complete discussion of water quality and toxic materials that may impact fisheries, including dioxins and furans, please refer to **Section 4.9, Hydrology and Water Quality** and **Section 4.12, Hazards and Hazardous Materials, respectively,** of this EIR.

4.5.1 SETTING

REGIONAL SETTING

The proposed project is located in Shasta County, California. This region of California is characterized as a dissected plain located between the Klamath Mountains to the north and west, and the northernmost extent of the Sierra Nevada foothills to the east. The plain is highly dissected by streams that drain toward the Sacramento River. Slopes range from nearly level to very gentle on remnants of depositional surfaces to moderately steep to steep in ravines (U.S. Department of Agriculture, 1997).

The climate of the region is characterized as hot and sub-humid and average precipitation is approximately 20 to 40 inches per year. Average annual temperature is about 60 to 62° F. (U.S. Department of Agriculture, 1997). Predominant upland vegetation communities in the region include blue oak woodland, oak-pine woodland, oak savannah, chaparral, and annual grassland. Aquatic environments in the region include seasonal and perennial streams that drain to the Sacramento River; vernal pools and other seasonal wetlands, freshwater marsh, groundwater seeps, and artificial ponds and reservoirs.

The California Natural Diversity Database (CNDDB) serves to inventory the locations of the state's rarest natural communities as well as individual species. A community is a mix of species interacting within a common physical environment. Communities respond to environmental changes and can be thought of as an indicator of the overall health of an ecosystem and its component species. Rare natural communities are those communities that are of highly limited distribution. Rare communities may or may not contain rare, threatened, or endangered species. The CNDDB ranks natural communities according to their rarity and endangerment within California. A search of the *Balls Ferry* and eight surrounding U. S. Geological Survey 7 ½ minute quad maps revealed five natural communities ranked as threatened or very threatened: Great Valley cottonwood riparian forest, Great Valley mixed riparian forest, Great Valley oak riparian forest, Great Valley willow scrub, and northern interior cypress forest.

4.5 BIOLOGICAL RESOURCES

LOCAL SETTING

The study area encompasses mainly flat to gently rolling river floodplain areas, woodlands, and agricultural fields. Elevations range between approximately 370 and 420 feet above mean sea level. Current land use consists of agriculture (row crops, field crops, and cattle grazing).

The discussion of biological resources that follows is based on a focused literature review, informal consultation with resource agencies, field studies, and observations made during site visits. The following descriptions of plant and wildlife communities follow the nomenclature used in *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer Jr. 1988). **Table 4.5-1** lists the total acreages of these communities. One rare natural community, Great Valley valley oak riparian forest, is known to occur in the study area (Figure 4.5-1).

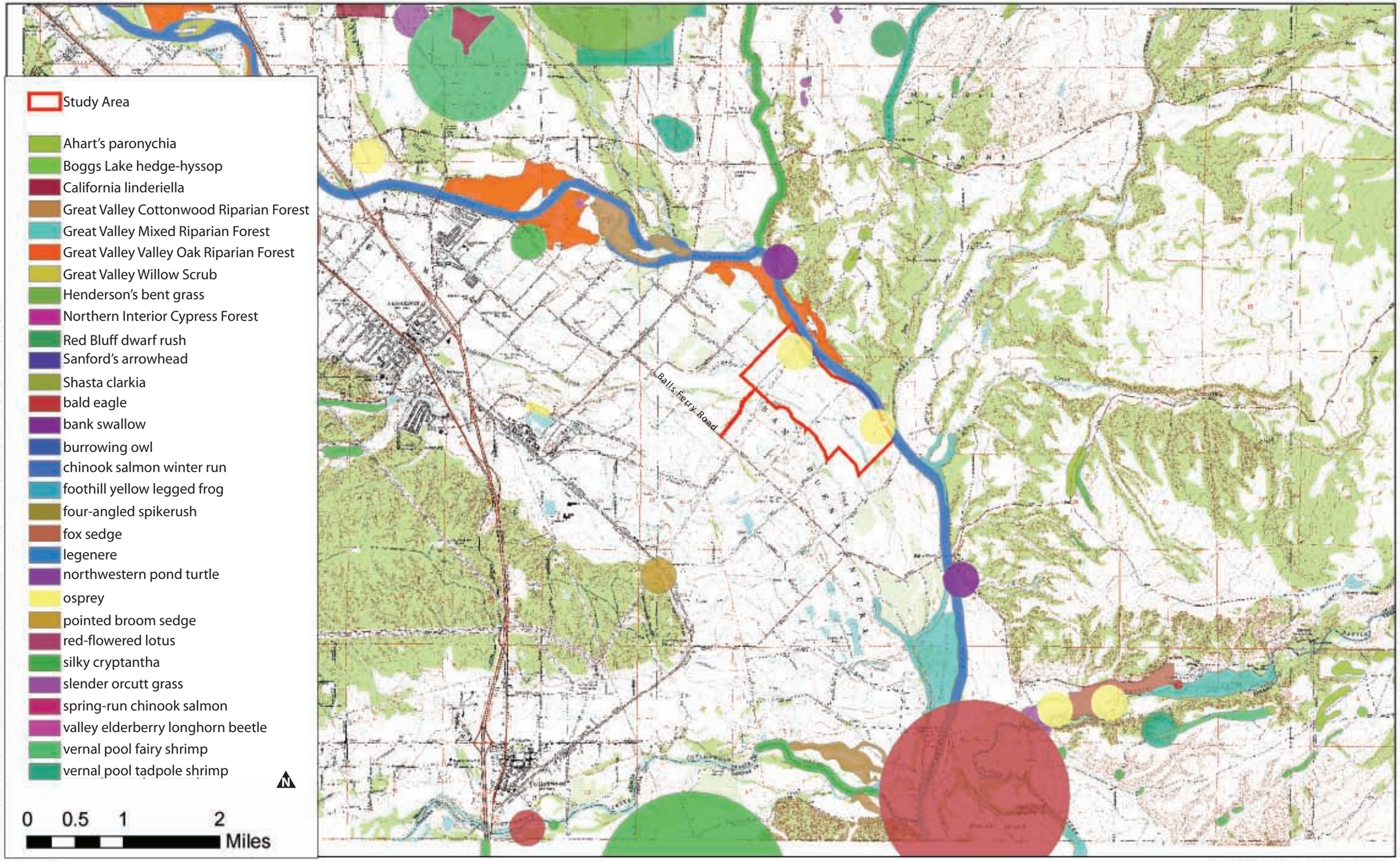
TABLE 4.5-1
PLANT COMMUNITIES OF THE SHASTA RANCH PROJECT

Vegetation Habitats	Approximate Acreage
Annual grassland	145.99
Valley oak woodland	59.29
Valley-foothill riparian	77.47
Fresh emergent wetland	8.16
Cropland	367.42
Urban	0.16
Riverine	0.84
TOTAL	**659.33**

Annual Grassland

Annual grassland habitat occurs mainly in the fallow agricultural fields and in an area located under a powerline easement on the western portion of the site. This habitat has a moderate to dense herbaceous layer dominated by annual grasses and forbs. Typical species include cheatgrass (*Bromus tectorum*), wild oat (*Avena fatua*), wall barley (*Hordeum murinum*), rose clover (*Trifolium hirtum*), plantain (*Plantago erecta*), prostrate knotweed (*Polygonum aviculare*), and dandelion (*Taraxacum* sp.).

Annual grasslands are productive wildlife habitat. Grassland bird species, such as the mourning dove (*Zenaida macroura*), savannah sparrow (*Passerculus sandwichensis*), and white-crowned sparrow (*Zonotrichia leucophrys*) as well as rodents, including the California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), and deer mouse (*Peromyscus maniculatus*), forage on the seed crop this



Source: Sharrah Dunlap Sawyer. Inc
03-11-06

FIGURE 4.5-1
SHASTA RANCH
SPECIES OF CONCERN

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community provides. These species, in turn, attract predators such as the gopher snake (*Pituophis melanoleucus*), American kestrel (*Falco sparverius*), red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), and coyote (*Canis latrans*). Other common grassland species include the western meadowlark (*Sturnella neglecta*) and black-tailed hare. Reptile species expected to occur here include the western fence lizard (*Sceloporus occidentalis*), western skink (*Eumeces skiltonianus*), western rattlesnake (*Crotalus viridis*), and yellow-bellied racer (*Coluber constrictor*).

Valley Oak Woodland

Valley oak woodlands occur scattered throughout the study area, along irrigation ditches, fence lines, and other areas not converted to agricultural uses. This habitat includes an open to moderately canopied woodland with an open to dense understory. The dominant tree species is valley oak (*Quercus lobata*) with occasional black walnuts (*Juglans hindsii*). Shrub species present include coffeeberry (*Rhamnus* sp.), pokeweed (*Phytolacca americana*), and Himalayan blackberry (*Rubus discolor*). A moderate to dense herbaceous layer also occurs and is dominated by annual grasses and forbs. Typical species include cheatgrass, wild oat, filaree (*Erodium botrys*), plantain, Santa Barbra sedge (*Carex barbarae*), and mugwort (*Artemesia douglasiana*).

The site's valley oak woodland provides habitat for many wildlife species that forage in nearby agricultural or grassland habitat and find cover or even nest in the large oaks. The acorns produced are also used as forage by a variety of species, including acorn woodpeckers (*Melanerpes formicivorus*), western scrub-jays (*Aphelocoma californica*), and black-tailed deer (*Odocoileus hemionus*). Amphibians and reptiles that make use of the downed tree branches under these oaks include the western fence lizard, gopher snake, and common kingsnake (*Lampropeltis getula*). Common birds of this habitat include house finches (*Carpodacus americanus*), western bluebirds (*Sialia mexicana*), and northern flickers (*Colaptes auratus*). Raptors such as the red-tailed hawk also forage here. California ground squirrels are common in this habitat and coyotes and badgers (*Taxidea taxus*) forage on the ground squirrels.

Valley Foothill Riparian

Valley foothill-riparian habitat occurs mainly in floodplain areas and along agricultural ditches and drainages throughout the study area. Vegetative cover is moderate to dense and is dominated by several tree and shrub species and various grasses and forbs. Typical tree species include Fremont cottonwood (*Populus fremontii*), Oregon ash (*Fraxinus latifolia*), box elder (*Acer negundo*), black willow (*Salix gooddingii*), and valley oak. Shrub species include Himalayan blackberry, mugwort, and pokeweed. Dominant grasses and forbs include cheatgrass, wild oat, Bermuda grass (*Cynodon dactylon*), Johnson grass (*Sorghum halpense*), Santa Barbara sedge, pipevine (*Aristoelochia californica*), and teasel (*Dipsacus fullonum*).

Riparian communities are among the most important habitats for wildlife because of their high floristic and structural diversity, high biomass (and therefore high food abundance), and high water availability. In addition to providing breeding, foraging and roosting habitat for a diverse array of animals, riparian communities provide movement corridors for some species, connecting a variety of habitats throughout a region. Riparian habitat along the banks of the Sacramento River also functions to shade riverine aquatic habitat. Vegetation contributing to shaded riverine aquatic (SRA) habitat is considered to be extremely important for maintaining cooler water temperatures needed to sustain steelhead and salmon, especially in lower elevation areas.

The leaf litter, fallen tree branches, and logs associated with the riparian communities in the study area provide cover for a variety of reptiles and amphibians. Common bird species nesting and foraging in this habitat, primarily in the riparian tree canopy, include the chestnut-backed chickadee (*Poecile rufescens*), bushtit (*Psaltriparus minimus*), white-breasted nuthatch (*Sitta carolinensis*), and Nuttall's and downy woodpeckers (*Picoides nuttallii* and *Picoides pubescens* respectively). Other resident species, such as the spotted towhee (*Pipilo maculatus*) and song sparrow (*Melospiza melodia*), nest and forage on or very close to the ground, usually in dense vegetation. Several species of raptors including the red-shouldered hawk (*Buteo lineatus*), Cooper's hawk (*Accipiter cooperii*), and western screech-owl (*Otus kennicottii*) are also year-round residents of riparian communities. In addition to the permanent residents, numerous species of Neotropical migrants occur in this community from spring through fall, with many potentially breeding on the site, including the ash-throated flycatcher (*Myiarchus cinerascens*), olive-sided flycatcher (*Contopus cooperi*), and black-headed grosbeak (*Pheucticus melanoleucus*).

A variety of mammals also occur in riparian communities. Small mammals, such as the Botta's pocket gopher and deer mouse, may burrow or find refuge in dense grass or brushy thickets. Black-tailed deer frequently use riparian habitats, and predators, such as the raccoon (*Procyon lotor*) and long-tailed weasel (*Mustela frenata*) are attracted by the abundance of prey and cover. In addition, the taller trees provide daytime roosts for nocturnal species such as the raccoon (*Procyon lotor*) and Virginia opossum (*Didelphis virginiana*).

Fresh Emergent Wetland

Fresh emergent wetlands occur in several drainage and pond features in the study area. This habitat is characterized by moderate to dense patches of emergent and submergent wetland plant species with occasional open-water areas. Dominant species include broad-leaf cattail (*Typha latifolia*), hard-stem bulrush (*Scirpus acutus*), smartweed (*Polygonum* sp.), and water primrose (*Ludwigia peploides*).

Fresh emergent wetlands provide habitat for breeding and larval development of amphibians, such as the western toad (*Bufo boreas*), Pacific treefrog (*Hyla regilla*), and the non-native bullfrog (*Rana catesbeiana*), as well as for waterbirds, such as the green

heron (*Butorides striatus*), mallard (*Anas platyrhynchos*), and American coot (*Fulica americana*). The vegetation in these areas also provides roosting and nesting habitat for red-winged blackbirds (*Agelaius phoeniceus*).

Cropland (Irrigated Hayfield, Irrigated Row Crop, and Orchard)

Cropland at the site consists of irrigated hayfields, irrigated row crops, and orchard. Irrigated hayfield habitat occurs in the form of several large alfalfa (*Medicago sativa*) fields. These fields are intensively farmed and dominated by moderate to dense growth of alfalfa. Irrigated row crop habitat consists solely of a pumpkin field and orchard habitat consists of a small portion of a walnut orchard located at the northeast corner of the site.

A variety of birds and mammals utilize agricultural fields as foraging areas, including the red-tailed hawk, American kestrel, American crow, coyote, and house mouse (*Mus musculus*). Insectivorous species of birds and mammals, including Say's phoebes (*Sayornis saya*), western kingbirds (*Tyrannus verticalis*), cliff swallows (*Petrochelidon pyrrhonota*), barn swallows (*Hirundo rustica*), and Brazilian free-tailed bats (*Tadarida brasiliensis*), forage in the air column over agricultural areas. Several species nest within, or adjacent to, agricultural fields, including ring-necked pheasants (*Phasianus colchicus*), killdeer (*Charadrius vociferus*), mourning dove, red-winged blackbird, western meadowlark (*Sturnella magna*), Brewer's blackbird (*Euphagus cyanocephalus*), house finches (*Carpodacus mexicanus*), and lesser goldfinches (*Carduelis psaltria*). Reptiles found in agricultural areas in the region include western fence lizards and gopher snake.

Orchards provide limited habitat for wildlife species. The absence of an herbaceous understory deprives many species of food and cover and on-going maintenance operations may discourage others. Some species that are tolerant of human encroachment, however, can be quite abundant in such habitats, including northern flickers (*Colaptes auratus*), western scrub-jays, yellow-billed magpies (*Pica nuttalli*), American crows (*Corvus brachyrhynchos*), and American robins (*Turdus migratorius*).

Urban

Urban habitat consists of the general area surrounding the ranch residences and outbuildings. The wildlife species most often associated with urban areas are those that are most tolerant of periodic human disturbances, including several introduced species, such as the European starling (*Sturnus vulgaris*), rock dove (*Columba livia*), and house mouse. Native species that are able to use these habitats include the western fence lizard, American robin, Brewer's blackbird, northern mockingbird (*Mimus polyglottos*), mourning dove, house finch, California ground squirrel, black-tailed hare (*Lepus californicus*), and striped skunk (*Mephitis mephitis*). In addition, bats that forage in nearby habitats may make use of small cavities around the eaves of structures.

Riverine

The riverine habitats at the site include the frequently inundated floodplain areas adjacent to the Sacramento River and a free-flowing portion of Anderson Creek. The Sacramento River adjacent to the study area is highly suitable habitat for a number of resident and anadromous fish. Salmon and steelhead, including several federal and state-listed species, spawn and rear in abundance within the river reach adjacent to the study site. Anderson Creek provides potential habitat for several native and introduced fish species including the western mosquitofish (*Gambusia affinis*), sunfishes (Centrarchidae), three-spine stickleback (*Gasterosteus aculeatus*) and California roach (*Lavinia symmetricus*). Non-natal rearing by juvenile anadromous salmonids has also been documented in Anderson Creek (USFWS 1995). Amphibians and reptiles expected to occur here include the Pacific chorus frog and western toad. In addition, birds such as the mallard and belted kingfisher (*Ceryle alcyon*) may forage here.

4.5.2 SPECIAL-STATUS PLANT SPECIES

For the purposes of this evaluation, federally or state-listed plant species include vascular plants that are (1) listed as threatened or endangered under the federal Endangered Species Act (FESA) or the California Endangered Species Act (CESA) or (2) proposed for listing as threatened or endangered. In addition to federally and state-listed plant species, other special-status species considered in this analysis are (1) candidates for federal or state listing; (2) listed as rare under the California Native Plant Protection Act (California Fish and Game Code Section 1901); and/or (3) included on the California Native Plant Society (CNPS) List as 1A, 1B, or 2 (California Native Plant Society 2005).

LITERATURE REVIEW

On November 18, 2005 a list of federal special-status species with the potential to occur in the *Balls Ferry* USGS 7.5-minute quadrangle and Shasta County was electronically obtained from the U.S. Fish and Wildlife Service (USFWS) (**Appendix 4.5-2**). The USFWS list identified one federally-listed plant species (slender Orcutt grass [*Orcuttia tenuis*]) as being of potential concern in the *Balls Ferry* quad. Subsequently, a list of special-status plant species considered for analysis for the Shasta Ranch Project was compiled by performing searches of the CNDDB (**Appendix 4.5-3**) and the CNPS electronic inventory (**Appendix 4.5-4**), reviewing the aforementioned USFWS lists, conducting informal discussions with the USFWS and the California Department of Fish and Game (CDFG), and reviewing biological literature concerning the project region.

SITE SURVEY

Protocol-level botanical surveys were conducted on April 20 and 28, May 31, and June 8 2006. Protocol-level surveys were conducted in accordance with guidelines developed by CDFG (2000), with surveys conducted in the season when special-status plant species are most likely to be identifiable (i.e., the blooming period). Based on

database queries, consultation with resource agencies, and review of the USFWS species list and other pertinent literature, 14 special-status plant species were determined to have a reasonable potential to occur in the study area. **Table 4.5-2** lists the special-status plant species with the potential to occur, their current regulatory status and general habitat requirements. Only fox sedge (*Carex vulpinoidea*) was observed during the protocol-level botanical surveys. Fox sedge is described in more detail below. **Figure 4.5-2** shows the locations of special-status plant species recorded within or adjacent to the study area during recent surveys. The locations of CNDDB recorded occurrences are shown in **Figure 4.5-1**.

Fox Sedge (*Carex vulpinoidea*). Federal status: none; State status: none; CNPS status: List 2. Fox sedge is a perennial plant that occurs in wetland and riparian areas. In California, this species' range includes Butte, Shasta, Siskiyou, Tehama, and Trinity counties. Fox sedge was observed at several locations within the study area during the protocol-level botanical survey of the study area (**Figure 4.5-2**).

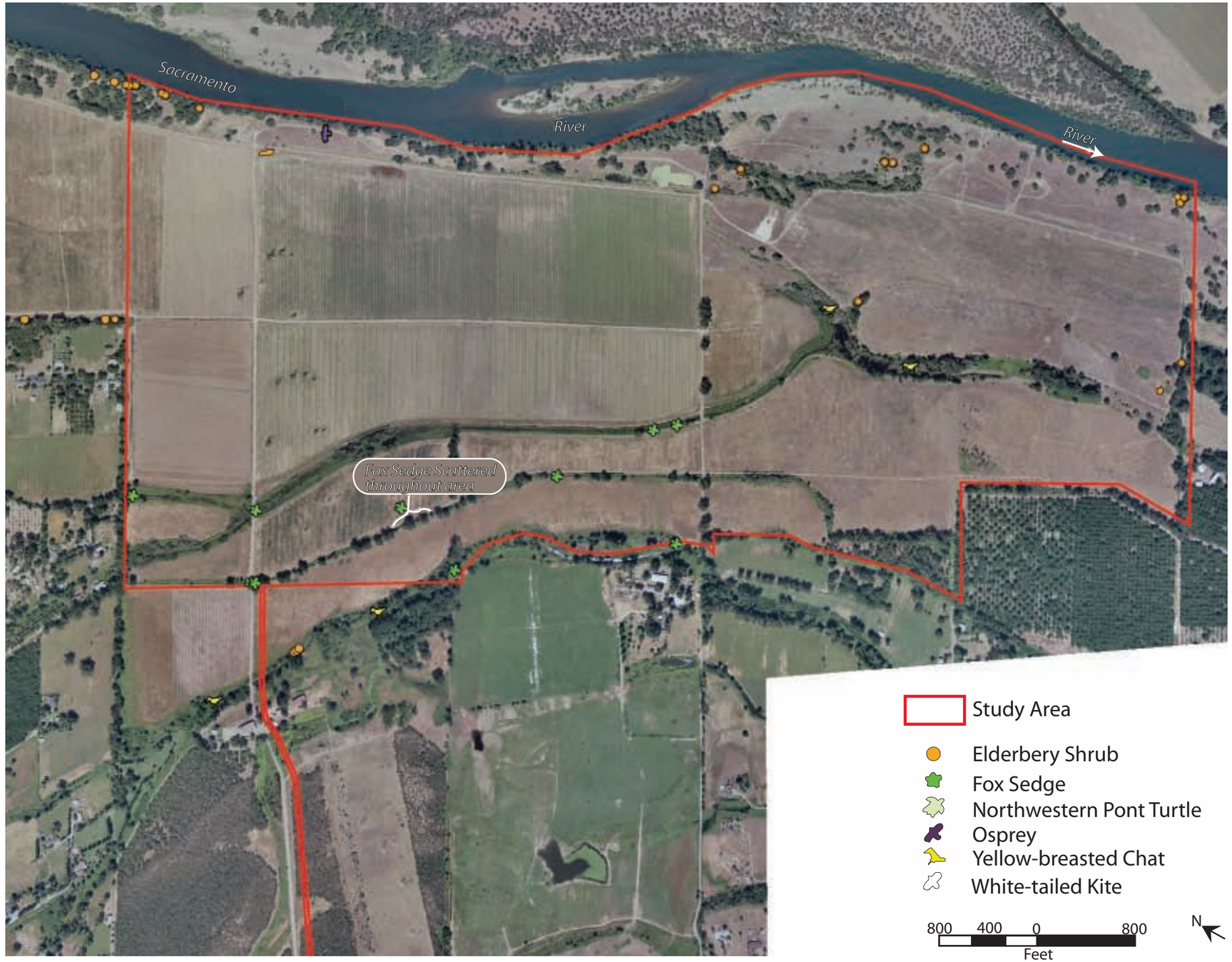
TABLE 4.5-2
SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR IN THE PROJECT AREA

Scientific Name	Common Name	Status[1] (Fed/State/ CNPS)	General Habitat Description	Comments
Federal or State Listed				
Gratiola heterosepala	Boggs Lake hedge-hyssop	--/E/1B	Marshes and swamps (lake margins), vernal pools. Blooms April – August.	Absent. Not observed during protocol-level surveys of the site in 2006.
Orcuttia tenuis	Slender Orcutt grass	T/E/1B	Vernal pools. Blooms May – October.	Absent. Suitable habitat is not present in the study area. Therefore, the species is judged to be absent.
Tuctoria greenei	Green's tuctoria	E/R/1B	Vernal pools. Blooms May – September.	Absent. Suitable habitat is not present in the study area. Therefore, the species is judged to be absent.
Other Special-Status Species				
Carex scoparia	Pointed broom sedge	--/--/2	Great Basin scrub; often occurs in wetlands. Bloom May.	Absent. Not observed during protocol-level surveys of the site in 2006.
Carex vulpinoidea	Fox sedge	--/--/2	Marshes, swamps, riparian woodland; 98-3,937 feet. Blooms May-June.	Present. Observed within the project study area during surveys.
Clarkia borealis ssp. *arida*	Shasta clarkia	--/--/1B	Cismontane woodland and lower montane coniferous forest; 1312-2624 feet. Blooms June – August.	Absent. Not observed during protocol-level surveys of the site in 2006.

Scientific Name	Common Name	Status[1] (Fed/State/ CNPS)	General Habitat Description	Comments
Cryptantha crinita	Silky cryptantha	--/--/1B	Valley and foothill grasslands, cismontane woodland, riparian forest; gravelly streambeds; 278-3,248 feet. Blooms April-May.	Absent. Not observed during protocol-level surveys of the site in 2006.
Eleocharis quadrangulata	Four-angled spikerush	--/--/2	Marshes and swamps (freshwater); lake and pond margins. Blooms May – September.	Absent. Not observed during protocol-level surveys of the site in 2006.
Juncus leiospermus ssp. *Leiospermus*	Red Bluff dwarf rush	--/--/1B	Meadows and seeps, valley and foothill grassland, vernal pools. Blooms March – May.	Absent. Not observed during protocol-level surveys of the site in 2006.
Legenere limosa	Legenere	--/--/1B	Vernal pools. Blooms April – June.	Absent. Suitable habitat is not present in the study area. Therefore, the species is judged to be absent.
Lotus rubriflorus	Red-flowered lotus	--/--/1B	Cismontane woodland, valley and foothill grassland. Blooms April – June.	Absent. Not observed during protocol-level surveys of the site in 2006.
Paronychia ahartii	Ahart's paronychia	--/--/1B	Valley and foothill grassland, vernal pool, and cismontane woodland habitats; 98-1,673 feet. Blooms April-June.	Absent. Not observed during protocol-level surveys of the site in 2006.

Scientific Name	Common Name	Status[1] (Fed/State/ CNPS)	General Habitat Description	Comments
Sagittaria sanfordii	Sanford's arrowhead	--/--/1B	Found in standing or slow-moving freshwater ponds, marshes, and ditches; 1-2,001 feet. Blooms late May-August.	Absent. Not observed during protocol-level surveys of the site in 2006.

[1]Status:
FED = Federal, ST = State,
Federal and State Codes: SC = Species of Concern, CNPS = California Native Plant Society Codes: List 1B = Rare, Threatened or Endangered in CA and elsewhere List 2 = Rare, Threatened or Endangered in CA but common elsewhere



Source: Sharrah Dunlap Sawyer. INC
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Figure 4.5-2
Incidential Special-Status Species Observations

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4.5.3 SPECIAL-STATUS WILDLIFE SPECIES

For the purposes of this evaluation, federally or state-listed wildlife species include taxa that (1) are listed as threatened or endangered under FESA or CESA; or (2) are proposed or petitioned for federal or state listing as threatened or endangered. In addition to federally and state-listed wildlife species, other special-status wildlife species considered in this analysis are (1) federal or state candidates for threatened or endangered status; and/or (2) identified by the CDFG as Species of Special Concern or California Fully Protected.

LITERATURE REVIEW

On November 18, 2005 a list of federal special-status animal species with the potential to occur in the *Balls Ferry* USGS 7.5-minute quadrangle and Shasta County was electronically obtained from the USFWS (**Appendix 4.5-2**). The USFWS list identified ten federally-listed species as being of potential concern in Shasta County: conservancy fairy shrimp (*Branchinecta conservation*), vernal pool fairy shrimp (*Branchinecta lynchi*), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), vernal pool tadpole shrimp (*Lepidurus packardi*), delta smelt (*Hypomesus transpacificus*), Central Valley steelhead (*Oncorhynchus mykiss*), Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha*), Sacramento River winter-run Chinook salmon, California red-legged frog (*Rana aurora draytonii*), bald eagle (*Haliaeetus leucocephalus*), and northern spotted owl (*Strix occidentalis caurina*). Based on database queries, consultation with resource agencies, and review of the USFWS species list and other pertinent literature, a list of 56 special-status animal species potentially occurring in the region was produced for further analysis.

SITE RECONNAISSANCE

NSR wildlife biologists conducted reconnaissance-level wildlife surveys of the study area in July 2004 and December 2005. Based on the information gathered during these surveys, the project location, and knowledge of the available habitat and species distributions, the study area was determined to be outside the range of 15 of the special-status species considered for analysis: the Trinity bristlesnail (*Monadenia setosa*), Shasta crayfish (*Pacifastacus fortis*), delta smelt (*Hypomesus transpacificus*), longfin smelt (*Spirinchus thaleichthys*), tailed frog (*Ascaphus truei*), Bell's sage sparrow (*Amphispiza belli belli*), black swift (*Cypseloides niger*), California spotted owl (*Strix occidentalis occidentalis*), ferruginous hawk (*Buteo regalis*), northern goshawk (*Accipiter gentiles*), northern spotted owl, western burrowing owl (*Athene cunicularia hypugaea*), white-faced ibis (*Phalacrocorax auratus*), Pacific fisher (*Martes pennanti pacifica*), and spotted bat (*Euderma maculatum*).

The remaining 41 special-status animal species were analyzed to determine their potential to occur in the Shasta Ranch study area. **Table 4.5-3** lists these species, their current regulatory status, whether suitable habitat is present, and whether they have

been observed in the study area. **Figure 4.5-2** shows the locations of special-status wildlife species recorded within or adjacent to the study area during recent surveys. The locations of CNDDB recorded occurrences are shown in **Figure 4.5-1**. Species potentially breeding in the study area are discussed in more detail below.

Federally Listed Species

Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*). Federal status: Threatened; State status: none. The USFWS formally listed the VELB as *threatened* on August 8, 1980 (45 FR 52803 52807). Critical Habitat was also designated at this time (45 FR 52803 52807). Changed land use in the riverside habitats to which it is restricted is the primary threat to this beetle.

The valley elderberry longhorn beetle is a member of the family Cerambidae. It is a medium-sized beetle approximately 0.5 to 1.0 inch long with a cylindrical body and long antennae. The 'dimorphus' in its name refers to the fact that males and females have different coloration. The forewings of males are primarily red with dark green spots whereas the forewings of females are dark metallic green with red margins.

The valley elderberry longhorn beetle life cycle is intimately connected to its habitat, elderberry (*Sambucus mexicana* or *Sambucus racemosa* var. *microbotrys*). Following mating, the female lays her eggs in crevices in the elderberry bark. Upon hatching (after about 10 days), the larvae bore into the pith of the shrub and feed inside stems larger than 1 inch in diameter for 1 to 2 years until they mature. They emerge as adults during the spring via exit holes chewed through the bark. The adult beetles feed on the elderberry foliage until they mate, completing the cycle. Adults are active from March to June.

The VELB is an insect endemic to the Central Valley of California that inhabits riparian and associated upland habitats where elderberry, its host plant, grows. Specifically, its range includes the upper Sacramento Valley to the central San Joaquin Valley (U.S. Fish and Wildlife Service 1991). The beetle's habitat consists of riparian forests whose dominant plant species include cottonwood, sycamore, valley oak, and willow, with an understory of elderberry shrubs (U.S. Fish and Wildlife Service 1991). Blue elderberry shrubs in the Central Valley with basal stem diameters larger than 1 inch are considered by the USFWS as potential VELB habitat.

Protocol-level surveys in 2004 (North State Resources 2005) found no evidence of valley elderberry longhorn beetles on the site. However, suitable habitat, blue elderberry shrubs, is known to occur in several locations (**Figure 4.5-2**).

TABLE 4.5-3
SPECIAL-STATUS WILDLIFE SPECIES WITH POTENTIAL TO OCCUR IN THE PROJECT AREA

Common Name (Scientific Name)	Status[1] (Fed/State)	General Habitat Description	Likelihood of Occurrence in Study Area
Federal or State Listed Species			
Conservancy fairy shrimp (*Branchinecta conservation*)	E/--	Highly turbid, large vernal pools.	Absent. Suitable habitat is not present. Thus, this species is judged to be absent.
Vernal pool fairy shrimp (*Branchinecta lynchi*)	T/--	Vernal pool crustaceans live in vernal pools, swales, and ephemeral freshwater habitats. None are known to occur in riverine waters or marine waters.	Absent. Suitable habitat is not present. Thus, this species is judged to be absent.
Vernal pool tadpole shrimp (*Lepidurus packardi*)	E/--	Vernal pool crustaceans live in vernal pools, swales, and ephemeral freshwater habitats. None are known to occur in riverine waters or marine waters.	Absent. Suitable habitat is not present. Thus, this species is judged to be absent.
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	T/--	Elderberry shrubs associated with riparian forests which occur along rivers and streams.	May be present. Elderberry shrubs are known to occur in the study area. However, no evidence of the species' presence was found during protocol surveys in 2004 (North State Resources 2005).
Central Valley spring-run ESU Chinook salmon (*Oncorhynchus tshawytscha*)	T/T	Spawn and rear in main-stem Sacramento River and suitable perennial tributaries. Require cool year-round water temperatures and deep pools for over-summering habitat. Spawn in riffles with gravel	Present. Known to occur in the Sacramento River, which borders the study area (California Department of Fish and Game 2005).

Common Name (Scientific Name)	Status[1] (Fed/State)	General Habitat Description	Likelihood of Occurrence in Study Area
		and cobble substrate.	
Central Valley steelhead ESU (*Oncorhynchus mykiss irideus*)	T/--	Spawn and rear in Sacramento River and its tributaries. Require cool, swift, shallow water; clean, loose gravel for spawning; and runs and suitable large pools in which to rear and over-summer.	Present. Known to occur in the Sacramento River, which borders the study area (California Department of Fish and Game 2005).
Green sturgeon (*Acipenser medirostris*)	T/SC	Spawn in the Sacramento River when temperatures range between 46-57°F. Preferred spawning substrate is large cobble, but can range from clean sand to bedrock.	Present. Known to occur in the Sacramento River, which borders the study area (U.S. Fish and Wildlife Service 1995).
Sacramento River winter-run ESU Chinook salmon (*Oncorhynchus tshawytscha*)	E/E	Spawn and rear in main-stem Sacramento River. Require cool year-round water temperatures, since spawning occurs during the summer. Requires deep pools and riffles, and clean gravel and cobble substrate to spawn.	Present. Known to occur in the Sacramento River, which borders the study area (California Department of Fish and Game 2005).
California red-legged frog *(Rana aurora draytonii)*	T/SC	Require aquatic habitat for breeding, also use a variety of other habitat types including riparian and upland areas. Adults utilize dense, shrubby or emergent vegetation associated with deep-water pools with fringes of cattails and dense stands of overhanging vegetation.	May be present. May occur in fresh emergent wetland habitats.

Common Name (Scientific Name)	Status[1] (Fed/State)	General Habitat Description	Likelihood of Occurrence in Study Area
American peregrine falcon *(Falco peregrinus anatum)*	D/E, FP	Forages in many habitats; requires cliffs for nesting.	Absent as breeder. Suitable nesting habitat is not present. May rarely occur in study area as a forager.
Bald eagle *(Haliaeetus leucocephalus)*	T/E, FP	Uncommon to common in riverine and open wetland habitats. Perches high in large, stoutly limbed trees, on snags or broken-topped trees or on rocks near water. Roosts communally in winter in dense, sheltered, remote conifer stands.	May be present. May nest on or immediately adjacent to the project area. Likely forages in the portion of the Sacramento River adjacent to the site.
Bank swallow *(Riparia riparia)*	--/T	Colonial nester on vertical banks or cliffs with fine-textured soils near water.	Absent as breeder. Potential nesting habitat is not present in the study area. Known to nest approximately ½ mile to the east on the Sacramento River (California Department of Fish and Game 2005). May occasionally forage over the site.
Greater sandhill crane *(Grus canadensis tabida)*	--/T, FP	Wetlands required for breeding; forage in nearby pastures, fields and meadows.	Absent as breeder. Project site is outside of the known breeding range (California Department of Fish and Game 2005). May rarely occur on site as a forager during winter migration.
Western yellow-billed cuckoo *(Coccyzus americanus occidentalis)*	C/E	Nesting habitat is cottonwood/willow riparian forest. Occurs only along the upper Sacramento Valley portion of the Sacramento River, the Feather River in Sutter Co., the south for the	Absent. Suitable dense riparian habitat is not present in or adjacent to the study area. Thus, this species is judged to be absent.

Common Name (Scientific Name)	Status[1] (Fed/State)	General Habitat Description	Likelihood of Occurrence in Study Area
		Kern River in Kern Co., and along the Santa Ana, Amargosa and lower Colorado rivers	
Willow flycatcher *(Empidonax traillii)*	--/E	Rare summer resident in wet meadow and montane riparian habitats at 2,000 to 8,000 feet elevation. No longer known to nest in Sacramento Valley but migrates through the north state region in spring and fall.	May be present. Suitable nesting habitat is not present. May occur as rare migrant.
Other Special-Status Species			
River lamprey *(Lampetra ayresi)*	--/SC	An anadromous fish found in rivers from San Francisco Bay watershed north to Alaska.	Present. Known to occur in the Sacramento River, which borders the study area (Moyle 2002).
Sacramento splittail *(Pogonichthys macrolepidotus)*	--/SC	Shallow, dead-end sloughs with submerged vegetation.	May be Present. This species is uncommon in the upper Sacramento River, which borders the study area, but is known to migrate past Red Bluff (Moyle 2002).
Central Valley fall/late fall-run ESU Chinook salmon *(Oncorhynchus tshawytscha)*	--/SC	Spawn and rear in main-stem Sacramento River and suitable perennial tributaries. *Requires cool water temperatures for spawning, egg-incubation and juvenile rearing*. Spawn in riffles with gravel and cobble.	Present. Known to occur in the Sacramento River, which borders the study area (USFWS 1995).
Foothill yellow-legged frog *(Rana boylii)*	--/SC	Rocky streams in a variety of habitats. Found in coast ranges.	Absent. Suitable habitat is not present. Thus, this species is judged to be absent.

Common Name (Scientific Name)	Status[1] (Fed/State)	General Habitat Description	Likelihood of Occurrence in Study Area
Western spadefoot toad *(Spea hammondii)*	--/SC	Grasslands with temporary pools.	Absent. Suitable habitat is not present. Thus, this species is judged to be absent.
Northwestern pond turtle *(Clemmys marmorata marmorata)*	--/SC	Slow water aquatic habitat with available basking sites. Hatchlings require shallow water with dense submergent or short emergent vegetation. Requires an upland oviposition site in the vicinity of the aquatic site.	Present. Riverine and fresh emergent wetland areas provide suitable habitat. Observed immediately adjacent to study area during reconnaissance survey (**Figure 4.5-2**).
California yellow warbler *(Dendroica petechia brewsteri)*	--/SC	Breeds in riparian woodlands, particularly those dominated by willows and cottonwoods.	May be present. Riparian woodlands provide suitable nesting and foraging habitat present.
Cooper's hawk *(Accipiter cooperii)*	--/SC	Nests in woodlands, forages in many habitats in winter and migration.	May be present. Suitable breeding and foraging habitat is present.
Double-crested cormorant *(Phalacrocorax auratus)*	--/SC	Inland lakes; fresh, salt and estuarine waters.	Absent as breeder. No known rookeries in project area (California Department of Fish and Game 2005). May occasionally occur as a forager.
Loggerhead shrike *(Lanius ludovicianus)*	--/SC	Forages in open grassland habitats throughout the Central Valley of California. Nests in shrubs and trees.	May be present. Suitable nesting and foraging habitat is present.

Common Name (Scientific Name)	Status[1] (Fed/State)	General Habitat Description	Likelihood of Occurrence in Study Area
Long-eared owl *(Asio otus)*	--/SC	Dense riparian and live oak thickets near meadow edges, and nearby woodland and forest habitats; also found in dense conifer stands at higher elevations.	Absent. Suitable habitat is not present. Thus, this species is judged to be absent.
Golden eagle *(Aquila chrysaetos)*	--/SC, FP	Breeds on cliffs or in large trees or electrical towers, forages in open areas.	Absent. Suitable habitat is not present. Thus, this species is judged to be absent.
Merlin *(Falco columbarius)*	--/SC	Frequents ocean shorelines, lake margins, and large, open river courses near tree stands for both nesting and wintering habitat. Does not breed in California.	Absent as breeder. May occur as a winter migrant.
Northern harrier *(Circus cyaneus)*	--/SC	Forages in marshes, grasslands, and ruderal habitats; nests in extensive marshes and wet fields.	Absent as breeder. Not known to breed in southern Shasta County. May occur as winter migrant.
Osprey *(Pandion haliaetus)*	--/SC	Ocean shorelines, lake margins and large, open river courses for both nesting and wintering habitat.	Present. Suitable nesting habitat is present due to the proximity of the Sacramento River. Individuals were observed in the study area during reconnaissance survey.
Prairie falcon *(Falco mexicanus)*	--/SC	Occurs in open habitats such as grasslands, desert scrub, rangelands, and croplands with nearby canyons or cliffs for nesting.	Absent as breeder. Suitable nesting habitat is not present. May occur as a rare forager.

Common Name (Scientific Name)	Status[1] (Fed/State)	General Habitat Description	Likelihood of Occurrence in Study Area
Purple martin *(Progne subis)*	--/SC	Breeding habitat includes old-growth, multi-layered, open forest and woodland with snags; forages over riparian areas, forest, and woodlands.	May be present. Suitable nesting and foraging habitat is present.
Sharp-shinned hawk *(Accipiter striatus)*	--/SC	Typically nests in dense conifer stands near water, winters in woodlands. Forages in many habitats in winter and migration.	Absent as breeder. Suitable nesting habitat is not present. May occur as a forager.
Tricolored blackbird *(Agelaius tricolor)*	--/SC	Breeds near fresh water in dense emergent vegetation.	May be present. May nest and/or forage in fresh emergent and riparian wetlands.
Vaux's swift *(Chaetura vauxi)*	--/SC	Prefers redwood and Douglas-fir habitats, nests in hollow trees and snags or, occasionally, in chimneys; forages aerially.	Absent as breeder. Suitable nesting habitat is not present. May forage over site during migration.
Yellow-breasted chat *(Icteria virens)*	--/SC	Breeds in riparian habitats having dense understory vegetation, such as willow and blackberry.	May be present. Riparian woodlands provide suitable nesting and foraging habitat is present.
White-tailed kite *(Elanus leucurus)*	--/FP	Nests in lowlands with dense oak or riparian stands near open areas, forages over grassland, meadows, cropland and marshes.	Present. Suitable habitat is present. Individual was observed in agricultural habitat adjacent to the study area during reconnaissance survey (**Figure 4.5-2**).

Common Name (Scientific Name)	Status[1] (Fed/State)	General Habitat Description	Likelihood of Occurrence in Study Area
Townsend's western big-eared bat *(Corynorhinus townsendii)*	--/SC	Roosts in colonies in caves, mines, tunnels, or buildings in mesic habitats. The species forages along habitat edges, gleaning insects from bushes and trees. Habitat must include appropriate roosting, maternity and hibernacula sites free from disturbance by humans.	Absent as breeder. Suitable breeding habitat is not present. May occur as a forager.
Pallid bat *(Antrozous pallidus)*	--/SC	Forages over many habitats; roosts in buildings, large oaks or redwoods, rocky outcrops and rocky crevices in mines and caves.	May be present. Suitable breeding and foraging habitat is present.
Spotted bat *(Euderma maculatum)*	--/SC	Ponderosa pine region of the western highlands. Prefers cracks/crevices of high cliffs and canyons for roosting.	Absent. Suitable habitat is not present. Thus, this species is judged to be absent.
Ringtail *(Bassariscus astutus)*	--/FP	Riparian habitats and brush stands in most forest and shrub habitats. Nests in rock recesses, hollow trees, logs, snags, abandoned burrows or woodrat nests.	May be present. Suitable breeding and foraging habitat is present.

[1]Status Codes: E = Endangered; T = Threatened; SC = Species of Concern; FP = California Full Protected species

Central Valley Spring-run ESU Chinook salmon (*Oncorhynchus tshawytscha*). Federal Status: Threatened; State Status: Threatened. Central Valley spring-run ESU Chinook salmon were federally-listed as a threatened species on September 16, 1999 (64 FR 50394). This designation was unchanged in a June 14, 2004 status review by NOAA Fisheries (69 FR 33102). The Central Valley spring-run Chinook salmon was also designated as state-listed threatened species under the California Endangered Species Act on February 5, 1999. On September 2, 2005 NOAA - Fisheries issued the final rule designating critical habitat for Central Valley spring-run ESU Chinook salmon, which became effective January 2, 2006 (Federal Register 70: 52488).

Spring-run Chinook salmon migrate upstream during the spring beginning in March, hold over in deep pools of the mainstem river and its large perennial tributaries, where fish can access cold headwaters, during the summer months, and spawn from mid-August through mid-October. Most of the spring run in the Sacramento River Basin ascend and spawn in the principal tributary streams (Mill, Deer, Clear, and Butte creeks, and the Feather River). Egg incubation occurs from mid-August through mid-January. Spring-run in the Sacramento River exhibit an ocean-type life history, emigrating as fry, sub-yearlings, and yearlings. Based on observations at Red Bluff Diversion Dam, spring-run emigration from the upper Sacramento River typically occurs from November through April (Vogel and Marine 1991; Johnson et al. 1992). Although some spring-run salmon may spawn in the Sacramento River between Red Bluff and Keswick Dam, it is thought that most have hybridized with fall-run salmon due to overlapping spawning periods, lack of spatial separation, and redd superimposition (CDFG 1998).

Central Valley spring-run ESU Chinook salmon populations in the Sacramento River and its tributaries have remained relatively depressed; however, some modest increases have occurred in their principal spawning tributaries such as Deer, Mill, and Butte Creeks (CDFG 2004). Spring-run Chinook salmon spawning in the mainstem Sacramento River and nearby tributaries such as Clear Creek and Battle Creek remains relatively depressed in recent years (CDFG 2004).

Designated critical habitat for Central Valley spring-run Chinook salmon includes the San Francisco Bay-Delta estuary, mainstem Sacramento River upstream to Keswick Dam and most of the Sacramento Valley's perennial tributaries with established spring salmon runs, including the Feather River and Feather River Hatchery. Designated critical habitat for Central Valley spring-run Chinook salmon includes all river reaches accessible to the species in the Sacramento and San Joaquin Rivers and their tributaries in California, which includes the Sacramento River adjacent to the project study area and Anderson Creek downstream of the study area. In 2005, NOAA-Fisheries published their final assessment of the Critical Habitat Analytical Review Teams (CHARTs) report for seven salmon and steelhead ESU's in California (70 FR 37160). Use of Anderson Creek by spring-run Chinook salmon was based on their use this intermittent stream during winter and early-spring months for non-natal rearing by juvenile spring-run Chinook. The CHART concluded Anderson Creek provides at least one habitat element that is important for juvenile non-natal rearing, which represents a unique life-history strategy that is essential for the conservation of this ESU because of its contribution to improved growth conditions and refuge from high water and catastrophic events. In addition,

the CHART concluded that certain intermittent streams would require special management efforts for flood control, residential and commercial development, agricultural management, and habitat restoration to protect and maintain the conservation value of these habitats for Central Valley spring-run ESU Chinook salmon.

Central Valley ESU Steelhead (*Oncorhynchus mykiss irideus*). Federal Status: Threatened; State Status: None. Central Valley ESU steelhead was federally-listed as a threatened species on March 19, 1998 (Federal Register 63: 13347). The abundance of naturally-produced steelhead in Central Valley streams remains significantly below historic levels of even as recent as 25 years ago based on the best available data (Hallock 1989; McEwan 2001). On September 2, 2005 NOAA - Fisheries issued the final rule designating critical habitat for Central Valley ESU steelhead (Federal Register 70: 52488).

Steelhead populations inhabiting the upper Sacramento River basin belong to the Central Valley ESU steelhead as defined by (Busby et al. 1997). These steelhead populations generally exhibit a life history pattern typical of a fall/winter-run. This species historically has provided a popular sport fishery throughout the Sacramento River and its tributaries; however, at present naturally produced steelhead remain at relatively low levels throughout their range in the Central Valley (Hallock 1989; McEwan 2001).

Steelhead trout adults may enter the Sacramento River and its tributaries from August through March, but peak migration generally occurs from October through February. Spawning begins in late December and can extend into early-April. Unlike Chinook salmon, steelhead trout do not die after spawning and may return to spawn several times during their life. Steelhead trout spawn in gravel and small cobble substrates usually associated with riffle and run habitat types. The upper mainstem Sacramento River is known to support suitable spawning and juvenile rearing habitat for steelhead. The Sacramento River in the vicinity of the project is utilized by steelhead during all life cycle stages, including spawning.

Designated critical habitat for Central Valley steelhead includes all river reaches accessible to steelhead in the Sacramento and San Joaquin Rivers and their tributaries in California, which includes the Sacramento River adjacent to the project study area. In 2005, NOAA-Fisheries published their final assessment of the Critical Habitat Analytical Review Teams (CHARTs) report for seven salmon and steelhead ESU's in California (Federal Register 70: 37160). Critical habitat for Central Valley ESU steelhead was not designated in Anderson Creek. CHART findings based on fish distribution and habitat use data compiled by the team concluded that Anderson Creek was not occupied by steelhead. However, lower reaches of Anderson Creek may still be used seasonally by juvenile steelhead.

Green Sturgeon (*Acipenser medirostris*). Federal Status: Threatened; State Status: Species of Special Concern. On April 6, 2006, NOAA-Fisheries listed as threatened green sturgeon that spawn in rivers south of the Eel River, California (southern distinct population segment, or DPS) (Federal Register 71: 17757).

Relatively little is known about green sturgeon in the Sacramento River compared to its relative the white sturgeon (*Acipenser transmontanus*). Adult green sturgeon generally migrate into rivers between late February and late July. Spawning takes place in deep, fast water from March to July when water temperatures range from 9°C to 16°C. Juveniles may rear in the river for 1 to 3 years before migrating to the estuary, primarily during the summer and fall. Once in the estuary young sturgeon adopt an oceanic foraging habit, which may last from 3 to 13 years before returning for their first spawning season (Moyle 2002).

Green sturgeon use streams, rivers, and estuarine habitat as well as marine waters during their lifecycle. Like the white sturgeon, green sturgeon prefer to spawn in lower reaches of large rivers with swift currents and large cobble; no nest is built, adults broadcast spawn into the water column. The fertilized eggs sink and attach to the bottom to hatch. Research indicates that water flow is one of the key determinants of larval survival (Moyle 2002).

Sacramento River winter-run ESU Chinook salmon (*Oncorhynchus tshawytscha*). Federal Status: Endangered; State Status: Endangered. The Sacramento River winter-run Chinook salmon was listed as an endangered species under the ESA on January 4, 1994 (59 FR 440) and its endangered status was reaffirmed on June 28, 2005 (70 FR 37169). The winter-run Chinook salmon was also designated as a state-listed endangered species under the California Endangered Species Act on September 22, 1989. NOAA - Fisheries published proposed critical habitat for winter-run on August 14, 1992, and the final rule was published on June 16, 1993 (58 FR 33212).

Historically, winter-run Chinook salmon spawned in the cold spring-fed headwaters of the upper Sacramento, Pit, McCloud, and Calaveras rivers (U.S. Fish and Wildlife Service 1995). Following construction of Shasta Dam, deep water releases during the summer months provided suitable cold water conditions for winter-run Chinook salmon spawning and rearing downstream of the dam. In response to these conditions, which increased total coldwater spawning habitat available to the winter run, the population increased. In 1969, winter-run size estimates exceeded 100,000 fish; however, since the early 1990s, run size estimates have ranged as high as 1,400 fish and dropped as low as about 200 fish in some years. The Sacramento River winter-run Chinook salmon population has exhibited a continuing recovery from extremely low adult returns observed in the early 1990's. Recent spawning populations range from about 7,000 to 8,000 (California Department of Fish and Game 2004); however, these levels remain well below draft recovery goals established for this run (National Marine Fisheries Service 2004).

Winter-run Chinook salmon begin their migration up the Sacramento River in December and may spawn from mid-April through mid-August with a peak in spawning occurring from late May through June (Vogel and Marine 1991; Moyle 2002). Winter-run Chinook

salmon spawning and juvenile rearing areas include the river reach adjacent to the project site (D. Killam, CDFG, unpublished data). The egg incubation period extends from mid-April through mid-September. Juvenile winter-run Chinook salmon are known to rear in suitable habitats of the upper Sacramento River, including that adjacent to the project site.

The critical habitat designation includes the Sacramento-San Joaquin Delta and the Sacramento River, within all accessible reaches, including that reach adjacent to the project study area. Constituent elements of anadromous salmonid critical habitat is considered to include seasonal timing and volume of stream flows sufficient to allow the fish to migrate, reproduce and rear; suitable streambed and bank conditions to support spawning, incubation, and larval development; suitable water quantity and quality and floodplain connectivity to form and maintain physical habitat to support juvenile development, growth, and mobility; natural cover such as shade, submerged and overhanging vegetation and large wood, log jams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks; and finally, freshwater migration corridors free of obstruction with water quantities and quality and natural cover that support juvenile and adult fish migration and survival (Federal Register 69: 71880).

River Lamprey (*Lampetra ayresi*). Federal Status: None; State Status: Species of Special Concern. River lamprey were petitioned for listing as threatened or endangered under the Endangered Species Act. On December 27, 2004 the USFWS Service determined that the river lamprey did not warrant listing (Federal Register 69: 77158). The river lamprey is listed as a State species of concern.

River lamprey are anadromous; like salmon they are born in freshwater streams, migrate to the ocean, and return to fresh water as mature adults to spawn. Also like the salmon, lampreys do not feed during their spawning migration. Mating pairs of lamprey construct a nest by digging together using rapid vibrations of their tails and by moving stones using their suction mouths. They enter streams from July to October; spawning takes place the following spring when water temperatures are between 10° and 17°C. They ascend rivers by swimming upstream briefly, then sucking to rocks and resting. Spawning takes place in low gradient reaches of streams, with gravel and sandy bottoms. Adults die within four days of spawning, after depositing about 10,000 to 100,000 extremely small eggs in their nest. The young hatch in 2-3 weeks and swim move to areas of low velocity water where sediments are soft and rich in dead plant materials. They quickly burrow into the muddy bottom where they filter the mud and water, eating microscopic plants (mostly diatoms) and animals.

Juvenile lamprey will stay burrowed in the mud for 3 to 6 years, moving only rarely to new areas. After a two-month metamorphosis, triggered by unknown factors, they metamorphose into an adult morphology averaging 4.5 inches long. Newly metamorphosed lampreys migrate downstream during winter and spring high flow events. Adult river lampreys are thought to spend from 2-12 months in the estuary or ocean before return to the rivers to spawn. River lamprey are known to occur in the Sacramento River (Moyle 2002).

Sacramento Splittail (*Pogonichthys macrolepidotus*). Federal Status: None; State Status: Species of Special Concern. Sacramento splittail were listed as a federally threatened species on February 8th, 1999 (64 FR 5963). This decision was challenged and on June 23, 2000 Federal Eastern District Court of California found the rule to be unlawful and on September 22, 2000, remanded the determination back to the USFWS for re-evaluation. After further review, the USFWS formally removed Sacramento splittail from the list of federally threatened species (68 FR 55139) and moved Sacramento splittail.

Sacramento splittail are a member of the cyprinid family (Cyprinidae). Splittail are distinctive in that the upper lobe of the tail fin is larger and more elongate than the lower lobe. Splittail grow to more than 12 inches in length and exhibit an elongate body with a blunt head. Splittail are primarily freshwater fish, but are tolerant of moderate salinity and can live in water with salinities of 10-18 parts per thousand. Spawning begins by late January and early February and continues through July, with most spawning taking place from February through April. Splittail spawn on submerged vegetation in temporarily flooded upland and riparian habitat. Typically, terrestrial shrubs and herbs are preferred over emergent wetland vegetation such as cattails and tules. Spawning occurs in the lower reaches of rivers, bypasses used for flood management, dead-end sloughs and in the larger sloughs such as Montezuma Slough (Daniels and Moyle 1983; Moyle 2002). This species is uncommon in the upper Sacramento River, which borders the study area, but is known to migrate past Red Bluff (Moyle 2002).

Central Valley Fall/Late Fall-run ESU Chinook (*Oncorhynchus tshawytscha*). Federal Status: None; State Status: Species of Special Concern. The Central Valley fall/late-fall run ESU Chinook salmon comprises the largest present day populations of Chinook salmon in the Central Valley. Fall-run Chinook salmon begins to enter the Sacramento River in July and the run builds through the late-summer and fall months peaking by late-September and October (Vogel and Marine 1991). Spawning occurs throughout the upper Sacramento River and in a majority of its tributaries from mid-October through December (Vogel and Marine 1991; Moyle 2002). Spawning densities of fall run salmon are very high in the Sacramento River from near Red Bluff to Keswick Dam (D. Killam, CDFG, personal communication). Juvenile fall-run Chinook salmon rears throughout the Sacramento River and its tributaries. Juvenile fall run fry may emigrate to the estuary from shortly after they hatch through the spring and summer months following their birth.

The late-fall run component of this Chinook salmon ESU enters the Sacramento-San Joaquin estuary and ascends Central Valley streams after the fall run, usually from late-October through March (Vogel and Marine 1991). Spawning begins in January and is usually complete by late-April. Late-fall run spawning densities are greatest in the upper Sacramento River from Red Bluff to Keswick Dam. Both fall and late-fall run salmon utilize the available spawning habitat in the mainstem Sacramento River adjacent to the project study area more than the spring- or winter-run Chinook salmon (CDFG, unpublished data). Juvenile late-fall-run salmon may be found to rear in the upper Sacramento River from late-April through the following winter before emigrating to the estuary (Vogel and Marine 1991; Moyle 2002).

Large numbers of the fall run and late-fall run salmon are spawned and reared by state and federal fish hatcheries in California's Central Valley. The number of hatchery-produced fish may greatly exceed the number naturally-produced fall/late-fall run Chinook salmon in some Central Valley streams which has led to concern over the viability of certain tributary populations. These runs support valuable and popular ocean and river commercial and sport fisheries.

The Sacramento River and its tributaries are designated by NOAA-Fisheries as essential fish habitat (EFH) for Chinook salmon as defined by the Magnuson-Stevens Fisheries Conservation and Management Act of 1994, as amended. EFH refers to those waters and substrates necessary for spawning, breeding, feeding, or growth to maturity. Freshwater EFH for salmon consists of four major components: spawning and incubation habitat; juvenile rearing habitat; juvenile migration corridors; and adult migration corridors and adult holding habitat (Pacific Fish Management Council 2000). Important components of EFH for spawning, rearing, and migration include adequate substrate composition; water quality (e.g., dissolved oxygen, nutrients, temperature, etc.); water quantity, depth, and velocity; channel gradient and stability; food; cover and habitat complexity (e.g., large woody debris, pools, channel complexity, aquatic vegetation, etc.); space; access and passage; and floodplain and habitat connectivity (Pacific Fishery Management Council 2000).

As defined, the term "waters" includes aquatic areas (and their associated physical, chemical, and biological properties) that are used by fish or, where appropriate, have historically been used by fish. The term "substrate" includes sediment, hard-bottom, structures underlying the waters, and associated biological communities. "Necessary" means the habitat required for a sustainable fishery and the managed species' contribution to a healthy ecosystem. Finally, "spawning, breeding, feeding, or growth to maturity" refers to a species' full life cycle.

The Sacramento River adjacent to the project area provides all four major components of freshwater EFH for salmon. Adult Chinook salmon migrate to and are known to spawn within all suitable habitats adjacent to the project site. Fry and juveniles are expected to, and are known to occur in suitable rearing habitats nearly year round. Medium to large cobbles and boulders dominate the river bottom in these habitats, providing suitable cover and refuge for rearing salmonids. Additional fry rearing habitat exists at the tail outs of the pool habitats. The deeper pools appear to provide suitable holding conditions for adult steelhead and salmon.

Anderson Creek provides EFH for Chinook salmon in the form of waters and substrates necessary for feeding or growth to maturity as it is known to support non-natal rearing. As a tributary of the Sacramento River, Anderson Creek has the potential to directly affect EFH in the mainstem.

California Red-legged Frog (*Rana aurora draytonii).* Federal Status: Threatened; State Status: None. The California red-legged frog inhabits quiet pools of streams, marshes, and ponds. All life history stages are most likely to be encountered in and around breeding sites, which include coastal lagoons, marshes, springs, permanent and semi permanent natural ponds, and ponded and backwater portions of streams, as well as artificial impoundments such as stock ponds, irrigation ponds, and siltation ponds. Eggs are typically deposited in permanent pools, attached to emergent vegetation.

The historic range of the California red-legged frog extended along the coast from the vicinity of Point Reyes National Seashore, Marin County, and inland from the vicinity of Redding, Shasta County, southward to northwestern Baja California, Mexico. The species has lost approximately 70 percent of its former range; California red-legged frogs are locally abundant in the San Francisco Bay area and the central coast, but only isolated populations have been documented in the Sierra Nevada, northern Coast, and northern Transverse ranges (50 CFR Part 17 14626). The study area is within the historical range of the California red-legged frog and fresh emergent wetlands provide suitable habitat for the species. However, the study area is not within the current known range of the species. Thus, the likelihood that the species occurs in the project area is low.

Bald Eagle (*Haliaeetus leucocephalus*). Federal status: Threatened (Proposed for Delisting); State status: Endangered. The bald eagle is a large soaring bird; in North America, it is second in size only to the California condor (*Gymnogyps californianus*). Most of the annual food requirements of a bald eagle is derived from or obtained around aquatic habitats. The food most often consumed consists of fish, water birds, and small to medium-sized mammals. Because of the dietary association, nesting territories are usually found near water.

Perches are used primarily during the day for resting, preening, and hunting, and may include human-made structures such as power poles. Roosting areas contain a night communal roosting tree that is easily accessible to the large birds and tall enough to provide safety from threats from the ground. Bald eagle nests and roosts are usually found where human activity is infrequent or muted.

In California, breeding pairs are found mostly in Butte, Lake, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Trinity counties (California Department of Fish and Game 2002).

The Sacramento River, which flows adjacent to the northern project site boundary, is prime foraging habitat for bald eagles. Habitat suitability within the project site is bolstered by the presence of significant stringers of riparian vegetation, including numerous large trees that occur along the northern project boundary/Sacramento River interface, as well as throughout the project site. Although there have been no documented occurrences or visual observations of bald eagles made during reconnaissance-level site visits, the project site does provide suitable bald eagle foraging and perching habitat. The nearest recorded nesting occurrence of a bald eagle is approximately 3 miles to the southeast (CNDDB 2005).

Other Special-Status Species

Northwestern Pond Turtle (*Clemmys marmorata marmorata*). Federal Status: Species of Concern; State Status: Species of Special Concern. The northwestern pond turtle is found in the quiet waters of ponds, marshes, creeks, and irrigation ditches. This species requires basking sites such as partially submerged logs, rocks, mats of floating vegetation, or open mud banks. They frequently bask on logs or other objects out of the water when water temperatures are low and air temperatures are greater than water temperatures. When air temperatures become too warm, western pond turtles water bask by lying in the warmer surface water layer with their heads out of the water. Hibernation in colder areas is passed underwater in bottom mud (Zeiner et al. 1990a). Mating typically occurs in late April or early May, but may occur year-round. Nests are located in an upland location that may be a considerable distance from the aquatic site (up to ¼ mile) (California Department of Fish and Game 1994).

Today, the northwestern pond turtle occurs in 90% of its historic range in the Central Valley and west of the Sierra Nevada mountains, but in greatly reduced numbers (Jennings and Hayes 1994). It occurs from the Oregon border south to the American Basin in the Central Valley, where it intergrades with southwestern pond turtle. Suitable habitat for this species is present in the study area, particularly along the Sacramento River and pond turtle was observed adjacent to the study area during a reconnaissance survey.

Cooper's Hawk (Accipiter cooperii). Federal status: None; State status: Species of Special Concern. Cooper's hawks are members of the family Accipitridae, long-tailed woodland raptors with rounded wings that are adapted for hunting among trees. Adult Cooper's hawks are crow-sized, approximately 14 to 20 inches, with males markedly smaller than females. Stick platform nests with a bark-lined cup are built in the crotch of a tree or on a main horizontal branch against the trunk. In Shasta County breeding occurs from February 15 through September 30. Cooper's hawks often hunt for prey from a concealed perch, using a sudden burst of speed to capture medium-sized birds (e.g., jays, doves, and quail) and occasionally small mammals and reptiles.

The Cooper's hawk is a year-round resident throughout much of the state. It prefers landscapes where wooded areas occur in patches and groves, which facilitate its ambush hunting tactics. Breeding pairs in California prefer nest sites within dense stands of live oak woodland or riparian areas. The valley oak woodland and valley foothill riparian habitats in the study area provide suitable nesting and foraging habitat for this species.

Osprey (*Pandion haliaetus*). Federal status: None; State status: Species of Special Concern. The osprey is associated with large, fish-bearing waters, primarily in ponderosa pine through mixed conifer habitats. It requires open, clear waters for foraging, using rivers, lakes, reservoirs, bays, estuaries, and surf zones. Large trees, snags, and dead-topped trees in open forest habitats are used for cover and nesting.

The osprey breeds in northern California from the Cascade Range south to Lake Tahoe, and along the coast south to Marin County. Regular breeding sites include Shasta

Lake, Eagle Lake, Lake Almanor, other inland lakes and reservoirs, and northwest river systems. The species is an uncommon breeder along the southern Colorado River and an uncommon winter visitor along the coast of southern California (Zeiner et al. 1990b). In the study area, the woodlands adjacent to the Sacramento River provide suitable nesting habitat for this species, and individual osprey were observed in the area during reconnaissance surveys (**Figure 4.5-2**) although no nests were located.

White-tailed Kite (*Elanus leucurus*). Federal Status: None; State Status: Fully Protected Species. The white-tailed kite can be found in association with the herbaceous and open stages of a variety of habitat types, including open grasslands, meadows, emergent wetlands, and agricultural lands. Nests are constructed near the top of dense oaks, willows, or other tree stands located adjacent to foraging areas. The species forages in undisturbed, open grasslands, meadows, farmlands and emergent wetlands. White-tailed kite are seldom observed more than 0.5 mi (0.8 km) from an active nest during the breeding season (Zeiner et al. 1990b).

The white-tailed kite is found year-round in both the coastal zones and lowlands of the Central Valley in California. Suitable nesting and foraging habitat for this species is present in the study area, and an individual was observed over agricultural habitat adjacent to the study area during a reconnaissance survey.

Purple Martin (*Progne subsi*). Federal listing status: None; State listing status: Species of Special Concern. The purple martin is an uncommon summer resident of old-growth, multi-layered open forests in California. In California, it primarily uses old woodpecker cavities for nesting but will occasionally nest in boxes or under bridges. Purple martins forage for insects over a variety of habitats including riparian areas and forests. The species has declined in numbers in recent decades due to competition with non-native species for nest cavities, the loss of riparian habitat, and removal of snags.

One of the few known nesting colonies of this species in the western United States occurs along the Pit River arm of Shasta Lake in snags that are submerged at full pool (USDA Forest Service 1996). Purple martins are not known to nest on or near the study area; however, suitable nesting and foraging habitat is present.

Tricolored Blackbird (*Agelaius tricolor*). Federal listing status: None; State Listing Status: Species of Special Concern. The tricolored blackbird commonly breeds in freshwater marshes of cattail, tule, bulrush, and sage and roosts in the strips along marshes between rice fields. In winter, the species moves through marshes, open cultivated lands, and pastures. Tricolored blackbirds forage on insects, cultivated grains, seeds, and fruits, depending on the season.

The species breeds from southern Oregon east of the coast range south, through interior California, and along the Pacific Coast from central California to northwest Baja, California. It is a summer resident in northeastern California, occurring regularly only at Tule Lake, but in some years has bred as far south as Honey Lake. The tricolored blackbird may nest and or forage in the fresh emergent and riparian emergent wetlands in the study area.

California Yellow Warbler (*Dendroica petechia brewsteri*). Federal status: None; State status: Species of Special Concern. The yellow warbler is a member of the family Parulidae, subfamily Parulinae, active, brightly colored birds, usually smaller than sparrows, with thin, needle-pointed bills. This species is the most extensively yellow of all warblers. However, rusty streaks occur on the breast. Adults are approximately 5 inches long. The yellow warbler is a long-distance migrant, usually arriving in California in April and leaving by October. The species breeds from mid-April to early August, building an open cup nest in a tree or shrub. Foraging patterns typically involve gleaning and hovering for insects and spiders.

The yellow warbler occurs as a summer resident in northern California. It is usually found in dense riparian deciduous habitats with cottonwoods, willows, alders, and other small trees and shrubs typical of open-canopy riparian woodlands. The riparian woodlands provide suitable nesting and foraging habitat for this species.

Yellow-breasted Chat (*Icteria virens*); Federal listing status: None; State listing status; Species of Special Concern. The yellow-breasted chat is the largest member of the wood warbler family, Parulidae. Males and females are similar in plumage, having a yellow throat and breast, whitish belly, olive upperparts, white spectacles, and dark legs. The yellow-breasted chat is a long-distance migrant that usually arrives in California in April and departs by late September. Open-cup nests are built low to the ground in dense shrubs. Breeding occurs from early May to early August. Foraging patterns usually involve gleaning insects, spiders, and berries from the foliage of shrubs and low trees.

Yellow-breasted chats occur in riparian or marsh habitats throughout California. They are found in valley foothill riparian habitat with thickets of dense willow and brushy tangles near watercourses. Nests are often in dense shrubs along streams. Yellow-breasted chats are known to occur as summer breeding residents along the Sacramento River and its tributaries. The riparian woodlands provide suitable nesting and foraging habitat for this species.

Pallid Bat (*Antrozous pallidus*). Federal listing status: None; State listing status: Species of Special Concern. The pallid bat is a medium-sized bat that prefers foraging on terrestrial arthropods in dry open grasslands near water and rocky outcroppings or old structures. It may also occur in oak woodlands and at the edge of redwood forests along the coast. Roosting typically occurs in groups. Roosts often occur in caves and mine tunnels but buildings and trees may be used for day roosts. More open, sites such as buildings, porches, garages, highway bridges, and mines may be used for night roosts. Pallid bats are sensitive to human disturbances at roost sites. The pallid bat occurs throughout much of California. Large hollow oaks or oaks with cavities provide suitable roosting habitat for this species. The species may also forage over a variety of habitats in the study area.

Ringtail (*Bassariscus astutus*). Federal Status: None; State Status: Fully Protected Species. The ringtail occurs in various riparian habitats in and brush stands of most forest and shrub habitats. Nocturnal, and primarily carnivorous, ringtails mainly eat small mammals but also feed on birds, reptiles, insects, and fruit. They forage on the ground, among

rocks, and in trees; usually near water. Hollow trees and logs, cavities in rocky areas, and other recesses are used for cover. The ringtail is widely distributed in California. The riparian habitat in the study provides suitable habitat for the ringtail.

4.5.4 JURISDICTIONAL WETLANDS

WATERS OF THE UNITED STATES AND WETLANDS

The term "waters of the United States" is defined as:

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- All interstate waters including interstate wetlands; or
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use degradation of which could affect interstate or foreign commerce including any such waters.

"Wetlands" are defined as:

- "Waters of the United States" or isolated features that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Table 4.5-4 below provides an acreage summary of the preliminary delineation results; see **Figure 4.5-3** for location and acreage detail. These "Waters of the United States" are subject to Army Corps of Engineers (Corps) and/or Regional Water Quality Control Board (RWQCB) jurisdiction. A total of 58.469 acres of jurisdictional waters was delineated within the project study area. Additionally, 0.585 acres of non-jurisdictional agricultural ditch was delineated. The Corps issued a letter verifying the boundaries of the delineated waters on April 19, 2006 (Corps Regulatory Branch # 200500942). (See **Appendix 4.5-5)**

TABLE 4.5-4

WATERS OF THE UNITED STATES ACREAGE SUMMARY: PRELIMINARY DELINEATION RESULTS

Classification	Acreage
Wetlands	
Fresh Emergent Wetlands	7.864
Fresh Emergent/Riparian Wetland	24.124
Agricultural Ditch - Wetland	1.064
Riparian Wetland	15.223
Other Waters	
Agricultural Ditch	0.135
Riverine	10.059
TOTAL WATERS OF THE United States	**58.469**

4.5.5 REGULATORY REQUIREMENTS

FEDERAL

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers has primary federal responsibility for administering regulations that concern "waters of the United States", including jurisdictional wetlands. The Corps acts under two statutory authorities, the Rivers and Harbors Act (Sections 9 and 10) which governs specified activities in "navigable waters of the United States and the Clean Water Act (Section 404), which governs specified activities in "other waters of the United States" and many wetland habitats. The Corps requires that a permit be obtained if a project proposes placing structures within, over, or under navigable waters and/or discharging dredged or fill material into "waters of the United States" below the ordinary high-water mark in non-tidal waters. The Environmental Protection Agency (EPA), USFWS, the National Marine Fisheries Services (NMFS), and several other agencies provide comment on Corps permit applications. On agricultural lands, the Natural Resources Conservation Service (NRCS) is the primary federal agency charged with determining the boundary of jurisdictional wetlands for implementation of the Food Securities Act; however, the Corps retains primary permitting authority.

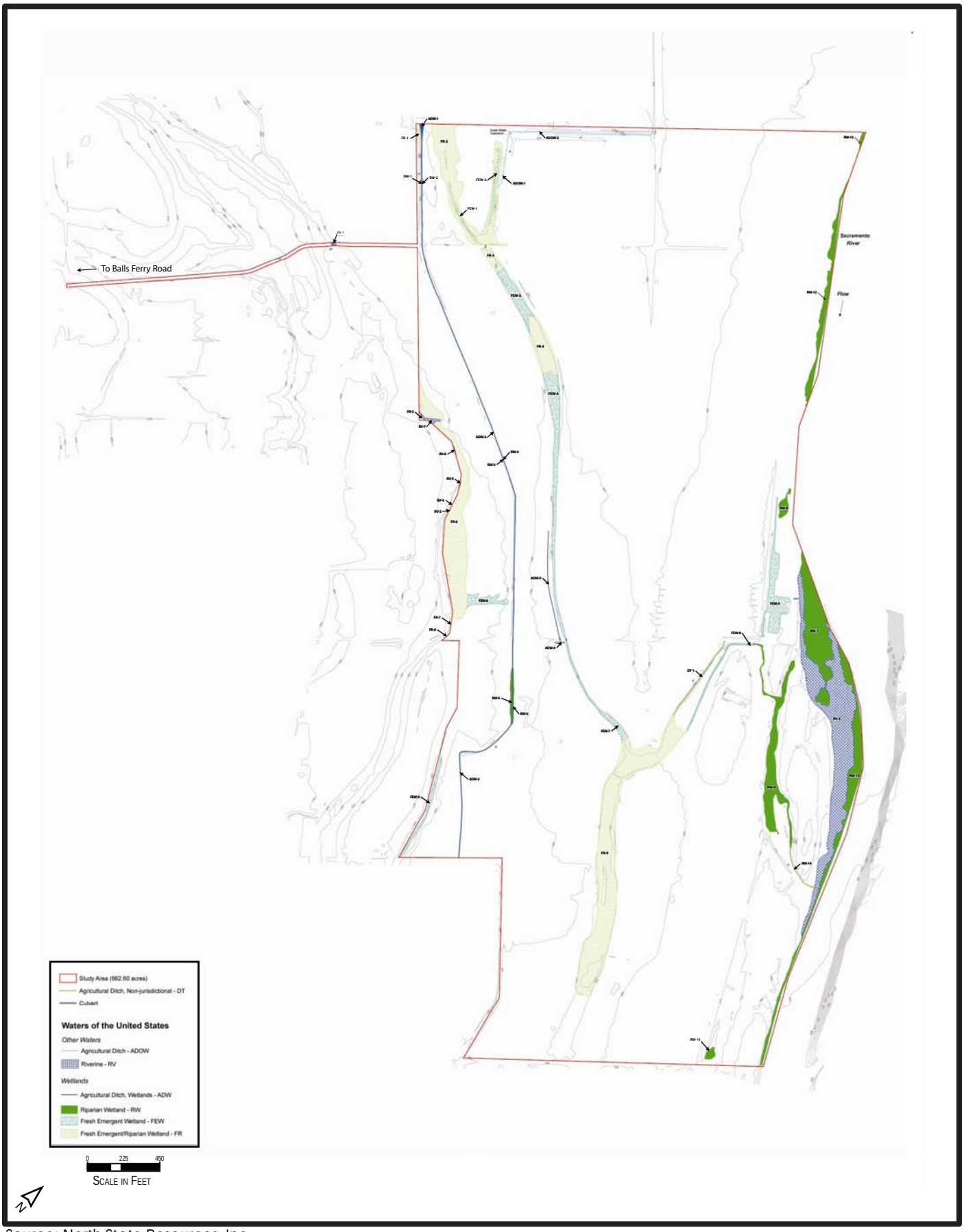
U.S. Fish and Wildlife Service and NOAA Fisheries

Federal Endangered Species Act

Provisions of the federal Endangered Species Act of 1973 prohibit acts of disturbance that result in the "take" of threatened or endangered species. As defined by the federal Endangered Species Act, "endangered" refers to any species that is in danger of extinction throughout all or a significant portion of its current range. The term "threatened" is applied to any species likely to become endangered within the foreseeable future throughout all or a significant portion of its current range. Take is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." Violation of this section can result in penalties of up to $50,000 and up to one year of imprisonment. Sections 7 and 10 of the federal Endangered Species Act provide a method for permitting an action that may result in "incidental take" of a federally listed species.

Incidental take refers to take of a listed species that is incidental to, but not the primary purpose of, an otherwise lawful activity. Incidental take is permitted under Section 7 for projects on federal land or involving a federal action, while Section 10 provides a method for permitting incidental take resulting from state or private action. Four federally listed or proposed listed wildlife species may occur on the site: the valley elderberry longhorn beetle, Central Valley spring-run ESU Chinook, Central Valley ESU steelhead, green sturgeon, and Sacramento River winter-run ESU Chinook.

The National Marine Fisheries Service (NOAA Fisheries) is responsible for protecting, managing, and conserving marine, estuarine and anadromous fish resources and their habitats under various legal authorities. To address specific activities likely to affect these managed resources in the Southwest Region, NOAA Fisheries Southwest Region (SWR) developed specific guidelines for activities likely to directly or indirectly impact managed resources. The 1996 National Marine Fisheries Service, *National Gravel Extraction Policy*, aims to avoid the take of listed salmonids by, for example, disallowing sediment extraction "within, upstream, or downstream of anadromous fish spawning grounds." The purpose of NOAA Fisheries-SWR Sediment Gravel Removal Guidelines is to present thorough scientific information that may be used to conduct effects analyses of proposed actions that would remove sediment from streams, either for commercial sediment production or flood control channel excavation within the Southwest Region (NOAA Fisheries, 2004). Information presented in these guidelines is intended to help identify adverse effects of sediment removal actions and provide reasonable and prudent alternative measures, as necessary. NOAA Fisheries-SWR Sediment Gravel Removal Guidelines establish a strategy to minimize the incidental take of listed salmonids entrusted to NOAA Fisheries. These guidelines do not present prescriptive measures that must be implemented by parties engaged in sediment removal activities. Alternative means of demonstrating compliance with statutory requirements are acceptable pending NOAA-Fisheries review (NOAA Fisheries 2004).



Source: North State Resources, Inc.

FIGURE 4.5-3
WATERS OF U.S.

PMC

The NOAA-Fisheries-SWR Sediment Gravel Removal Guidelines provides the following recommendations for mining terraces and floodplains:

1) Terrace Mines- NOAA Fisheries recommends that terraces and other upland geologic sources be mined preferentially before floodplains. Drainage from terraces and upland pits should follow applicable statutes that prevent polluting surface and groundwater. Scale should be considered because mining can convert terraces to floodplains, a process that may impact salmonids. Applicants should consult with NOAA Fisheries prior to excavating floodplain pits.

2) Dry Pit Floodplain Mines- Dry pits located outside the riparian zone and on the boundaries of the streams meander belt can have relatively low risk of impacts on salmonid habitat. It is recommended that the pit volume relative to the area of adjacent floodplain be considered because the pit will not provide many of the ecological services for salmonids provided by undisturbed floodplains. Salmonids can be trapped in dry-pits during flood events. Without provisions for fish rescue, all trapped fish will expire when pit dries out. It is recommended that a responsible mine plan seek to minimize the probability of future stream connection.

3) Wet Pit floodplain Mines- Wet-pit mines can adversely affect the local groundwater level and quality either as a result of dewatering operations or from evaporation or contamination. It is recommended that water pumping from wet-pit mines does not decrease the water table elevation, or reduce ground water flow to nearby salmonid stream habitat.

4) Wetland Pit- Excavating a wetland pit in a frequently inundated floodplain (2-5 year floodplain) may be a relatively low risk method for producing high quality aggregate outside the bank-full stream channel. It is recommended that pit size and elevation be designed relative to the flow frequency and magnitude that can be expected to refill the sediment trap. A reliable sediment budget is required in addition to a fish rescue protocol to mitigate impacts to fishes stranded in pits. It is also recommended that the sediment removal activities for a single project be located on the same side of the floodplain.

Federal Magnuson-Stevens Fishery Conservation and Management Act

The federal Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance essential fish habitat (EFH) for those species regulated under a federal fisheries management plan (FMP). The MSA requires federal agencies to consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agencies that may adversely affect EFH (MSA section 305[b][2]). A component of this consultation process is the preparation and submittal of an Essential Fish Habitat Assessment (EFHA). The length of the EFHA will vary, based on project complexity and the magnitude of potential

impacts on EFH, but all EFHAs must include the following information: (1) a description of the proposed action; (2) an analysis of the effects, including cumulative effects, of the proposed action on EFH, the managed species, and associated species, such as major prey species, including affected life history stages; (3) the federal agency's views regarding the effects of the proposed action on EFH; and (4) proposed mitigation, if applicable. In instances where MSA and FESA issues overlap, NOAA Fisheries encourages an integrated approach to consultation. The EFH mandate applies to all species managed under an FMP. For the Pacific coast (excluding Alaska), there are three FMPs covering groundfish, coastal pelagic species, and Pacific salmon.

Migratory Bird Treaty Act

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). Most of the birds found in the study area are protected under the MBTA. Thus, project construction has the potential to directly take nests, eggs, young, or individuals of protected species. Further, construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to the abandonment of nests, a violation of the MBTA. Measures that may be instituted to help ensure compliance with the MBTA include the following:

- Grading and other construction activities should be scheduled to avoid the nesting season to the extent possible. The nesting season for most birds in Shasta County extends from March through August.

- If the nesting season cannot be avoided, the following measures should be instituted:

- A qualified biologist should conduct pre-construction surveys no more than 1 week prior to the initiation of construction in any given area to ensure that no nests of species protected by the MBTA would be disturbed during project implementation.

- If an active nest more than half completed is found, a construction-free buffer zone should be established around the nest. The size of the buffer zone should be determined by a qualified biologist in consultation with USFWS.

- If vegetation is to be removed by the project and all necessary approvals have been obtained, potential nesting substrate (e.g., bushes, trees, grass, buildings, and burrows) that will be removed by the project should be removed before the onset of the nesting season (March) to help preclude nesting. Pre-removal surveys are required for some species. Removal of vegetation or structures slated for removal by the project should be completed outside of the nesting season (i.e., between September 1 and March 1).

STATE

California Department of Fish and Game

Streambed Alteration Agreement (Sections 1600-1616 of the California Fish and Game Code)

The California Department of Fish and Game (CDFG) has jurisdictional authority over wetland resources associated with rivers, streams, and lakes under California Fish and Game Code Sections 1600 to 1616. CDFG must be notified when any person, business, state or local government agency, or public utility proposes an activity that will:

- divert, obstruct, or change the natural flow or the bed, channel or bank of any river stream or lake;
- use material from a streambed; or
- result in the disposal or deposition of debris, waste, or other material where it can pass into any river, stream, or lake.

The notification requirement applies to any work undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel. This includes ephemeral streams, desert washes, and water courses with a subsurface flow. It may also apply to any work undertaken within the flood plain of a body of water.

If CDFG determines that the proposed project or activity could have substantial adverse effects on fish or wildlife, a Streambed Alteration Agreement is required. As part of this agreement, CDFG may require reasonable modifications in the proposed construction that would allow for the protection of the fish and wildlife resources. The County must notify CDFG before beginning construction activities in lands under CDFG jurisdiction.

California Endangered Species Act

Under the California Endangered Species Act (CESA), CDFG has the responsibility for maintaining a list of endangered and threatened species (California Fish and Game Code 2070). CDFG also maintains a list of "candidate species," which are species that CDFG formally notices as being under review for addition to the list of endangered or threatened species. In addition, CDFG maintains lists of "species of special concern," which serve as species "watch lists." Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any species that are state listed as endangered or threatened may be present in the project study area and, if so, whether the proposed project would have a potentially significant impact on any of these species. In addition, CDFG encourages informal consultation on any proposed project that may affect a species that is a candidate for state listing.

Project-related impacts to species listed as endangered or threatened under the CESA would be considered significant. State-listed species are fully protected under the mandates of the CESA. "Take" of protected species incidental to otherwise lawful

management activities may be authorized under Section 2081 of the Fish and Game Code of California. Three state listed species may occur on the site: Bogg's Lake hedge hyssop, Sacramento River winter-run ESU Chinook, and Central Valley spring-run ESU Chinook.

Native Plant Protection Act

The Native Plant Protection Act (California Fish and Game Code Sections 1900-1913) prohibits the taking, possessing, or sale within the state of any plants with a state designation of rare, threatened, or endangered, as defined by CDFG. Project impacts to these species are not considered significant unless the species are known to have a high potential to occur in the area of disturbance associated with construction of the project.

Birds of Prey

Under Section 3503.5 of the California Fish and Game Code, it is unlawful to take, possess, or destroy any birds in the orders of Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird, except as otherwise provided by this code or any regulation adopted pursuant thereto.

Migratory Birds

Migratory birds are also protected in California. The State Fish and Game Code Section 3513 states that it is unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Treaty Act. Under Code Section 3513 the CDFG may considerer impacts similar to those described above under the MBTA a significant impact. Instituting the same measures described under the MBTA above will help ensure compliance with the Fish and Game Code Section 3513.

California Senate Bill (SB) 1334 – Oak Woodlands

California Senate Bill (SB) 1334 took effect on January 1, 2005. This amendment to CEQA requires that counties make a specific effort to determine whether projects they consider may lead to a significant environmental impact as a result of the conversion of oak woodlands. The bill adds Public Resources Code (PRC) 21083.4, which creates two new requirements for counties (it does not apply to other public agencies). First, counties must now determine whether or not a project may result in a conversion of oak woodlands that will have a significant effect. Second, if there may be a significant effect, they must employ one or more of the following mitigation measures:

- Conserving oaks through the use of conservation easements;
- Planting and maintaining an appropriate number of trees either on-site or in restoration of a former oak woodland (tree planting is limited to half the mitigation requirement);

- Contributing funds to the Oak Woodlands Conservation Fund for the purpose of purchasing conservation easements; or
- Other mitigation measures developed by the county.

This requirement does not apply to projects undertaken pursuant to an NCCP that includes oaks as a covered species or that conserves oak habitat consistent with the bill, affordable housing projects for lower income households, conversion of oak woodlands on agricultural land "that includes land that is used to produce or process plant and animal products for commercial purposes" (this would include grazing lands), and projects undertaken pursuant to a certified regulatory program.

California Regional Water Quality Control Board

Section 401, Clean Water Act–Water Quality Certification/Waiver

The California Regional Water Quality Control Board (RWQCB), Central Valley Region, is responsible for enforcing water quality criteria and protecting water resources in the project area. The RWQCB is responsible for controlling discharges to surface waters of the state by issuing waste discharge requirements (WDRs), or commonly by issuing conditional waivers to WDRs. A request for water quality certification (including WDRs) by the RWQCB would be required for any project which would need a Section 404 permit from the Corps. A Notice of Intent application for a General Permit for Storm Water Discharges Associated with Construction Activities is required for any project which would result in the disturbance of five or more acres.

Shasta County General Plan

The County General Plan contains the following objectives and policies concerning biological resources that pertain to the project:

Objectives:

FW-1 Protection of significant fish, wildlife and vegetation resources.

FW-2 Provide for a balance between wildlife habitat protection and enhancement and the need to manage and use agricultural, mineral extraction, and timber land resources.

Policies:

FW-b. Recognition that classification of some fish, wildlife, and vegetation resources designated and used as Timberlands, Mineral Resource, Croplands, or Grazing lands does, in most cases, protect habitat resources. However, it there is a conflict, the timber, mineral extraction, or agricultural land use classifications mentioned above shall prevail in a manner consistent with State and Federal laws.

FW-c Projects that contain or may impact endangered and/or threatened plant or animal species, as officially designated by the California Fish and Game Commission and/or the U.S. Fish and Wildlife Service, shall be designed or conditioned to avoid any net adverse impacts on those species.

FW-d. The significant river and creekside corridors of Shasta County shall be designated on the General Plan maps. The primary purpose of this designation is to protect the riparian habitats from development and from adverse impacts from conflicting resources uses. The purpose is also to encourage open space and recreation (policy OSR-e). Mapping of significant waterway corridors in areas designated as resource protection lands is not required since it is assumed that resource land uses will also act to protect such waterway corridors. Riparian habitat protection along the significant river and creekside corridors, as designated on the plan maps shall be achieved, where appropriate, by the following measures:

FW-e. Salmon spawning gravel in the following rivers and creeks shall be protected:

- Sacramento River: Keswick Dam to Shasta-Tehama County line.

FW-k. The County should support efforts to develop a Stream Corridor Protection Plan along the Sacramento River from the south Redding City limits to the Tehama County line.

Sacramento River Advisory Council

The overall goal of the management program from the Sacramento River Conservation Area (SB 1086) is to preserve remaining riparian habitat and reestablish a continuous riparian ecosystem along the Sacramento River between Redding and Chico, and reestablish riparian vegetation along the river from Chico to Verona. This will be accomplished through this incentive-based, voluntary river management plan (Sacramento River Advisory Council 2003). The Riparian Habitat Committee (Committee) developed a set of management guidelines for the Sacramento River Conservation Area, which for Shasta and Tehama counties is the area within the approximate 100-year designated floodplain. These guidelines are identified as follows: inner river zone guidelines, site-specific management planning guidelines, restoration priority guidelines and Sacramento River GIS guidelines.

4.5.3 IMPACTS AND MITIGATION MEASURE CRITERIA

SIGNIFICANCE CRITERIA

Significance criteria used to analyze potential impacts that construction of the Shasta Ranch Mining and Reclamation Plan Project may have on biological resources include factual and scientific information as well as regulatory standards of county, state, and

federal agencies, including CEQA *Guidelines*. The Project will have a significant effect on the environment if it results in any of the following:

- A substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.
- A substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Section 15065 of the CEQA Guidelines has the following mandatory findings of significance:

> The project has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare or threatened species, or eliminate important examples of the major periods of California history or prehistory.

IMPACTS AND MITIGATION MEASURES

Impact 4.5.1 Implementation of the Shasta Ranch Mining and Reclamation Plan could result in the direct loss of, or indirect impacts to, riparian habitat or other sensitive plant communities identified in local or regional plans, policies, or regulations. This impact is considered ***less than significant*. [LS]**

Riparian habitat (valley foothill riparian), considered a sensitive natural community by the CDFG, is present in the study area, and construction of the temporary levee and access roads will result in a small direct impact to this habitat. However, as mining activities are completed, the project area will be reclaimed and revegetated as detailed in the Reclamation Plan, which includes measures for preserving the majority of existing riparian habitats and reclaiming additional marsh/riparian habitat (Section 5.4 of the Reclamation Plan). The Phase 2 and 3 areas will be specifically reclaimed so as to provide habitat to riparian and wetland species. The Reclamation Plan also provides for monitoring of the restoration areas to ensure successful revegetation. Thus, although a small short-term loss of riparian habitat will occur as a result of levee construction and creation of access roads, in the long term, riparian habitat on the site

will be enhanced through revegetation and reclamation of riparian habitat (including the planting of additional elderberry shrubs) and placement of structures which facilitate interim wildlife use of the area (e.g. nesting boxes, nest platforms, brush piles). Therefore, impacts to riparian habitat are considered ***less than significant***.

Mitigation Measures

None required.

Impact 4.5.2 Development of the proposed project would result in the loss of upland habitat types including valley oak woodland, annual grassland, and cropland. This impact is considered ***less than significant*. [LS]**

Implementation of the Shasta Ranch Mining and Reclamation Plan, including initial grading and levee construction, would result in the loss of upland habitat. These habitats provide resources for a number of wildlife species. However, according to California GAP Analysis data (U.S. Geological Survey 1998) for the watershed, these habitats are regionally abundant. Thus, given the regional abundance of annual grasslands and cropland, the preservation of the open space areas (including valley oak woodlands), and the reclamation of habitat after mining operations are completed, impacts to upland habitats are considered to be ***less than significant***.

Mitigation Measures

None required.

Impact 4.5.3 Implementation of the Shasta Ranch Mining and Reclamation Plan could result in the direct impacts to federally-protected jurisdictional wetlands and other waters of the United States. This impact is considered ***less than significant*. [LS]**

Implementation of the Shasta Ranch Mining and Reclamation Plan, including initial grading and levee construction, is not expected to result in any direct discharge or fill of federally-protected jurisdictional wetlands. Based on the site plan provided by the applicant to the Corps on January 13, 2006, the project would fully avoid the discharge of fill into jurisdictional waters (See **Figure 4.5-4**). The Corps provided written concurrence on January 24, 2006 that the project, as proposed on January 13, 2006, would not involve the discharge of fill material into jurisdictional waters and, therefore, a Section 404 permit would not be required. (See **Appendix 4.5-6**)

If, during development of the final site plans, proposed project elements need to be re-located and full avoidance of jurisdictional waters cannot be attained, the project would be subject to review and approval by regulatory agencies. Therefore, impacts to jurisdictional wetlands and other waters of the United States are considered to be ***less than significant***.

FIGURE 4.5-4. IMPACTS ON WATERS OF THE UNITED STATES, INCLUDING WETLANDS

Impact 4.5.4 Implementation of the Shasta Ranch Mining and Reclamation Plan could result in indirect impacts to federally-protected jurisdictional wetlands and other waters of the United States. This impact is considered ***potentially significant subject to mitigation*. [PSM]**

Construction and operation of the project could result in indirect impacts to waters of the United States within and adjacent to the project site. Project indirect effects could result from modification of local hydrology and degradation of water quality through operation and construction activities.

The disturbance of soils on the site is not expected to increase toxic concentration levels of dioxins in groundwater. A thorough discussion of dioxin and furans with respect to water quality and public health are included in **Section 4.9, Hydrology and Water Quality** and **Section 4.12, Hazards and Hazardous Materials**, respectively, of this EIR.

Based on information provided in the Federal Register (Vol. 67 No. 10, page 2093), indirect impacts are assumed when project activities are within 50 feet of waters of the United States. Such impacts would be **significant**.

Mitigation Measures:

MM 4.5.4 The following measures shall be implemented to reduce the indirect impacts to waters of the United States:

1. Silt fencing or straw bale siltation barriers shall be installed between all waters of the United States and the construction area.
2. Initial site grading and levee construction shall be conducted during the dry summer months (June 15 through October 15).
3. Hydromulch and/or hydroseed (using native plant species) will be applied to all soil stockpiles to minimize wind and water erosion.
4. Disturbed soil, including roads, shall be watered frequently to prevent dust emissions.
5. Fueling and maintenance of construction equipment shall occur only at the processing facility to reduce the area of potential fuel spills, lubricant spills, etc.
6. Spill containment materials shall be kept on site at all times to contain any accidental spill.
7. The design of the aggregate haul roads and pond levees shall be sloped toward the pond areas to prevent storm water runoff from leaving the site and flood waters from entering the ponds.
8. Work conducted within jurisdictional waters would be limited to the summer dry months, June 15 though October 15.
9. Additional mitigation measures may be implemented as conditions of the Water Quality 401 Certification issued by the Central Valley Regional Water Quality Control Board and/or the Section 1602

Streambed Alteration Agreement issued by the California Department of Fish and Game.

Timing/Implementation: Prior to initiating construction and ongoing throughout construction for each phase

Enforcement/Monitoring: U.S. Army Corps of Engineers

Implementation of the above mitigation measure will reduce impacts to a ***less-than-significant*** level.

Impact 4.5.5 Implementation of the Shasta Ranch Mining and Reclamation Plan will result in direct and indirect impacts to fox sedge. This impact is considered ***potentially significant subject to mitigation.*** **[PSM]**

One non-listed special-status plant species, fox sedge, is known to occur in the study area. Direct impacts to all known populations of this species have been avoided. However, construction activities typically include the refueling of construction equipment on location. As a result, minor fuel and oil spills may occur, with a risk of larger releases. Without rapid containment and clean up, these materials may be toxic to this species, depending on the location of the spill in proximity to these resources. Loss of federal and/or state listed plants species is considered a ***potentially significant impact.***

Mitigation Measures:

MM 4.5.5 If special-status plant species cannot be avoided during construction, the CDFG shall be contacted immediately and determine the appropriate salvage and relocation measures. Special-status plant species populations that can be avoided shall be protected with exclusionary fencing to prohibit disturbance.

Timing/Implementation: Prior to implementing construction

Enforcement/Monitoring: California Department of Fish and Game

Implementation of the above mitigation measures will reduce impacts to a ***less-than-significant*** level.

Impact 4.5.6 Implementation of the Shasta Ranch Mining and Reclamation Plan will result in the direct loss of, or indirect impacts, to federal and state-listed endangered Sacramento River winter-run ESU Chinook salmon and threatened Central Valley spring-run ESU Chinook salmon; federal-listed threatened Central Valley ESU steelhead and/or their designated critical habitat; and federal-listed as threatened green sturgeon. This impact is considered ***potentially significant subject to mitigation.*** **[PSM]**

Gravel mining operations could remove up to approximately 12 million tons (6.06 million cubic yards) of aggregate materials, including fossilized alluvial gravel deposits, from a

riverside terrace. Approximately half of the proposed gravel mining site is within the 100-year floodplain of the upper Sacramento River and is prone to periodic flood inundation. And, while gravel extraction could occur as close as 200-300 feet from the river channel, the Shasta Ranch Mining and Reclamation Plan includes provisions that all mining operations and associated activities will maintain a 100-foot setback buffer from the landward edge of riparian corridor or the top of the river bank, whichever is greater. While gravel eroded from the river's banks and from tributaries has been identified as an important source of gravel recruitment to the bed of the upper Sacramento River (The Resources Agency 1989; Buer and Parfitt 1980), river channel meander and bank erosion in the project reach has greatly diminished over the past 60 years due to flood control operation of Shasta Dam. The proposed confinement of gravel mining to the off-channel terrace at the Shasta Ranch site and minimum setback buffers of 100 feet from the river bank will minimize impacts to fluvial gravel supplies. Therefore, this impact is considered to be ***less than significant***.

The proposed Shasta Ranch Mining and Reclamation Plan includes fish exclusion levees to prevent river channel migration, gravel pit entrainment, and fish stranding in gravel pits at river flows up to 25-year flow events (Phase 1) and up to 50-year flow events (Phases 2 and 3) for perpetuity. These design elements, properly maintained, would be generally protective of fish, preventing entrainment and stranding in the quarry ponds, except during extreme flood events exceeding the 50-year flood recurrence level. During these relatively infrequent events, listed fish species, which generally migrate during the flood season, could become stranded in the quarry ponds. Without a way out of the quarries, listed salmon and steelhead and the candidate green sturgeon may perish or be preyed upon by other fish or bird predators. Therefore, this impact is considered to be ***potentially significant***.

The Shasta Ranch Mining and Reclamation Plan describes provisions to manage and prevent sediment, resulting from on-site erosion and aggregate mining activities, from entering the Sacramento River or Anderson Creek in storm runoff from the project site. However, final site plans have not been developed to verify if full containment of sediment-laden water and thus avoidance can be attained. Therefore, implementation of the proposed project could result in the discharge sediment to the Sacramento River and Anderson Creek. Sediment discharged to the river may cover spawning gravel and negatively affect aquatic invertebrates (Cordone and Kelley 1961). Such discharges during the period of salmon egg and larval incubation may also settle on nests and suffocate these early salmon and steelhead life stages. Therefore, this impact is considered to be ***potentially significant***.

Dioxin levels in the shallow overburden soil and in the underlying material to be processed for aggregate during the first 20 years of the proposed project (Phase 1 and Phase 2) are less than current regulatory levels (Vestra 2006). Furthermore, the dioxin results for all of the samples collected from the sandy gravel that will be processed for aggregate (including Phase 3) are less than the EPA residential preliminary elimination goal (PRG). Levels of waterborne dioxins, particularly the most toxic form 2,3,78-tetrachlorobenzo-p-dioxin or 2,3,7,8-TCDD, observed to cause adverse effects in fish are generally an order of magnitude higher than the concentrations measured from soil

and groundwater samples on the proposed project site (Walker and Peterson 1994). Thus, potential impacts of dioxin on special-status fish resulting from the disturbance of soil in the project area is considered to be ***less-than-significant*.**

Mitigation Measures:

MM 4.5.6(a): In the event that flood events exceed the 25-year (Phase 1) and 50-year (Phases 2 and 3) design flood capacities of the proposed quarry levees, a qualified fishery biologist shall be retained to conduct site surveys to quantify the extent of anadromous fish stranding that may occur. Fish shall be salvaged and returned to the Sacramento River to the extent practicable using fish collection and handling protocols approved by the California Department of Fish and Game and National Marine Fisheries Service.

Timing/Implementation: During project operation and in perpetuity.

Enforcement/Monitoring: California Department of Fish and Game and National Marine Fisheries Service.

MM 4.5.6(b): The design of the Phase 2 and Phase 3 quarry ponds shall include a controllable drainage system that allows any juvenile salmonids that may enter the ponds during floods exceeding the 50-year recurrence level to be passively returned to the Sacramento River.

Timing/Implementation: To be implemented during project operation and maintained in good operation for perpetuity.

Enforcement/Monitoring: California Department of Fish and Game and National Marine Fisheries Service.

MM 4.5.6(c) Grading of the restored Phase 1 quarry shall avoid creating pits or swales and insure that slopes and contours drain to the Sacramento River in order to prevent stranding of fish species during high flow events.

Timing/Implementation: During reclamation activities.

Enforcement/Monitoring: California Department of Fish and Game and National Marine Fisheries Service.

Implementation of the above mitigation measures will reduce impacts to a ***less-than-significant*** level.

Impact 4.5.7 Implementation of the Shasta Ranch Mining and Reclamation Plan could result in direct and indirect impacts to the California Species of Special Concern: Central Valley fall/late-fall run ESU Chinook salmon, Sacramento splittail, and river lamprey. This impact is considered ***potentially significant subject to mitigation*. [PSM]**

The potential for direct and indirect impacts of the Shasta Ranch Mining and Reclamation Plan on federal and state species of special concern is the same as described for listed fishes in **Impact 4.5.6**.

Mitigation Measures:

Apply Mitigation Measures **MM 4.5.6(a)** through **MM 4.5.6(c).**

Implementation of the above mitigation measures will reduce impacts to a ***less-than-significant*** level.

Impact 4.5.8 Implementation of the Shasta Ranch Mining and Reclamation Plan could result in direct and/or indirect impacts to the federally listed valley elderberry longhorn beetle. This impact is considered ***potentially significant subject to mitigation*****. [PSM]**

No elderberry shrubs will be removed as a result of implementation of the Shasta Ranch Mining and Reclamation Plan. However, indirect impacts to elderberry shrubs may occur as a result of the proximity of four shrubs to the Phase 1 levee and spur dike (e.g. soil compaction, altered hydrology, dust, erosion).

Mitigation Measures:

MM 4.5.8 In order to avoid and/or minimize the impacts to federally listed valley elderberry longhorn beetle, the following measures shall be implemented:

1. Prior to the start of construction activities in the project area, exclusionary fencing shall be erected around all elderberry shrubs within 100 feet of the project construction areas (e.g., roads, levees). Fencing shall be erected a minimum of 20 feet from the dripline (core avoidance area) of each elderberry shrub. In areas where encroachment within 100 feet of an elderberry shrub is necessary to complete construction activities, approval from the USFWS must be received. The exclusionary fencing shall be periodically inspected throughout each period of construction and be repaired as necessary. Signs shall be erected every 50 feet along the avoidance area that state the following: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be readily visible and must be maintained for the duration of construction and mining operations.
2. Prior to construction, a Worker Environmental Awareness Program for construction workers and miners shall be conducted by a qualified biologist. The program shall provide all workers with

information on their responsibilities with regard to sensitive biological resources, specifically the status of the federally threatened VELB and the need to protect its elderberry host plant.

3. All initial construction-related disturbances in buffer areas shall be minimized, and any damaged area shall be promptly restored after construction.
4. All construction personnel shall be excluded from core avoidance areas before, during, and after construction.
5. The Project Engineer shall oversee the construction by the subcontractors, to ensure that the required mitigation measures are being properly implemented (i.e., placement of the temporary exclusionary fencing, monitoring of construction-related activities within the 20-foot buffer area, protection of existing habitat).
6. The USFWS shall be provided with a map and written details identifying the avoidance areas.
7. Should complete avoidance of elderberry shrub buffer zones and core avoidance areas be impossible, the Applicant shall immediately halt construction and consult with the USFWS for further mitigation measures. Construction will continue upon receipt of written authorization from USFWS to proceed.
8. The following additional mitigation measures are identified in the event that intentional/unintentional damage (due to project construction activities) occurs to any qualifying elderberry plant. These include the following:

    a. Any damage to the buffer area during construction shall be restored following construction. Restoration shall include erosion control and re-vegetation with appropriate native plants as appropriate.

    b. Continue to protect the buffer areas from adverse effects following construction. These measures may include fencing, signs, weeding, and trash removal as appropriate.

    c. No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant shall be used within the buffer areas, or within 100 feet of any elderberry plant with one or more stems measuring 1inch or greater in diameter at ground level.

    d. Mowing of grasses and other ground cover may occur from July through April to reduce fire hazard. No mowing shall occur within 5 feet of elderberry stems. Mowing must be done in a manner that avoids damaging plants (e.g., stripping away bark by mowing/trimming equipment).

e. The Applicant shall provide the USFWS with a brief written description of how the core and buffer avoidance areas are to be restored, protected, and maintained after construction is completed.

Timing/Implementation: Prior to any ground disturbance within 100 feet of elderberry shrubs.

Enforcement/Monitoring: U.S. Fish and Wildlife Service

Implementation of the above mitigation measure will reduce impacts to a ***less-than-significant*** level.

Impact 4.5.9 Implementation of the Shasta Ranch Mining and Reclamation Plan could result in direct or indirect impacts to the bald eagle. This impact is considered ***potentially significant subject to mitigation*****. [PSM]**

The Sacramento River, which flows adjacent to the northern project site boundary, is prime foraging habitat for bald eagles. Habitat suitability within the project site is bolstered by the presence of significant stringers of riparian vegetation, including numerous large trees that occur along the northern project boundary/Sacramento River interface, as well as throughout the project site. Although there have been no documented occurrences or visual observations of bald eagles made during reconnaissance-level site visits, the project site does provide suitable bald eagle foraging and nesting habitat and the species could move into the area at any time. Suitable nesting habitat along the Sacramento River and Anderson Creek in the project area will be buffered from project-related activities; however, impacts to bald eagles could still occur, should the species begin to nest on the site, as a result of disturbance from noise and mining activities. Any activities that disturb a nesting bald eagle or destroy an active nest is considered a ***potentially significant impact, subject to mitigation.*** **[PSM]**

Mitigation Measures:

MM 4.5.9 In order to avoid and/or minimize the impacts to the habitat of bald eagles, the following measures shall be implemented during construction activities:

1. Initial grading and levee construction activities shall be scheduled to avoid the nesting season (February 15 through September 30) to the extent possible.
2. If vegetation is to be removed by the Project and all necessary approvals have been obtained, potential nesting substrate (e.g. trees) that will be removed by the Project may be removed between October 1 and February 14 (*i.e.*, outside the nesting season) to ensure that active bald eagle nest trees are not removed as a result of construction activities.

3. The project proponent shall retain a qualified biologist to conduct a minimum of one survey for nesting eagles in the proposed construction and mining activities area and in a surrounding 500-foot buffer of the area. The survey shall be conducted no more than one week prior to the onset of construction. Active bald eagle nests located within 500 feet of construction activities shall be mapped.
4. If an active nest is found, Section 10 consultation with the USFWS will be required before any construction activities can begin

Timing/Implementation: Prior to initiating construction activities for each phase.

Enforcement/Monitoring: U.S. Fish and Wildlife Service

Implementation of the above mitigation measure will reduce impacts to a ***less-than-significant*** level.

Impact 4.5.10 Implementation of the Shasta Ranch Mining and Reclamation Plan could result in direct or indirect impacts to the California red-legged frog. This impact is considered ***potentially significant subject to mitigation*****. [PSM]**

Freshwater emergent wetlands, riverine habitats, and associated uplands in the project area provide potentially suitable habitat for the California red-legged frog. Although no direct impacts to waters of the United States are expected to occur, impacts to California red-legged frogs could occur during site grading and levee construction. In upland habitats, "take" of individuals and/or loss of habitat could occur via the destruction of occupied aestivation habitat (*e.g.*, small mammal burrows, debris piles). During wet seasonal periods, California red-legged frogs might be present almost anywhere in the uplands and would be at risk of "take" caused by construction equipment and materials.

Mitigation Measures

MM 4.5.10 A California red-legged frog habitat assessment shall be conducted in accordance with guidelines provided by the USFWS (U.S. Fish and Wildlife Service 2005). This assessment shall be submitted to the USFWS who will make a determination as to whether protocol-level surveys will be required. If surveys are required by the USFWS, the applicant shall retain a qualified biologist to complete red-legged frog surveys per the USFWS protocol (U.S. Fish and Wildlife Service 2005). If it is determined that red-legged frogs may occur on the site, formal Section 10 consultation with the USFWS will be required.

Timing/Implementation: Prior to initiating construction activities for each phase.

Enforcement/Monitoring: U.S. Fish and Wildlife Service

Implementation of the above mitigation measures would reduce impacts to *a* ***less-than-significant level.*** **[LS]**

Impact 4.5.11 Implementation of the Shasta Ranch Mining and Reclamation Plan could result in direct or indirect impacts to the northwestern pond turtle. This impact is considered ***potentially significant subject to mitigation.*** **[PSM]**

Reclamation of the site (i.e. the creation of open water features with surrounding riparian vegetation) will increase the amount of suitable habitat for northwestern pond turtles in the area. However upland habitat (potential pond turtle aestivation habitat) adjacent to the Sacramento River will be directly impacted by the proposed grading and levee construction. If ground disturbance occurs within pond turtle habitat, individuals of the species could be directly impacted. Further, pond turtles may be impacted indirectly if construction results in degradation of aquatic habitat and water quality by increased erosion and sedimentation, or accidental fuel leaks/spills. Implementation of Mitigation Measure 4.5-3 will reduce these potential impacts to aquatic habitat and water quality to a less-than-significant level. The northwestern pond turtle is designated as a species of special concern by the USFWS and CDFG and any impacts to the species would be ***potentially significant***.

Mitigation Measures:

MM 4.5.11 In order to avoid and/or minimize the impacts to the habitat of northwestern pond turtle, the following measures shall be implemented:

1. Prior to any disturbance in suitable pond turtle habitat, the project proponent shall retain a qualified biologist to survey for pond turtles in the areas to be disturbed. Surveys shall occur in no more than 48 hours prior to the onset of disturbance. Surveys of the area shall be repeated if a lapse in construction activity of two weeks or greater occurs. If the species is detected, individuals shall be relocated to a suitable site within the same drainage by a qualified biologist, and a monitoring biologist will be present during initiation of construction activities to ensure that no turtles are present during the onset of disturbance activities.

2. If a northwestern pond turtle is encountered during construction, activities shall cease until appropriate corrective measures have been implemented or it has been determined that the turtle will not be harmed. Any trapped, injured, or killed northwestern pond turtles shall be reported immediately to the CDFG.

Timing/Implementation: Prior to implementing construction activities for each phase.

Enforcement/Monitoring: California Department of Fish and Game

Implementation of the above mitigation measure will reduce impacts to a **less-than-significant** level.

Impact 4.5.12 Implementation of the Shasta Ranch Mining and Reclamation Plan will result in take of Cooper's hawks, osprey, and white-tailed kites and/or loss of habitat for these species. This impact is considered ***potentially significant subject to mitigation*. [PSM]**

The study area provides suitable nesting and foraging habitat for the Cooper's hawk, white-tailed kite, and osprey, and the Project may result in a small reduction in available habitat for these species. Due to the small and temporary nature of the impacts, the regional abundance of similar habitats, and the reclamation that will occur as mining activities are completed, this impact is considered less than significant. However, construction and mining activities during the nesting season may disturb a nesting raptor or destroy an active nest. Pursuant to Section 3503.5 of the Fish and Game Code of California and the Migratory Bird Treaty Act (16 U.S.C. 703-711), it is considered unlawful to take, possess, or destroy the nest or eggs of any raptor. Therefore, activities during the nesting season that disturb a nesting raptor or destroy active nests are considered a ***potentially significant impact subject to mitigation***.

Mitigation Measures:

MM 4.5.12 In order to avoid and/or minimize the impacts to nesting raptors, the following measures shall be implemented:

1. Initial grading and levee construction activities shall be scheduled to avoid the nesting season (February 15 through September 30) to the extent possible.
2. If vegetation is to be removed by the Project and all necessary approvals have been obtained, potential nesting substrate (e.g. trees, shrubs) that will be removed by the Project may be removed between October 1 and February 14 (*i.e.*, outside the nesting season for raptor species) to ensure that active raptor nest trees are not removed as a result of construction activities.
3. The project proponent shall retain a qualified biologist to conduct a minimum of one survey for nesting raptors in the proposed construction and mining activities area and in a surrounding 500-foot buffer of the area. The survey shall be conducted no more than one week prior to the onset of construction. Active raptor nests located within 500 feet of construction activities shall be mapped.
4. If an active nest (a nest containing eggs or young) is found a qualified biologist, in consultation with CDFG, will determine the extent of a construction-free buffer zone to be established around the nest. A qualified biologist shall monitor the nest(s) to determine when the young have fledged and submit status reports to the

CDFG, as appropriate, throughout the nesting season. An active nest may only be removed after the young have fledged (based on field verification).

Timing/Implementation: Prior to initiating construction activities for each phase.

Enforcement/Monitoring: California Department of Fish and Game

Implementation of the above mitigation measures will reduce impacts to a ***less than significant*** level.

Impact 4.5.13 Implementation of the Shasta Ranch Mining and Reclamation Plan could result in direct or indirect impacts to the purple martin, tricolored blackbird, California yellow-warbler, yellow-breasted chat, and loggerhead shrike. This impact is considered ***potentially significant subject to mitigation*. [PSM]**

The study area provides suitable nesting and foraging habitat for the purple martin, tricolored blackbird, California yellow-warbler, yellow-breasted chat, and loggerhead shrike. All of which are California Species of Special Concern. The Project may result in a small reduction of foraging and/or roosting habitat for these species. Due to the small and temporary nature of the impacts, the regional abundance of similar habitats, and the reclamation that will occur after the completion of mining activities, this impact is considered less than significant. However, construction and mining disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Loss of fertile eggs or nesting individuals of these species, or any activities resulting in nest abandonment, is considered a ***potentially significant impact subject to mitigation***.

Mitigation Measures:

MM 4.5.13 In order to avoid and/or minimize the impacts to the purple martin, tricolored blackbird, California yellow-warbler, yellow-breasted chat, and loggerhead shrike, the following measures shall be implemented:

1. Initial grading and other construction activities shall be scheduled to avoid the nesting season (March 1 through September 30) to the extent feasible.
2. If vegetation is to be removed and all necessary approvals have been obtained, potential nesting substrate (e.g. bushes, trees, grass) that will be removed by the Project may be removed between October 1 and February 28 (i.e., outside of the nesting season) to help preclude nesting.
3. A qualified biologist shall be retained to conduct a minimum of one survey for nesting birds within the proposed construction and mining activities area and in a surrounding 250-foot buffer of the area. The survey shall be conducted no more than one week prior

to the onset of construction. If no active nests are located, no further mitigation is necessary.

4. If active nests (nests containing eggs or young) are located within 250 feet of construction activities, their location shall be mapped and a qualified biologist, in consultation with CDFG, will determine the extent of a construction-free buffer zone to be established around the nest. Active nests may not be removed until after the young have fledged (based on field verification). A qualified biologist shall monitor the nest to determine when the young have fledged and submit status reports to the CDFG throughout the nesting season.

Timing/Implementation: Prior to initiating construction activities for each phase.

Enforcement/Monitoring: California Department of Fish and Game

Implementation of the above mitigation measure will reduce impacts to a ***less-than-significant*** level.

Impact 4.5.14 Implementation of the Shasta Ranch Mining and Reclamation Plan could result in direct or indirect impacts to the pallid bat and Townsend's western big-eared bat. This impact is considered ***potentially significant subject to mitigation*. [PSM]**

The Sacramento River riparian corridor provides suitable roosting and/or foraging habitat for two bat species: pallid bat and Townsend's western big-eared bat. The pallid bat may roost in trees (e.g., spaces under tree bark or in cavities) as well as caves and buildings, while the Townsend's western big-eared bat prefers to nest in structures such as buildings, caves, and mines. Thus, the project area provides suitable breeding habitat for the pallid bat but not the Townsend's western big-eared bat, although it may rarely occur as a forager on the site. Although no bats were observed during reconnaissance surveys, suitable habitat is present. Further, bats could move into or off of the site at any time. Noise and visual disturbances associated with construction activities may disrupt bats roosting within or adjacent to the project area. Further, removing large trees with cavities could result in the direct loss of pallid bat colonies, *a* ***potentially significant impact***.

Mitigation Measures:

MM 4.5.14 In order to avoid and/or minimize the impacts to the pallid bat and Townsend's western big-eared bat, the following measures shall be implemented:

1. A pre-construction survey for roosting bats shall be conducted prior to any removal or disturbance of large trees ≥12 inches in diameter at 4.5 feet above grade. The survey will be conducted by a qualified biologist. No activities that would result in disturbance to

active roosts of special-status bats shall proceed prior to the completed surveys. If no active roosts are found, then no further action would be warranted. If an active roost is located in a tree not scheduled to be removed, a qualified biologist will determine the extent of a construction-free zone to be implemented around the roost. If either a maternity roost or hibernacula is present and located in a tree scheduled to be removed, the Mitigation Measures detailed below shall be implemented. CDFG shall also be notified of any active nurseries within the construction zone.

2. If an active maternity roost or hibernacula is found in a tree schedule to be removed, the Project will be redesigned to avoid the loss of the tree if feasible.
3. If an active maternity roost is located and the Project cannot be redesigned to avoid removal of the occupied tree, demolition of that tree should commence before maternity colonies form (i.e., prior to March 1) or after young are volant (flying) (i.e., after July 31). The disturbance-free buffer zone described above should be observed during the maternity roost season (March 1 - July 31).
4. If a non-breeding bat hibernacula is found in a tree scheduled to be removed, the individuals shall be safely evicted, under the direction of a qualified biologist by opening the roosting area to allow air flow through the cavity. Demolition shall then follow no less than the following day (i.e., there will be no less than one night between initial disturbance for air flow and the demolition). This action should allow bats to leave during dark hours, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight. Trees with roosts that need to be removed shall first be disturbed at dusk, just prior to removal that same evening, to allow bats to escape during the darker hours.

Timing/Implementation: Prior to initiating construction activities for each phase.

Enforcement/Monitoring: California Department of Fish and Game

Implementation of the above mitigation measure will reduce impacts to *a* ***less-than-significant*** level.

Impact 4.5.15 Implementation of the Shasta Ranch Mining and Reclamation Plan could result in direct or indirect impacts to the ringtail cats. This impact is considered ***potentially significant subject to mitigation.*** **[PSM]**

The Sacramento River riparian corridor provides habitat for the ringtail. Thus, removal of large trees with cavities or snags could result in the loss of ringtails, which a ***potentially significant impact***.

Mitigation Measures:

MM 4.5.15(a) A pre-construction survey for ringtails shall be conducted prior to any removal of trees ≥12 inches in diameter at 4.5 feet above grade. The survey will be conducted by a qualified biologist. No activities that would result in disturbance to active dens of ring-tail cats shall proceed prior to completion of the surveys. If no active dens are found, no further action would be warranted.

Timing/Implementation: Prior to initiating construction activities for each phase.

Enforcement/Monitoring: California Department of Fish and Game

MM 4.5.15(b) If an active ring-tail nest is found, the project will be redesigned to avoid the loss of the tree occupied by the nest if feasible. If the project cannot be redesigned to avoid removal of the occupied tree, demolition of that tree should commence outside of the breeding season (February 1 to August 30). If a non-breeding den is found in a tree scheduled to be razed, the individuals shall be safely evicted under the direction of a qualified biologist. Trees with dens that need to be removed shall first be disturbed at dusk, just prior to removal that same evening, to allow ring-tail cats to escape during the darker hours.

Timing/Implementation: Prior to initiating construction activities for each phase.

Enforcement/Monitoring: California Department of Fish and Game

Implementation of the above mitigation measures will reduce impacts to a ***less-than-significant*** level.

Impact 4.5.16 Implementation of the Shasta Ranch Mining and Reclamation Plan could result in direct or indirect impacts to non-listed special-status wildlife species that occur only as migrants or foragers on the site. This impact is considered ***less than significant*. [LS]**

The Project will have little effect on the breeding success of the double-crested cormorant, sharp-shinned hawk, merlin, prairie falcon, northern harrier, Vaux's swift, and Townsend's western big-eared bat although it will result in a small, temporary reduction of foraging habitat available to them regionally. Due to the abundance of similar habitats regionally, the infrequency with which most of these species occur in the study area, and the temporary nature of the impacts to the foraging habitat, the impact is considered to be ***less than significant***.

Mitigation Measures:

None required.

Impact 4.5.17 Implementation of the Shasta Ranch Mining and Reclamation Plan could block or disrupt a major fish or wildlife migration/travel corridor. This impact is considered ***less than significant*. [LS]**

For many species, the landscape is a mosaic of suitable and unsuitable habitat types. Environmental corridors are segments of land that provide a link between these different habitats while also providing cover. On a broader level, corridors also function as avenues along which wide-ranging animals can travel, plants can propagate, genetic interchange can occur, populations can move in response to environmental changes and natural disasters, and threatened species can be replenished from other areas. In California, environmental corridors often consist of riparian areas along streams, rivers, or other natural features. In addition, the rivers and streams themselves may serve as migration corridors for anadromous fish. Implementation of the Shasta Ranch Mining and Reclamation Plan would not result in the temporary or permanent blockage, fragmentation, or reduction in width of a wildlife migration/travel corridor; neither the Sacramento River nor the riparian habitat lining its banks would be blocked or reduced in width. Therefore, impacts to major fish or wildlife migration/travel corridors would be ***less than significant.***

Mitigation Measures

None required.

Impact 4.5.18 Implementation of the Shasta Ranch Mining and Reclamation Plan could conflict with local policies or ordinances protecting biological resources. This impact is considered ***less than significant*. [LS]**

State Bill 1334 requires that counties determine whether or not a project may result in a conversion of oak woodlands that will have a significant effect. Although a few individual oak trees may be removed as a result of the proposed project, it will not result in the conversion of oak woodlands. Therefore, impacts to oak woodlands in Shasta County would be ***less than significant***.

Mitigation Measures

None required.

Impact 4.5.19 Implementation of the Shasta Ranch Mining and Reclamation Plan could result in the spread of non-native and invasive plant species. This impact is considered ***potentially significant subject to mitigation*. [PSM]**

Implementation of the proposed project could result in the spread of non-native and invasive plant species during ground-disturbing activities. Further, after completion of reclamation, aquatic invasive species such as *Hydrilla verticillata* may become

established in the resulting ponds and could potentially be transported to the Sacramento River. This impact would be considered ***potentially significant***.

Mitigation Measures:

MM 4.5.19(a) In order to avoid and/or minimize the potential introduction and/or spread of noxious weeds, the following measures shall be implemented:

1. Use only certified weed-free erosion control materials, mulch, and seed.
2. Preclude the use of rice straw in riparian areas.
3. Limit any import or export of fill to material not known to be weed free.
4. Annual weed monitoring of the project area will be conducted until habitat performance criteria (as detailed in the Reclamation Plan) have been met for two consecutive years. Areas planted with native species will be weeded between the months of April and August using the best available method. Herbicide treatment for invasive species that cannot be eradicated through manual or mechanical removal will be permitted as needed.

Timing/Implementation: Throughout project construction and reclamation.

Enforcement/Monitoring: California Department of Fish and Game

MM 4.5.19(b) All slopes shall be vegetated with indigenous grasses or plants to minimize surface erosion.

Timing/Implementation: Prior to issuance of the final grading permit, Conditional Use Permit and Reclamation Plan.

Enforcement/Monitoring: Shasta County Department of Resource Management, Environmental Health Division and Planning Division.

Implementation of the above mitigation measures will reduce impacts to a **less-than-significant** level.

4.5.6 CUMULATIVE IMPACTS AND MITIGATION

No cumulative impacts were identified.

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ACRONYMS

ACOE	Army Corps of Engineers
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	U.S. Army Corps of Engineers
County	Siskiyou County
DFG	California Department of Fish and Game
DEIR	Draft environmental impact report
EIR/EA	Environmental Impact Report/Environmental Assessment
ESA	Federal Endangered Species Act
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
Forest Service	USDA Forest Service
LRMP	Land and Resource Management Plan
LS	Less than significant
MBTA	Migratory Bird Treaty Act
MCSD	McCloud Community Services District
MDBM	Mount Diablo Base Meridian
MMP	Mitigation Monitoring Program
MSAAS	Mount Shasta Area Audubon Society
MSMRNA	Mount Shasta Mudflow Research National Area
NMFS	National Marine Fisheries Service
NOAA	NOAA Fisheries
NMFS	National Marine Fisheries Service
NWNA	Nestlé Waters North America
RWQCB	Regional Water Quality Control Board

STNF	Shasta-Trinity National Forest
TNC	The Nature Conservancy
USACE	U.S. Army Corps of Engineers
USFS	United States Forest Service
USFWS	U.S. Fish and Wildlife Services
USEPA	U.S. Environmental Protection Agency
WHR	California Wildlife Habitat Relationships

This section evaluates the potential impacts of the project on cultural resources. CEQA Guidelines Section 15064.5(a) defines a historical resource for the purposes of environmental review. The analysis of cultural resource impacts is primarily based upon archaeological investigations conducted by Jensen & Associates in 2004.

4.6.1 ENVIRONMENTAL SETTING

LOCATION AND SITE CONDITIONS

The project area is located adjacent to the west side of the Sacramento River and the east side of Balls Ferry Road, approximately two miles east of the City of Anderson, Shasta County, California. Lands affected are located within unprojected Sections of the San Buenaventura Land Grant, within a portion of Township 30 North, Range 3 West, as shown on the USGS Balls Ferry, California 7.5' series quad (See **Figure 3.0-2, Project Area Map**).

Most of the land in the project area remains generally undeveloped, although ranching and farming have been undertaken since the middle of the 19th Century and during modern times portions of the project area were utilized by Simpson Lee Paper Company for wash water disposal. Collectively, these activities, particularly mechanized farming and related irrigation, have resulted in substantial impacts to the ground surface and subsurface cultural components at scattered locations throughout the project area.

Elevation within the project area averages between 370 feet to 420 feet above mean sea level (AMSL). The most important natural surface water source for this area is of course the Sacramento River that forms the eastern property boundary. The confluence of Cow Creek with the Sacramento River is located near the northeast corner of the project area, while the confluence of Bear Creek with the Sacramento River is located near the southeast corner. Anderson Creek proceeds through the western portion of the property, merging with the Sacramento River south of the property.

Overall and based upon map review and the results of previous survey work in this area, the project area contains lands ranging from low to high in archaeological sensitivity for prehistoric sites, and from low to moderate in sensitivity for historic-period sites and features.

PREHISTORY

The project area is located within Wintu Indian territory (Du Bois 1935: Map 1; La Pena 1978: Figure 1), not too far from the border shared with the Yana to the east and the Nomlaki to the south. The basic social unit for all three groups was the family, although the village may also be considered a social, political and economic unit. Villages were usually located on flats adjoining streams, and were inhabited mainly in the winter as it was necessary to go up into the hills and higher elevations to establish temporary

camps during food gathering seasons (i.e., spring, summer and fall). Villages frequently contained a scattering of bark houses, numbering from four or five to several dozen in larger villages, each house containing a single family of three to seven people. Larger villages containing from twelve to fifteen houses, especially those along the Sacramento River, might also have an earth lodge.

As with all northern California Indian groups, economic life for the Wintu, Nomlaki and Yana revolved around hunting, fishing and the collecting of plant foods, with deer, acorns, and salmon representing primary staples. Collecting and processing these various food resources was accomplished with the use of a wide variety of wooden, bone and stone artifacts. These groups were also very sophisticated in terms of their use of local plants and animals, and knowledge of raw materials that could be used in manufacturing an immense array of primary and secondary tools and implements. However, only fragmentary evidence of their material culture remains, due in part to perishability, and in part to the impacts to archaeological sites resulting from later (historic) land uses. Based on the results of previous survey work within the general and immediate project area (e.g., Jensen 1978, 1980, 1992; 1996; J. Johnson 1984; K. Johnson 1974), the expected range of Native American site types included the following:

- Surface scatters of lithic artifacts and debitage, often but not always associated with dark brown to black "midden" deposits, resulting from village encampments. Typically such sites are located adjacent or close to water sources.
- Surface scatters of lithic artifacts and debitage without associated middens, resulting from short-term occupation and/or specialized economic activities.
- Bedrock milling stations, including both mortar holes and metate slicks, located in areas where bedrock is exposed, particularly along stream channels.
- Petroglyphs, especially "pitted" or "cupped" bedrock outcrops.
- Isolated finds of aboriginal artifacts and flakes.

HISTORY

Historic evidence exists to document that some of the Spanish and Mexican expeditions may have come through and made brief stays within northern California. John Work's fur trapping expedition through central California in 1832-33, the best documented of the initial forays into the Redding area, introduced several communicable diseases to the Native inhabitants which turned out to be devastating to Wintu culture and society (Work 1945; Cook 1955).

The next major incursion by Euroamericans occurred during the Gold Rush, which in this area began with Reading's 1848 discovery of gold along Clear Creek. Mineral deposits along many of the streams in north Redding, and streams located west of the Sacramento River as far south as the Anderson area, were intensively mined on a fairly small scale through the end of the 19th Century. Just at the turn-of-the-century, however, Shasta County began to experience accelerated population and economic growth as the mineral resource increasingly began to be mined with mechanized equipment. Hundreds of "wildcat" operations emerged to exploit the recently discovered, but low-grade, copper, gold and silver deposits. Mining stimulated the growth of other industries as well, and soon led to a burgeoning County population.

Following intensive mining and early ranching, the local population focused increasingly on ranching and farming, although the population in the area remained quite low and widely scattered until about the middle of the 20th Century. During this latter period and into the recent past, the project area was utilized for ranching and farming operations, with increased mechanization since the middle of the 20th Century.

In the 1970's, the Simpson Lee Paper Company acquired a portion of the project area and utilized it to dispose of wash water from its nearby paper mill. Some impacts to project area lands accompanied this land use activity, although most of the impacts to the ground surface and subsurface components are more directly linked with mechanized farming and ranching activities of the 20th Century.

4.6.2 REGULATORY FRAMEWORK

STATE

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires that lead agencies determine whether projects may have a significant effect on archaeological and historical resources. This determination applies to those resources that meet significance criteria qualifying them as "unique," "important," listed on the California Register of Historic Resources (CRHR), or eligible for listing on the CRHR. If the agency determines that a project may have a significant effect on a significant resource, the project is determined to have a significant effect on the environment, and these effects must be addressed. If a cultural resource is found not to be significant under the qualifying criteria, it need not be considered further in the planning process.

CEQA emphasizes avoidance of archaeological and historical resources as the preferred means of reducing potentially significant effects. If avoidance is not feasible, an excavation program or some other form of mitigation must be developed to mitigate these impacts.

LOCAL

SHASTA COUNTY GENERAL PLAN

The *Shasta County General Plan* contains the following objectives and policies concerning cultural resources that pertain to the project: [1]

Objective

HER-1. Protection of significant prehistoric and historic cultural resources.

Policy

HER-a. Development projects in areas of known heritage value shall be designed to minimize degradation of these resources. Where conflicts are unavoidable, mitigation measures which reduce such impacts shall be implemented. Possible mitigation measures may include clustering, buffer or nondisturbance zones, and building siting requirements.

4.6.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The project may have ***significant impacts*** on cultural resources if it does any of the following:

- Causes a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5.
- Causes a substantial adverse change in the significance of a unique archaeological resource pursuant to CEQA Guidelines Section 15064.5.
- Directly or indirectly destroys a unique paleontological resource or site or unique geologic feature.
- Disturbs any human remains, including those interred outside of formal cemeteries.

CEQA Guidelines Section 15064.5 provides guidance in determining the significance of impacts on historical and unique archaeological resources. A lead agency is required to identify potentially feasible measures to mitigate significant adverse changes in the significance of an historical resource. "Substantial adverse change" includes demolition, destruction, relocation or alteration of an historical resource or its immediate surroundings such that the significance of the resource would be materially impaired. A historical resource is considered **significant** if meets one of the following criteria:

- The resource is listed in, or determined to be eligible for listing in, the California Register of Historical Resources.

- The resource is included in a local register of historical resources or identified as significant in an historical resource survey.

- The resource is determined by a lead agency to be historically significant, provided the determination is supported by substantial evidence that any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources including the following:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

- Is associated with the lives of persons important in our past;

- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

- Has yielded, or may be likely to yield, information important in prehistory or history [CEQA Guidelines Section 15064.5(a)(3)].

Public Resources Code Section 21083.2, part of CEQA, governs the identification and treatment of unique archaeological resources. This section allows a lead agency to require reasonable efforts to be made to permit any or all of a unique archaeological resource to be preserved in place or left in an undisturbed state. To the extent that such a resource is not preserved in place or not left in an undisturbed state, mitigation measures shall be required as provided in Section 21083.2.

METHODOLOGY

Prior to 2004, approximately 10% of the project area had been formally surveyed for cultural resources. Johnson (1974) and Yatsko (1976) surveyed approximately 100 acres in the vicinity of the former mill site, treatment lagoon, and the margins of the Sacramento River within the project area. This work resulted in identifying two prehistoric sites within the former Shasta Ranches property. One of these sites (CA-SHA-779) is located adjacent to the Sacramento River within the east-central portion of the

property. The second site (CA-SHA-780) is located near the center of the overall project area, partially under the existing Round Mountain-Cottonwood #3 and the Pacific Gas & Electric Company's Round Mountain electrical transmission lines. Site CA-SHA-780 was re-recorded in 1999 during additional survey work within the project area (Dore and Serafin 2000, I.C. File # 3398). Dore and Serafin's survey also resulted in recording and evaluating PG&E's Round Mountain electrical transmission line (site CA-SHA-2939), a linear feature that proceeds roughly northeast-southwest through the central portion of the project area. These researchers recommended this historic resource (CA-SHA-2939) ineligible for listing in either the National Register of Historic Places or the California Register of Historical Resources (Dore and Serafin 2000:ii). Lastly, the U.S. Army Corps of Engineers conducted survey work along both sides of Anderson Creek within the project area and beyond (Sacramento District, U.S. Army Corps of Engineers 1980, I.C. File # 1447A). No prehistoric or historic-period sites or features were identified within, adjacent or close to the project area by the Corps during this 1980 survey along Anderson Creek

In 2004, Jensen and Associates (Jensen) completed an Archaeological Inventory Survey (AIS) of the project area. During the preparation of the AIS, Jensen conducted a records search at the Northeast Information Center at CSU-Chico and consulted with the Native American Heritage Commission and Native American representatives with cultural ties to the project area. The goals of the records search and consultation were to determine (a) the extent and distribution of previous archaeological surveys, (b) the locations of known archaeological sites and any previously recorded archaeological districts, and (c) the relationships between known sites and environmental variables. This step was designed to ensure that, during subsequent field survey work, all significant/eligible cultural resources would be discovered, correctly identified, fully documented, and properly interpreted.

Jensen also conducted a complete-coverage pedestrian survey of the project area as part of the AIS. The purpose of the pedestrian survey was to ensure that any previously identified sites would be relocated and evaluations updated vis-à-vis existing field conditions. For any undocumented sites discovered, the pedestrian survey also included preparing State DPR-523 Primary Records. Based on a map review and the results of previous archaeological surveys within portions of the property and immediate vicinity, Jensen determined that variable-intensity coverage would be appropriate. The variable-intensity coverage consisted of an intensive-level field survey of those areas determined to most likely contain cultural resources (approximately 15% of the project area) and a general-level field survey of the remaining site. These field surveys are described below.

The intensive-level field survey was undertaken in the highest sensitivity areas, including the margins and all terraces and elevated ground associated with the Sacramento River and Anderson Creek where these features proceed through or adjacent to the project area. Within these areas and terrain types, estimated at approximately 15% of

the overall 1,000-acre project area, survey transects were spaced at roughly 15-25 meter intervals.

The general-level field survey was undertaken within the remaining 85% or so of the property, which included flat terrain located away from elevated areas, terraces and benches associated with the Sacramento River and Anderson Creek.

In searching for cultural resources, the surveyors took into account the results of background research and were alert for any unusual contours, soil changes, distinctive vegetation patterns, exotic materials, artifacts, feature or feature remnants and other possible markers of cultural sites.

Upon completion of the records search and pedestrian survey, Jensen prepared a Final Report that identified potential impacts to cultural resources within the project area and immediate vicinity and recommended appropriate mitigation measures for sites that might be affected and that Jensen considered significant or potentially significant per CEQA, and/or eligible or potentially eligible for inclusion on the National Register of Historic Places. Jensen and Associates' Archaeological Inventory Survey is provided in its entirety in **Appendix 4.6-1**.

ANALYSIS OF IDENTIFIED RESOURCES

Site CA-SHA-780

One of the prehistoric sites, CA-SHA-780, is located near the center of the overall project area, partially under the existing Round Mountain-Cottonwood #3 and the Pacific Gas & Electric Company's Round Mountain electrical transmission lines. As noted in previous discussions, this site was first identified and recorded in 1974/1979 in conjunction with Simpson Lee Paper Company's proposed use of the project area for distribution of wash water outflow from its paper mill located close to the east side of Interstate 5 at Anderson. The site was re-recorded in 1999 during survey work within the project area involving PG&E's Round Mountain transmission line (Dore and Serafin 2000). In 1976, Andrew Yatsko representing the Research Archaeology Program at Chico State University evaluated this site, which included intensive surface reconnaissance and surface collection of all observed cultural material, excavation of three 1-m-sq test pits to 40 cm depth, and description, characterization and evaluation of the recovered assemblage. During the evaluation, only 26 artifacts were recovered, all from the surface, while excavation of three test units yielded only 11 waste flakes, none below 30 cm. Yatsko's examination of exposed soil profiles indicated no midden accumulation and no discernible stratigraphic profile, a finding consistent with the absence of significant accumulations of cultural material and also consistent with Yatsko's conclusion that the site was likely not utilized for primary habitation. Yatsko concluded that the site was neither significant nor eligible for inclusion on the National Register under any of the relevant evaluative criteria, due in large measure to disturbance to the site, the absence of any diagnostic implement types, and the

absence of a subsurface accumulation at this location. Simpson Lee Paper Company "...completely obliterated...the site within weeks of the completion of the field evaluation" (Yatsko 1976:7) in conjunction with preparation of the field around the site for receiving the wash water runoff from the mill plant located to the east near Interstate 5.

In 1999, the archaeological survey along PG&E's transmission line that partially spans the archaeological site (Dore and Serafin 2000) encountered a total of 16 secondary and tertiary basalt flakes distributed sparsely throughout the general vicinity of site CA-SHA-880. Dore and Serafin prepared an UPDATE to the original site record for CA-SHA-880 at this time, and filed the document with the Northeast Information Center at CSU-Chico. This UPDATE record provides further confirmation that Yatsko's observations were accurate concerning the absence of significant cultural material accumulations at this locale.

Observations made during Jensen's pedestrian survey confirm the findings and observations of Yatsko, and Dore and Serafin. Essentially nothing remains of the site which, prior to extensive impacts in the 1970's, contained no temporally diagnostic artifacts, only a very few number and narrow range of formed tools on the surface, and neither a subsurface accumulation of cultural material nor non-artifactual midden constituents.

Due to complete loss of integrity, the absence of accumulated deposit, and the lack of data sets that might be useful for further research, this site is recommended *ineligible for listing* in either the National Register of Historic Places or the California Register of Historical Resources.

Site CA-SHA-2939

The Dore and Serafin survey along the PG&E Round Mountain Transmission Line resulted in recording and evaluating this linear feature (site CA-SHA-2939) (Dore and Serafin 2000) that proceeds roughly northeast-southwest through the central portion of the project area. These researchers recommended this historic resource ineligible for listing in either the National Register of Historic Places or the California Register of Historical Resources (Dore and Serafin 2000:ii). This recommendation has been elevated to the status of a determination as a result of consultation between a federal agency (United States Department of Agriculture Forest Service) and California SHPO, during State Historic Preservation Office's review and concurrence with findings of the Dore and Serafin inventory.

Site CA-SHA-779

The third and final identified site within the project area is CA-SHA-779, located adjacent to the Sacramento River within the east-central portion of the project area. As with CA-SHA-780, this site was also encountered by Keith Johnson in 1974 during survey

work for the proposed disposal of wash water from the Simpson Lee Paper Company's mill. This site occupies the east natural levee of the Sacramento River, and is dissected by a lightly graded levee access road. Intensive surface reconnaissance and site recordation were undertaken by Yatsko at the time of his evaluation of site CA-SHA-779, as a result of which the site boundary was clearly identified as extending 75 meters along the levee, extending back from (west of) the river bank approximately 30 meters. Surface indicators of buried cultural material include a moderate to high density of lithic material on the surface (approximately three to eight items per square meter of surface area in some areas of the site), freshwater shell, and a dark, greasy-textured "midden". The site remains today essentially as described by Yatsko, except that additional vegetation has become established among the several Valley Oak trees that define the distribution of midden at this site. An update to the existing Yatsko site record was prepared during Jensen and Associates' Archaeological Inventory Survey and has been filed with the Northeast Information Center.

As previously mentioned, CA-SHA-779 contains a buried deposit. Although its maximum depth and thus its volume are unknown since no archaeological test excavation has been undertaken, the limits of the deposit were clearly defined by Yatsko's evaluation in the late 1970's, and are clearly evident in exposed rodent holes and in the face of the River bank/terrace on which the site is located. As well, this site clearly contains portable cultural material, likely including formed and datable (temporally diagnostic) artifact types, faunal and floral remains, specialized samples suitable for faunal analysis and radiocarbon dating, etc. Such material could be expected to yield additional information on prehistoric patterns of resource extraction methodology and technology, technical information concerning lithic reduction strategies employed, the size of the population involved, and further characterization of the intensity of resource use during prehistoric time periods in this area of northern California.

There is no evidence of substantial prior disturbance or pot hunting at CA-SHA-779, and the existing road through the site appears to have been only lightly graded over the years. Therefore, it may be presumed that virtually all of the original deposit remains intact. This site is considered significant/eligible for inclusion in either the NRHP or CRHR per Criterion d).

PROJECT IMPACTS AND MITIGATION MEASURES

Impact 4.6.1 Implementation of the proposed project could result in the potential disturbance or destruction of sites CA-SHA-780 and CA-SHA-2939. However, implementation of the project will have a ***less than significant impact*** on these sites**. [LS]**

Site CA-SHA-780 was *recommended* ineligible for inclusion on the NRHP, the CRHR, or for consideration for designation as unique archaeological resources. Likewise CA-SHA-2939 was *determined* ineligible for inclusion on the NRHP, the CRHR, or for consideration

for designation as unique archaeological resources. Therefore, implementation of the project will have a **less than significant** impact on these sites.

Impact 4.6.2 Implementation of the proposed project could result in the potential disturbance or destruction of site CA-SHA-779. This is considered a ***potentially significant impact, therefore subject to mitigation*. [PSM]**

Archaeological sites containing buried cultural deposits related to Native American use typically document protracted habitation and performance of a range of domestic activities. For these reasons, further research at such sites frequently has the potential to expand our understanding and appreciation of local and regional prehistory, and such sites are therefore often considered significant per CEQA and eligible for inclusion on the National Register of Historic Places, under Criterion d).

CA-SHA-779 contains a buried deposit. Although its maximum depth and thus its volume are unknown since no archaeological test excavation has been undertaken, the limits of the deposit were clearly defined by Yatsko's evaluation in the late 1970's, and are clearly evident in exposed rodent holes and in the face of the River bank/terrace on which the site is located. As well, this site clearly contains portable cultural material, likely including formed and datable (temporally diagnostic) artifact types, faunal and floral remains, specialized samples suitable for faunal analysis and radiocarbon dating, etc. Such material could be expected to yield additional information on prehistoric patterns of resource extraction methodology and technology, technical information concerning lithic reduction strategies employed, the size of the population involved, and further characterization of the intensity of resource use during prehistoric time periods in this area of northern California.

There is no evidence of substantial prior disturbance or pot hunting at CA-SHA-779, and the existing road through the site appears to have been only lightly graded over the years. Therefore, it may be presumed that virtually all of the original deposit remains intact. This site is thus considered significant/eligible for inclusion on the NRHP and/or the CRHR per Criterion d). Consequently, any project related disturbance to this site is considered a ***potentially significant* impact, therefore subject to mitigation. [PSM]**

<u>Mitigation Measures</u>:

MM 4.6.2 Ground disturbing project activity should not be conducted within boundaries of sites CA-SHA-779. If ground disturbing activity within boundaries of this site cannot be avoided, one of the following options shall be implemented:

1. An archaeologist meeting the Secretary of Interior's Professional Qualifications Standards in prehistoric archaeology shall be retained to excavate the sites to determine their eligibility for inclusion on the

NRHP and the CRHR and recover the data potential of the sites, if appropriate; or

2. An archaeologist meeting the Secretary of Interior's Professional Qualifications Standards in prehistoric archaeology shall be retained to: prepare an inadvertent discovery plan; monitor any ground disturbing activities within site boundaries; and update the records for the sites; or

3. A representative of the Wintu Tribe shall be on-site to monitor all ground disturbing activity within the boundaries of CA-SHA-779. If significant cultural resources are identified during monitoring the protocols presented in the inadvertent discovery plan shall be implemented.

Timing/Implementation: As a condition of project approval, and implemented prior to and during grading, mining and/or construction activities.

Enforcement/Monitoring: Shasta County Department of Resource Management, Planning Division.

Implementation of MM 4.6.2 would reduce the impacts to a ***less than significant impact.*** **[LS]**

Impact 4.6.3 Prehistoric or historic sites may be uncovered in the course of any grading, construction or mining activity associated with the project. This will result in a ***potentially significant impact, therefore subject to mitigation*****. [PSM]**

Subsurface excavations have been conducted only within a very small fraction of the overall site. It is possible that future grading, construction or mining activities within the project area may uncover additional cultural resources. Impacts to previously unidentified cultural resources are considered ***potentially significant, therefore subject to mitigation*****. [PSM]**

Mitigation Measure:

MM 4.6.3 If any prehistoric and/or historic resources, or other indications of cultural resources are found once project implementation is underway, all work in the immediate vicinity of the find must stop and the County shall be immediately notified. An archaeologist meeting the Secretary of Interior's Professional Qualifications Standards in prehistoric or historical archaeology, as appropriate, shall be retained to evaluate the finds and recommend appropriate mitigation measures.

Timing/Implementation: During grading, mining and/or construction activities.

Enforcement/Monitoring: Shasta County Department of Resource Management, Planning Division

Implementation of **MM 4.6.3** would reduce the impacts to a **less than significant impact** upon discovery of any prehistoric or historic sites found on the project site. **[LS]**

Impact 4.6.4 Paleontological resources may be uncovered in the course of any grading or construction work associated with the project. This will result in a ***potentially significant impact, therefore subject to mitigation*. [PSM]**

The site has not been surveyed for paleontological resources. It is possible that future grading, construction or mining activities within the project area may uncover potentially significant paleontological resources. Impacts to paleontological resources are considered ***potentially significant and subject to mitigation***.

Mitigation Measure:

MM 4.6.4 If any paleontological resources are found once project implementation is underway, all work in the immediate vicinity of the find must stop and the County shall be immediately notified. A qualified paleontologist (i.e. one with a graduate degree in paleontology, geology, or related field, and having demonstrated experience in the vertebrate, invertebrate, or botanical paleontology of California) shall be retained to evaluate the finds and recommend appropriate mitigation measures.

Timing/Implementation: During grading, mining and/or construction activities.

Monitoring/Enforcement: Shasta County Department of Resource Management, Planning Division

Implementation of **MM 4.6.4** would reduce the impacts to a ***less than significant impact*** upon discovery of any paleontological resources found on the project site. **[LS]**

Impact 4.6.5 Human remains may be uncovered in the course of any grading or construction work associated with the project. This will result in a ***potentially significant impact, therefore subject to mitigation*. [PSM]**

As stated above, subsurface excavations have been conducted only within a very small fraction of the overall site. It is possible that future grading, construction or mining activities within the project area may uncover human remains. Impacts to previously

unidentified gravesites are considered ***potentially significant and subject to mitigation***. **[PSM]**

Mitigation Measure:

MM 4.6.5 If human remains are discovered, all work must stop in the immediate vicinity of the find, and the County Coroner must be notified, according to Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native American, the coroner will notify the Native American Heritage Commission, and the procedures outlined in CEQA Section 15064.5(d) and (e) shall be followed.

Timing/Implementation: During grading, mining and/or construction activities.

Enforcement/Monitoring: Shasta County Department of Resource Management, Planning Division

Implementation of mitigation measures **MM 4.6.2 through MM 4.6.5** would reduce impacts to undiscovered cultural and paleontological resources to a level that is ***less than significant.*** These mitigation measures would avoid any significant damage to any undiscovered prehistoric and/or historic resources until a professional archaeologist or paleontologist can assess their significance and determine if mitigation is necessary. Implementation of the mitigation measures would reduce potential impacts to any cultural and paleontological resources uncovered during project activity to a level that is ***less than significant***. **[LS]**

4.6.6 CUMULATIVE IMPACTS AND MITIGATION

No cumulative impacts were identified.

REFERENCES

Jensen & Associates. Archaeological Inventory Survey: Proposed Shasta Ranches Development Project, c. 1,000 acres East of Anderson and Adjacent to the Sacramento River, Shasta County, August 16, 2004.

ENDNOTES

[1] Shasta County General Plan, Section 6.10, Heritage Resources, pg. 6.10.04

This section describes the noise environment at and near the project site, and it analyzes potential noise impacts generated by the proposed project. The analysis includes the potential impacts of noise generated by project construction, project operations and traffic on noise-sensitive areas, primarily residences. The evaluation is based upon a noise analysis conducted Ambient, Inc.

4.7.1 ENVIRONMENTAL SETTING

BACKGROUND ON NOISE AND ACOUSTICAL TERMINOLOGY

Noise is generally defined as unwanted sound that is loud, disagreeable, or unexpected. Sound, as described in more detail below, is mechanical energy transmitted in the form of a wave because of a disturbance or vibration. The number of pressure variations per second is called the frequency of sound.

To measure sound directly in terms of pressure the decibel scale was designed and uses the hearing threshold (20 micropascals of pressure), as a point of reference, defined as 0 decibels (dB). Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB.

Another useful aspect of the decibel scale is that changes in levels correspond closely to human perception of relative loudness known as amplitude. Amplitude is the difference between ambient air pressure and the peak pressure of the sound wave. Amplitude is measured in decibels (dB) on a logarithmic scale. Because the decibel scale is logarithmic, the noise produced by two noise sources does not equal the sum of their individual decibel levels. For example, a 65 dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). Amplitude is interpreted by the ear as corresponding to different degrees of loudness. Laboratory measurements correlate a 10 dB increase in amplitude with a perceived doubling of loudness and establish a 3 dB change in amplitude as the minimum audible difference perceptible to the average person.

The perception of loudness of sounds is dependent upon many variables, including sound pressure level and frequency content. Frequency measures the number of fluctuations of the pressure wave per second expressed in cycles per second or Hertz (Hz). Sound waves below 16 Hz or above 20,000 Hz cannot be heard at all, and the ear is more sensitive to sound in the higher portion of this range than in the lower. To approximate this sensitivity, environmental sound is usually measured in A-weighted decibels (dBA). The A-weighted measurement has become the standardized tool of environmental noise assessment based on the strong correlation between A-weighted sound levels and community response to noise. On this scale, the normal range of human hearing extends from about 10 dBA to about 140 dBA.

The human response to environmental noise is subjective and varies considerably from individual to individual. Community noise is commonly described in terms of the

"ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (Leq) over a given time period (usually one hour). The Leq is the foundation of the Day-Night Average Level noise descriptor, Ldn, and shows very good correlation with community response to noise.

Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases. The acceptability of noise and the threat to public well-being are the basis for land use planning policies preventing exposure to excessive community noise levels.

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise over differing individual experiences with noise. In general, however, few individuals are typically considered "highly annoyed" when exposed to hourly-average noise levels below 55 dBA L_{eq}, and few are "moderately annoyed" at levels below 50 dBA L_{eq}. Intermittent or impulsive noise levels should typically not exceed 45 dBA L_{max} within interior occupied building areas (WHO 1999).

Noise can be generated by a number of sources, including mobile sources, such as automobiles, trucks and airplanes, and stationary sources, such as construction sites, machinery, and industrial operations. Noise generated by mobile sources typically attenuates at a rate between 3.0 to 4.5 dBA per doubling of distance. The rate depends on the ground surface and the number or type of objects between the noise source and the receiver. For mobile transportation sources, such as highways, hard and flat surfaces, such as concrete or asphalt, have an attenuation rate of 3.0 dBA per doubling of distance. Soft surfaces, such as uneven or vegetated terrain, have an attenuation rate of about 4.5 dBA per doubling of distance from the source. Noise generated by stationary sources typically attenuates at a rate of approximately 6.0 to 7.5 dBA per doubling of distance from the source.

Sound levels can be reduced by placing barriers between the noise source and the receiver. In general, barriers contribute to decreasing noise levels only when the structure breaks the "line of sight" between the source and the receiver. Buildings, concrete walls, and berms can all act as effective noise barriers. Wooden fences or broad areas of dense foliage can also reduce noise, but are less effective than solid barriers.

Atmospheric Effects

Atmospheric conditions such as wind speed, temperature, and humidity may affect noise levels as discussed in detail below.

Wind. The effects of wind on noise are mostly confined to noise paths close to the ground because of the wind shear phenomenon. Wind shear is caused by the slowing of wind near the ground because of friction. As the surface roughness of the ground increases, so does the friction between the ground and the air moving over it. As the wind slows near the ground, a sound velocity gradient is created because of differential movement of air with respect to the ground. This velocity gradient tends to bend sound waves downward in the same direction of the wind and upward in the opposite direction. The process, called refraction, creates a noise shadow downwind of the source.

Temperature Gradients. In the troposphere, air temperature normally decreases with increased height above the ground. Because the speed of sound decreases as air temperature decreases, the resulting temperature gradient creates a sound velocity gradient with height. Slower speeds of sound higher above the ground tend to refract sound waves upward in the same manner as wind shear does upwind of the source. The result is a decrease in noise. Under certain stable atmospheric conditions, however, temperature profiles are inverted; in other wards, temperature increases with height. The inversion results in speeds of sound that temporally increase with altitude, causing noise refraction similar to that caused by wind shear downwind of a noise source. Inversions can affect noise propagation, resulting in less-than-normal attenuation rates and thus increased noise. The effects of vertical temperature gradients are more important over longer distances.

Temperature and Humidity. Molecular absorption in the air also reduces noise levels with distance. Although this process only accounts for about 1 dBA per 300 meters (1,000 feet) under average conditions with respect to traffic noise, the process may cause significant longer range effects. Air temperature and humidity affect molecular absorption differently depending on the frequency spectrum and vary significantly over long distances in a complex manner.

Rain. With respect to traffic noise, wet pavement results in an increase in tire noise and a corresponding increase in frequencies of noise at the source. Because the propagation of noise is frequency dependent, rain may also affect distance attenuation rates. On the other hand, traffic generally slows down during rain, decreasing noise levels and lowering frequencies. Various types of pavement interact with tires differently when wet than when dry.

The selection of a proper noise descriptor for a specific source is dependent upon the spatial and temporal distribution, duration, and fluctuation of the noise. The noise descriptors most often encountered when dealing with traffic, community, and environmental noise are defined below in **Table 4.7-1**.

TABLE 4.7-1

ACOUSTICAL TERMINOLOGY

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Amplitude	Amplitude is the difference between ambient air pressure and the peak pressure of the sound wave that is measured in decibels (dB) on a logarithmic scale.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound. A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
Ldn-(day-night noise level)	The 24-hour L_{eq} with a 10 dBA "penalty" for the noise sensitive hours between 10 p.m. and 6 a.m. The L_{dn} attempts to account for the fact that noise during this specified period of time is a potential source of disturbance with respect to normal sleeping hours.
Leq- (equivalent noise level)	The energy-mean noise level. The instantaneous noise levels during a specific period of time, in dBA, are converted to relative energy values. From the sum of the relative energy values, an average energy value is calculated, which is then converted to dBA to determine the L_{eq}.
Lmax- (maximum noise level)	The maximum instantaneous noise level during a specified period of time.
Loudness	A subjective term for the sensation of the magnitude of sound.
Noise	Unwanted sound.
Threshold of Hearing	The lowest sound perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.

The Day-night Average Level (Ldn) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because Ldn represents a 24-hour average, it tends to disguise short-term variations in the noise environment. Ldn-based noise standards are commonly used to assess noise impacts associated with traffic, railroad, and aircraft noise sources.

EXISTING NOISE ENVIRONMENT

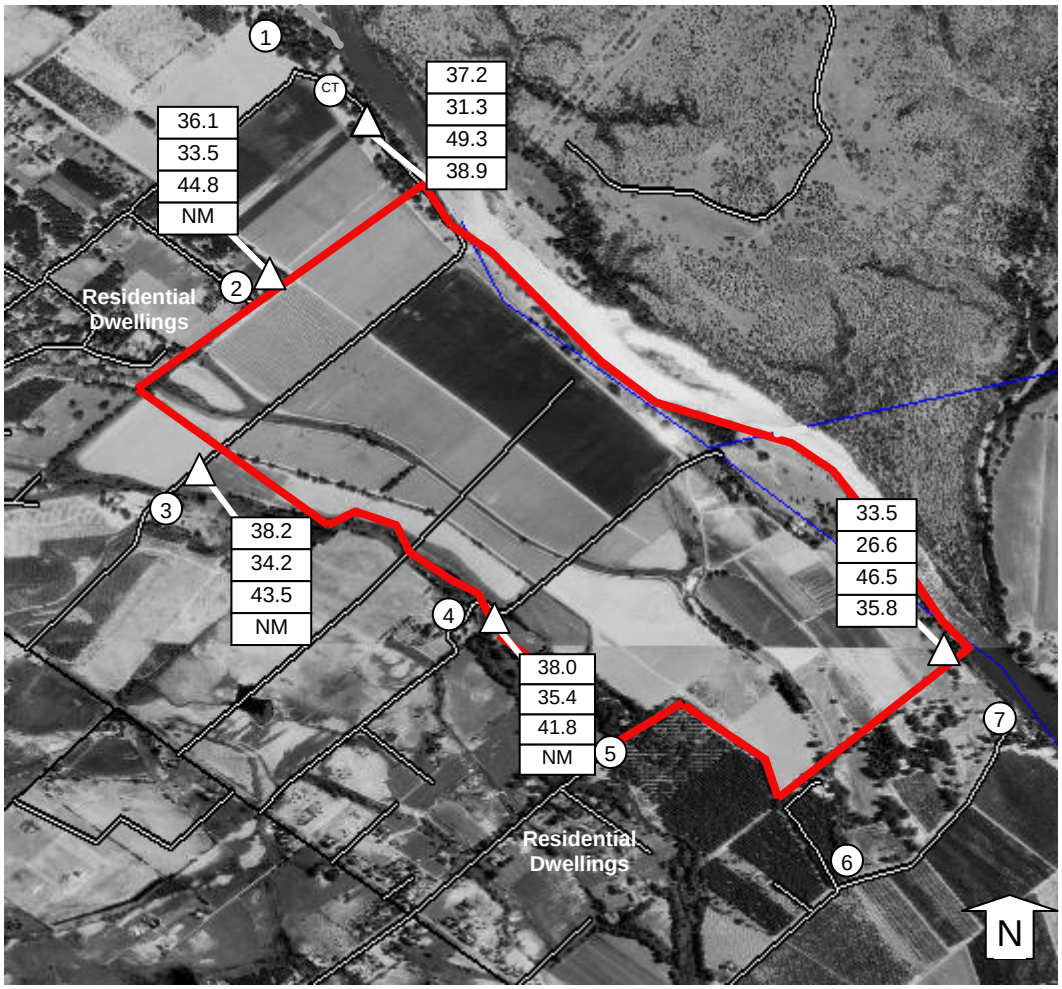
Noise-Sensitive Receptors

Noise-sensitive receptors located within the vicinity of the proposed project consist of single-family residential dwellings generally located to the south, west, and north of the project site. Nearby residential dwellings are depicted in **Figure 4.7-1**. The nearest residential dwellings are located within approximately 100 feet of the project site boundary. Noise-sensitive receptors located along the proposed haul route also consist primarily of single-family residential dwellings located at varying distances from the roadway.

Ambient Noise Levels

Ambient noise surveys were conducted by AMBIENT Air Quality & Noise Consulting in December 2005 for the purpose of documenting the existing noise environment in the vicinity of the project site. Measurements were conducted using a Larson Davis Laboratories model 820 sound level meter placed at a height of 4.5 meters. Noise measurement locations and corresponding measurement values are depicted in **Figure 4.7-1**. Average-hourly daytime noise levels within the vicinity of the project site and nearby residential dwellings range from the mid to upper-30's (in dBA L_{eq}). Intermittent noise levels ranged from lows in the upper 20's to maximum levels in the upper 40's. Average-daily noise levels ranged from approximately 36 to 39 dBA CNEL.

Based on the measurements conducted, primary noise sources in the vicinity of the project site and along the proposed haul routes are primarily associated with vehicle traffic on area roadways. To a lesser extent, other sources such as occasional aircraft over flights also contribute to the existing noise environment. Existing traffic noise levels are discussed in more detail below.



Project Boundary

(1) Noise-Sensitive Receptors & Receptor Groups

Depicts nearest residence in areas where multiple residential dwellings are present.

(CT) Caretaker Residence

Caretaker residence is included as part of the proposed project. Caretaker residences associated with commercial and industrial land uses are exempt from compliance with County noise standards.

△ Ambient Noise Measurement

Leq	Hourly-Average Equivalent Noise Level
Lmin	Minimum Noise Level
Lmax	Maximum Noise Level
CNEL	24-Hour Average Noise Level (NM=Not Measured)

Not To Scale

SOURCE: Image, USGS 2005

FIGURE 4.7-1

EXISTING NOISE ENVIRONMENT

PMC

Existing Traffic Noise Levels

Existing roadway traffic noise levels were calculated for various roadway segments near the proposed project site using the Federal Highway Administration (FHWA) roadway noise prediction model. Input variables such as daily traffic volumes, traffic distribution characteristics, vehicle speeds, ground attenuation factors, and roadway widths were based on information derived from the traffic report prepared for this project. Modeled existing traffic noise levels 50 feet from the centerline of the nearest travel lane for primarily affected roadways are depicted in **Table 4.7-2**. Existing average-daily traffic noise levels along area roadways range from approximately 48 to 62 dBA L_{dn}/CNEL.

TABLE 4.7-2

EXISTING TRAFFIC NOISE LEVELS

Roadway Segment	L_{dn}/CNEL 50 Feet From Nearest Travel Lane Centerline (dB)[1]
Balls Ferry Road, Deschutes to Kimberly	55.52
Balls Ferry Road, Kimberly to Panorama Point	52.57
Deschutes Road, SR-273 to Locust	60.46
Kimberly Road, Balls Ferry to Locust	48.02
SR-273, South to Deschutes	61.95
Balls Ferry Road, Panorama Point to Fourth	54.88
Balls Ferry Road, Deschutes to Shelly Lane	59.19
Note: Predicted traffic noise levels do not take into account shielding due to intervening terrain or structures. Predicted traffic noise levels are based on traffic volumes obtained from the traffic analysis prepared for this project.	

SOURCE: AMBIENT AIR QUALITY & NOISE CONSULTING 2006

4.7.1 REGULATORY FRAMEWORK

Federal, state, and local governments and other entities have implemented a variety of standards and guidelines related to noise levels. The applicable standards and guidelines for the proposed mine expansion project are discussed below.

STATE

State standards regulate noise levels of motor vehicles and freeway noise affecting classrooms, set standards for sound transmission control and occupational noise control, and identify noise insulation standards. The state has also developed land use compatibility guidelines for community noise environments.

The State of California General Plan Guidelines, published by the Governor's Office of Planning and Research, provides guidance for the acceptability of projects within

specific CNEL/L_{dn} contours. Generally, residential uses are considered to be acceptable in areas where exterior noise levels do not exceed 60 dBA CNEL/L_{dn}. Residential uses are normally unacceptable in areas exceeding 70 dBA CNEL/L_{dn} and conditionally acceptable within 60 to 70 dBA CNEL/L_{dn}. Schools, libraries, churches, hospitals, and nursing homes are treated as noise-sensitive land uses requiring acoustical studies within areas exceeding 60 dBA CNEL/L_{dn}. Additionally, 45 dBA CNEL/L_{dn} is prescribed as a suitable interior noise environment for noise-sensitive uses. However, the state stresses that these guidelines can be modified to reflect sensitivities of individual communities to noise.

SHASTA COUNTY

The Shasta County General Plan Noise Element establishes noise level standards for both non-transportation and transportation noise sources. The County's noise standards for non-transportation and transportation noise sources are depicted in **Tables 4.7-3 and 4.7-4**, respectively.

As indicated, in **Table 4.7-3,** the County's noise standards for non-transportation noise sources are based on average-hourly noise levels (in dBA L_{eq}). In accordance with these criteria, non-transportation operational noise levels are generally considered compatible if hourly exterior noise levels at nearby noise-sensitive receptors do not exceed 55 dBA L_{eq} during the daytime hours or 50 dBA L_{eq} during the nighttime hours. These levels shall be lowered by five dB for simple tone noise, noise consisting of speech or music, or reoccurring impulsive noise (Shasta County 1998).

As depicted in **Table 4.7-4**, noise exposure from transportation noise sources is typically limited to a maximum of 60 dBA CNEL/L_{dn} in outdoor activity areas and 45 dBA CNEL/L_{dn} in interior spaces for residential dwellings. Maximum acceptable interior noise levels for other daytime noise-sensitive land uses, such as churches, office buildings, and theaters, are based on an hourly-average noise level, rather than an average-daily noise level. Acceptable interior noise criteria for these daytime noise-sensitive land uses range from 35 to 45 dBA L_{eq} (Shasta County 1998).

The Shasta County General Plan also includes various noise-related goals and policies, which have been developed to protect County residents from harmful and annoying effects of exposure to excessive noise.

TABLE 4.7-3

NOISE LEVEL PERFORMANCE STANDARDS FOR NEW PROJECTS AFFECTED BY OR INCLUDING NON-TRANSPORTATION SOURCES

Noise Level Descriptor	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly-Average (Leq, dBA)	55	50

The noise levels specified above shall be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings). The County can impose noise level standards which are more restrictive than those specified above based upon determination of existing low ambient noise levels. In rural areas where large lots exist, the exterior noise level standard shall be applied at a point 100' away from the residence. Industrial, light industrial, commercial, and public service facilities which have the potential for producing objectionable noise levels at nearby noise-sensitive uses are dispersed throughout the County. Fixed-noise sources which are typically of concern include, but are not limited to, the following:

HVAC Systems	Cooling Towers/Evaporative Condensers	Pump Stations
Lift Stations	Emergency Generators	Boilers
Steam Valves	Steam Turbines	Generators
Fans / Blowers	Air Compressors	Heavy Equipment
Conveyor Systems	Transformers	Pile Drivers
Grinders	Drill Rigs	Gas or Diesel Motors
Welders	Cutting Equipment	Outdoor Speakers

The types of uses which may typically produce the noise sources described above include, but are not limited to: industrial facilities including lumber mills, trucking operations, tire shops, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works projects, batch plants, bottling and canning plants, recycling centers, electric generating stations, race tracks, landfills, sand and gravel operations, and athletic fields.

Note: For the purposes of the Noise Element, transportation noise sources are defined as traffic on public roadways, railroad line operations, and aircraft in flight. Control of noise from these sources is preempted by Federal and State regulations. Other noise sources are presumed to be subject to local regulations, such as a noise control ordinance. Non-transportation noise sources may include industrial operations, outdoor recreation facilities, HVAC units, loading docks, etc.

Source: Shasta County General Plan, Noise Element (Table N-IV) 1998

TABLE 4.7-4

MAXIMUM ALLOWABLE NOISE EXPOSURE - TRANSPORTATION NOISE SOURCES

Land Use	Outdoor Activity Areas[1] (dBA, L_{dn}/CNEL)	Interior Spaces	
		dBA, L_{dn}/CNEL	dBA, L_{eq}[2]
Residential	60[3]	45	
Transient Lodging	60[4]	45	
Hospitals, Nursing Homes	60[3]	45	
Theaters, Auditoriums, Music Halls	--		35
Churches, Meeting Halls	60[3]		40
Office Buildings	--		45
Schools, Libraries, Museums	--		45
Playgrounds, Neighborhood Parks	70		--

1. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use. Where it is not practical to mitigate exterior noise levels at patio or balconies of apartment complexes, a common area such as a pool or recreation area may be designated as the outdoor activity area.
2. As determined for a typical worst-case hour during periods of use.
3. Where it is not possible to reduce noise in outdoor activity areas to 60 dBA CNEL/Ldn or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.
4. In the case of hotel/motel facilities or other transient lodging, outdoor activity areas such as pool areas may not be included in the project design. In these cases, only the interior noise level criterion will apply.

Source: Shasta County General Plan, Noise Element (Table N-VI) 1998.

The County General Plan contains the following objectives and policies concerning noise that pertain to the project:

Objectives

N-1. To protect County residents from the harmful and annoying effects of exposure to excessive noise.

N-2. To protect the economic base of the County by preventing incompatible land uses from encroaching upon existing or planned noise-producing uses.

N-3. To encourage the application of state-of-the-art land use planning methodologies in areas of potential noise conflicts.

Policies

N-b. Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of **Table 4.7-3** as measured immediately within the property line of lands designated for noise-sensitive uses. Noise generated from agricultural operations conducted in accordance with accepted standards and practices is not required to be mitigated **Table 4.7-4** is referred to as Table N-1 in the Shasta County General Plan].

N-d The feasibility of proposed projects with respect to existing and future transportation noise levels shall be evaluated by comparison to Figure N-1 and Table N-VI.

N-f. Noise created by new transportation noise sources shall be mitigated so as not to exceed the levels specified in **Table 4.7-4** at outdoor activity areas or interior spaces of existing noise-sensitive land uses referred to as Table N-3 in the Shasta County General Plan].

N-i. Where noise mitigation measures are required to achieve the standards of **Table 4.7-3 and Table 4.7-4**, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project.

N-l. The use of site planning and building materials/design as primary methods of noise attenuation is encouraged. Recommended techniques include items such as:

- Use building setbacks and dedicating noise easements to increase the distance between the noise source and the receiver.
- Using noise-tolerant structures, such as garages and carports, to shield noise sensitive areas.
- Locating uses and orienting buildings that are compatible with higher noise levels adjacent to noise-generators or in clusters as a means to shield more noise-sensitive areas and uses.
- Clustering office, commercial, or multiple-family residential structures to reduce interior open-space noise levels.

- Locate automobile and truck access to commercial or industrial land uses abutting residential parcels at the maximum practical distance from the residential parcels.

- Avoid the siting of commercial and industrial loading and shipping facilities adjacent to residential parcels whenever practicable.

- Parking areas for commercial and industrial uses should be set back from adjacent residential uses to the maximum extent feasible, or buffered and shielded by walls, fences, berms, and/or landscaping techniques.

4.7.1 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

A project may have ***significant impacts*** on noise if it results in any of the following:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, exposure of people residing or working in the project area to excessive noise levels.

- For a project within the vicinity of a private airstrip, exposure of people residing or working in the project area to excessive noise levels.

For this analysis, noise impacts are considered significant if project-related activities create a significant increase in offsite traffic noise levels, defined as 3 dB, if on-site activities would result in noise levels that would exceed applicable County noise standards (**Tables 4.7-3 and 4.7-4**), or if construction activities generate noise levels in excess of 5 dB over ambient noise levels at the nearest existing residential areas during the more noise-sensitive nighttime hours.

The Shasta County General Plan Noise element has not identified an L_{max} (maximum noise level) defined in **Table 4.7-1** for intermittent noise events. Recommended noise criteria for instantaneous noise events typically range from 60 to 70 dBA L_{max}. The more conservative threshold of 60 dBA L_{max} is recommended by the World Health Organization for the protection of occupants from increased levels of annoyance, speech interference, and sleep disruption. The 60dBA L_{max} threshold was established and remains recognized by the US EPA. As a result, project-generated intermittent noise levels in excess of 60 dBA L_{max} within 100 feet of nearby residential dwellings would be considered to have a potentially significant impact.

METHODOLOGY

A combination of noise level measurements, use of existing acoustical literature, and application of accepted noise prediction methodologies was used to predict the noise generation of this project. The potentially significant sources of noise identified for evaluation in this report include project construction (including improvements to the project truck access road and processing area), off-site traffic (both on local roads as well as the project-related truck access road), and facility operations (on-site truck movements, loading activities, employee parking, and mechanical equipment). The methodology used to assess noise impacts for each of these sources is provided below and in Appendix 4.7-1 of this report.

3.7.4 IMPACT ANALYSIS AND MITIGATION

Impact 4.7.1 Construction activities may potentially occur during the more noise-sensitive evening and nighttime hours (i.e., 7p.m. to 7a.m.). Increases in ambient noise levels during these noise-sensitive hours of the day could result in potential increase in levels of annoyance and/ or sleep disruption to occupants of nearby dwellings. As a result, this impact is considered ***potentially significant, therefore subject to mitigation*. [PSM]**

Initial construction activities, prior to operation, would include grading of the processing area, followed by installation of concrete footings and stationary equipment. Initial grading of the processing area is anticipated to take less than 2 days and would likely involve the use of one grader and one compactor. Following site compaction, footings will be prepared and concrete pads poured upon which to place the crusher equipment. This phase is anticipated to occur over an approximate one week period and would likely involve the use of concrete and gravel trucks and front-end loaders. Once footings have been constructed, the crusher equipment and support facilities will be delivered to the site and set on the footings. Installation of the equipment is anticipated to occur over an approximate 3 day period and would require the use of a front-end loader. A truck crane would be used to set the conveyor belts and stands. The proposed project does not identify specific hours of day during which construction activities would occur. All levees proposed as part of the project would be constructed,

subsequent to the initial construction phase, with overburden derived from the Phase 1 mining area and concurrent with normal operational activities.

According to the U.S. EPA, the noise levels of concern are typically associated with the site preparation phase because of the construction equipment associated with clearing and excavation, which range in noise levels from 79 to 91 dBA at a distance of 50 feet as indicated in **Table 4.7-5**. The simultaneous operation of the construction equipment associated with the project, as identified above, would be projected to result in noise levels of approximately 85 dBA L_{eq} at 50 feet from the construction area. Based on this noise level and assuming a noise attenuation rate of 6 dBA per doubling of distance from the source, exterior noise levels at the single-family residential units located within approximately 1,600 feet of construction activities could experience noticeable increases in ambient noise levels in excess of approximately 55 dBA L_{eq}. If construction operations were to occur during the more noise-sensitive evening and nighttime hours (i.e., 7 p.m. to 7 a.m.), increases in ambient noise levels would result in potential increases in levels of annoyance and/or sleep disruption for occupants of nearby dwellings. As a result, this impact is considered ***potentially significant, therefore subject to mitigation***.

TABLE 4.7-5

TYPICAL OFF-HIGHWAY EQUIPMENT NOISE LEVELS

Type of Equipment	Noise Level at 50 feet (dBA)
Dozer	85
Backhoe	80
Compactor	82
Concrete Mixer	85
Crane, Mobile	83
Scraper	89
Front-End Loader	85
Paver	89
Roller	74
Grader	85
Truck	88

Source: U.S. Department of Transportation 1995.

Mitigation Measures

MM 4.7.1(a) Use of construction equipment during initial placement of the onsite equipment and paving of the access road shall be limited to the hours between 7 a.m. and 7 p.m., Monday through Saturday. Construction activities shall be prohibited on Sundays, and federal-/state-recognized holidays.

Timing/Implementation: *Upon commencement of project operation*

Enforcement/Monitoring: *Shasta County Resource Management Department.*

MM 4.7.1(b) Construction equipment shall be properly maintained and equipped with noise control, such as mufflers and engine shrouds, in accordance with manufacturer specifications.

Timing/Implementation: *Upon commencement of project operations*

Enforcement/Monitoring: *Shasta County Resource Management Department.*

Implementation of **MM 4.7.1a** and **MM 4.7.1b** would reduce short-term construction-generated noise levels at nearby receptors and would be limited to the less noise-sensitive daytime hours (e.g., 7 a.m. to 7 p.m.). Construction activities would also be prohibited on weekends and on federal-/state-recognized holidays. For these reasons, the amount of noise generated by construction activities that reaches nearby residences would be considered ***less than significant***. **[LS]**

Impact 4.7.2 Long-term exposure to Stationary-Source Noise Levels. Predicted onsite operational noise levels would exceed County noise standards. This impact is ***potentially significant, therefore subject to mitigation*****. [PSM]**

Noise generated by onsite activities would primarily occur in two distinct locations, including the mine processing area and mineral extraction areas. Under normal operating conditions, the proposed hours of operation would be from 7 a.m. to 5 p.m. Under maximum operating conditions, the proposed hours of operation are from 6 a.m. to 6 p.m. Mining of the proposed site is anticipated to occur over an approximate 24 to 29 year period. Noise levels associated with onsite processing, mining, and reclamation activities, as well as combined noise impacts to nearby receptors, are discussed separately below.

Mine Processing Area

Noise levels associated with the processing area include noise associated with the operation of stationary equipment (e.g., wash plants, conveyors, crushers and screens) and onsite mobile equipment (e.g, onsite and offsite haul trucks, front-end loaders). Based on measurements conducted at similar facilities, including the nearby Cottonwood Sand & Gravel plant, combined average-hourly noise levels associated with sand and gravel processing plants typically average between 65 and 75 dBA L_{eq} at approximately 275 feet, associated with the simultaneous operation of both stationary and mobile equipment.

It is important to note that the proposed project has been designed to locate material stockpiles within the processing area between onsite equipment and these nearest receptors, in an effort to help reduce noise associated with material processing activities at nearby receptors. However, because the size of the storage piles would likely vary in size and location, noise-reductions associated with intervening storage piles were not included when calculating predicted noise levels at nearby receptors. Based on a maximum noise level of 75 dBA L_{eq} at 275 feet and assuming an average noise-attenuation rate of 6 dBA per doubling of distance (dBA/DD) from the source, predicted maximum average-hourly noise levels at nearby residential dwellings would range from approximately 47 to 57 dBA L_{eq}.

Mining & Reclamation Areas

Noise levels associated with mineral extraction and reclamation activities would result in an increase in the ambient noise levels, which would be greatest during initial excavation. Predicted noise levels at nearby receptors would be anticipated to decrease as the depth of the mining pit increases, due to increased shielding provided by mine pit slopes. Excavation of the mining areas would require the use of an excavator and front-end loader. Haul trucks would be used to transport material to the processing area. Reclamation of Phase 1 subphases would occur subsequent to completion of each of the Phase 1 subphases. For instance, reclamation of Phase 1a would begin following excavation and would occur concurrent with excavation of Phase 1b. Reclamation activities would require the additional use of scrapers to transfer material to the reclamation areas. As a result, mining and reclamation activities could occur simultaneously during mining of Phase 1, as well as during the initial mining of Phase 2. Phase 2 and 3 mining areas are not planned for reclamation.

Based on noise measurements conducted at similar facilities and data obtained from the U.S. EPA, average-hourly noise levels associated with mining and excavation activities typically range from approximately 80 to 90 dBA L_{eq} at 50 feet. To ensure a conservative analysis and to account for the potential from mining and reclamation activities to occur simultaneously, predicted noise levels associated with onsite mining areas were based on a maximum hourly noise level of 90 dBA L_{eq}.

Predicted noise levels at nearby receptors were calculated assuming an average attenuation rate of 6 dBA/DD from the source, based on the from the property line of the receptor to the nearest mining phase. Based on the modeling conducted, predicted average-hourly operational noise levels at nearby residential dwellings associated with mining and reclamation activities would range from approximately 42 to 63 dBA L_{eq}. Again, it is important to note that these predicted noise levels are based on those days that activities would occur at the surface of the mining areas and do not take into account any shielding of noise due to intervening terrain or structures. Noise levels would decrease as the depth of the mining pit increases due to shielding provided by the pit walls and as mining moves away from the receptor.

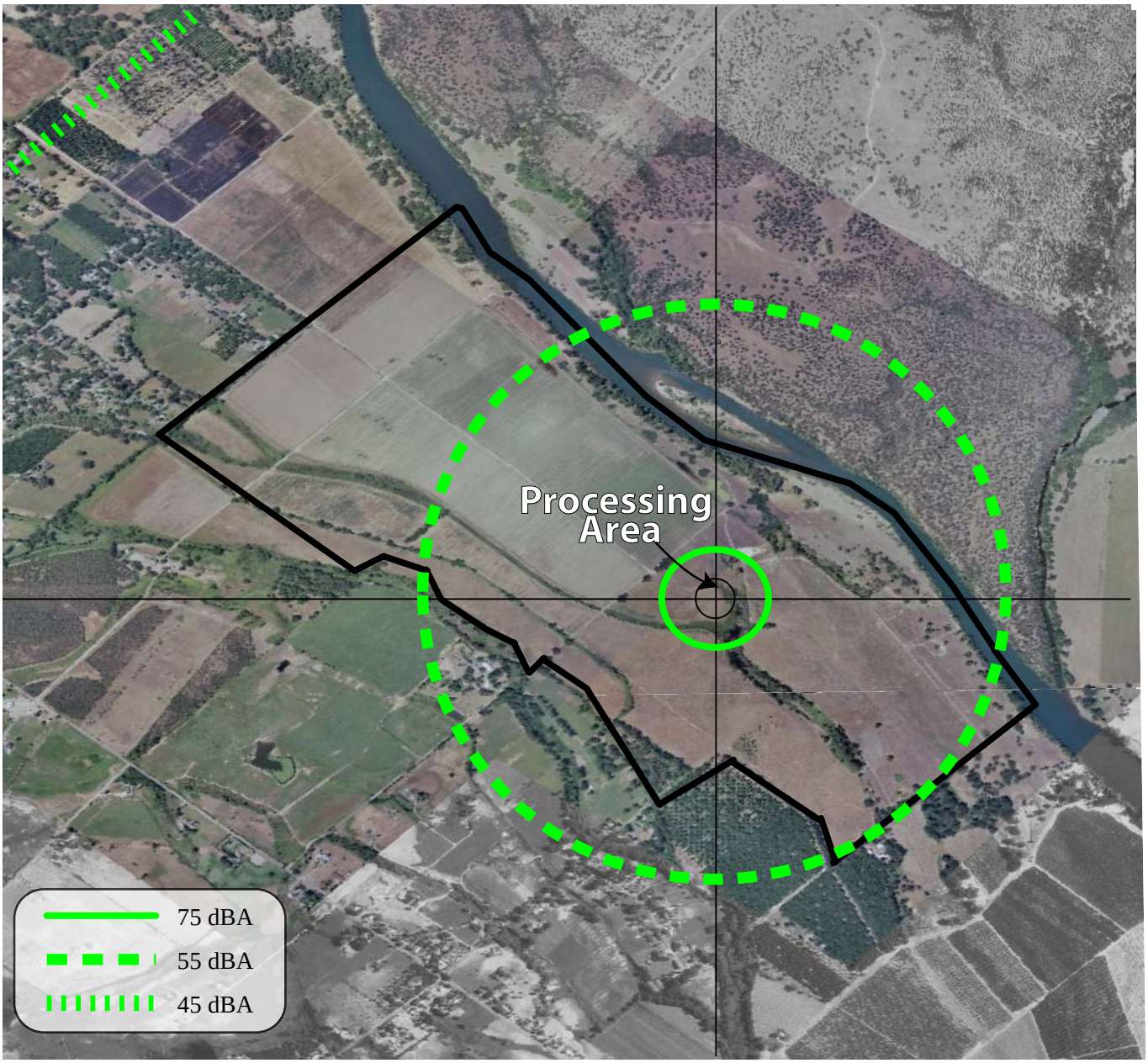
Combined Operational Noise Levels (Processing, Mining & Reclamation)

Maximum combined operational noise levels were calculated based on the maximum predicted operational noise levels associated with onsite processing, mining, and reclamation-related activities, as discussed above. Predicted noise levels do not account for potential shielding of noise levels that may occur due to intervening material stockpiles in the vicinity of the processing plant, which may vary in height and location. In addition, because proposed levee heights would also vary, depending on location, shielding of noise associated with onsite levees was not included in the analysis.

Predicted maximum combined operational noise levels at nearby residences, under typical meteorological conditions, are summarized in **Table 4.7-6**. As depicted, predicted maximum hourly operational noise levels at nearby residential dwellings, taking into account all onsite stationary sources, would range from approximately 51 to 66 dBA L_{eq}.

Based on the modeling conducted, the primary noise sources affecting the nearby land uses are associated with the operation of mobile equipment within the mineral extraction areas, including excavators, front-end loaders, scrapers, and trucks, as well as material handling activities. Activities occurring in the processing area would have a minimal contribution to overall maximum predicted hourly noise levels at nearby receptors. As depicted in **Table 4.7-6**, primarily affected receptors include residential dwellings generally located to the south and east of the proposed mining areas (Receptors 4 through 7). These nearest receptors are primarily affected by mining activities occurring within the south-eastern portions of the Phase 1 mining area; as well as the Phase 2 mining area. Receptors 1, 2, and 3 are primarily affected by mining of the Phase 3 mining area. (Refer to **Figure 4.7-2** for receptor locations.)

Predicted noise levels associated with onsite processing and excavation activities, as depicted in **Table 4.7-6**, would result in a noticeable increase in ambient noise levels that would exceed the County's noise standards at nearby residences. (See **Figure 4.7-2**, Predicted Unmitigated Plant Noise Levels) Again, it is important to note that these predicted maximum daily noise levels would occur on days when activities within the mining areas occur at or near the surface, such as activities involving the use of scrapers



Predicted contours are based on maximum predicted operational noise levels and do not take into account shielding from intervening terrain or structures. As a result, predicted noise contours should be interpreted as maximum areas of potential noise exposure and should not be interpreted as absolute lines of demarcation.

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Source: Ambient Air Quality and Noise Consulting, 2006

FIGURE 4.7-2
PREDICTED UNMITIGATED PROCESSING PLANT NOISE LEVELS

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to remove overburden prior to mining or for the placement of overburden during the reclamation of mined areas. Noise levels at nearby receptors would decrease as mining increases in depth and moves away from these sources. Typical mining activities involving the use of a scraper would occur at a depths of10 feet, or greater. Under these conditions, the additional shielding of equipment noise levels provided by the pit walls would be anticipated to reduce operational noise levels at nearby receptors to below County noise standards. Nonetheless, because activities occurring at or near the surface would be projected to exceed the County's noise standard, this impact is considered ***potentially significant, therefore subject to mitigation***.

Mitigation Measures

MM 4.7.2(a) Mining equipment shall be properly maintained and equipped with noise control devices, such as mufflers and engine shrouds, in accordance with manufacturer specifications.

Timing/Implementation: *Upon commencement of project operations*

Enforcement/Monitoring: *Shasta County Resource Management Department.*

MM 4.7.2(b) Mining and processing operations shall be limited to hours between 7 a.m. and 7 p.m.

Timing/Implementation: *Upon commencement of project operations*

Enforcement/Monitoring: *Shasta County Resource Management Department.*

MM 4.7.2(c) A sound barrier (e.g., earthen berms, walls, etc.) shall be constructed to shield nearby residential dwellings from line-of-sight to nearby mining areas. Recommended barrier locations are depicted in **Figure 4.7-2**. The recommended barrier located along the southwestern boundary of the Phase 2 mining area shall be constructed concurrent with removal of material from Phase 1 mining area and prior to commencing Phase 2 mining activities. The recommended barrier located along the northwestern boundary of the Phase 3 mining area shall be constructed prior to commencing Phase 3 mining activities.

Timing/Implementation: *Upon commencement of project operations*

Enforcement/Monitoring: *Shasta County Resource Management Department.*

MM 4.7.2(d) The proposed levee located along the southeastern boundary of the project site shall be constructed to a minimum height of 12 feet above ground level (AGL) (refer to **Figure 4.7-3**).

Timing/Implementation: Upon commencement of project operations

Enforcement/Monitoring: Shasta County Resource Management Department.

MM 4.7.2(e) Material screens and crushers shall be strategically located on the project site, enclosed, or reflective barriers installed sufficient to shield line-of-sight between the noise-generating source of the equipment and the nearest adversely affected receptors (i.e., Receptors 4 and 5). As an alternative, the height of the proposed levee located immediately southwest of the processing area may be increased to a minimum height of 8 feet, provided the increased levee height would interrupt line-of-sight between the noise-generating source(s) of the equipment and the nearest adversely affected receptors (i.e., Receptors 4 and 5).

Timing/Implementation: Upon commencement of project operations

Enforcement/Monitoring: Shasta County Resource Management Department.

MM 4.7.2(f) Excavation of the proposed Phase 1 mining area shall commence at the northern-most boundary (Phase 1d), at the furthest distance, from the nearest residential dwelling (i.e., Receptor 7).

Timing/Implementation: Upon commencement of project operations

Enforcement/Monitoring: Shasta County Resource Management Department.

The following mitigation measures MM 4.7.2a-f have been proposed to reduce operational noise levels at nearby receptors. For instance, use of mufflers and engine shrouds on mobile equipment, as required by MM 4.7.2a, would reduce individual equipment noise levels by approximately 5 to 10 dBA. MM 4.7.2b would limit operational activities to the least noise-sensitive hours of 7 a.m. to 7 p.m., which would help to reduce levels of annoyance and potential sleep disruption to occupants of nearby residential dwellings. Construction of sound barriers, as noted in MM 4.7.2c-e, would reduce combined operational noise levels at nearby receptors by approximately 6 to 13 dBA. In addition, implementation of MM 4.7.2f would require that mining of Phase 1 begin at the furthest distance from the primarily affect residential dwellings (i.e., Phase 1D). In doing so, mining of subsequent phases (i.e., Phases 1A-1C) would occur below

existing grade, which would further reducing predicted noise levels to nearby receptors. Implementation of MM 4.7.2f would, thereby, help to reduce the duration during which mining would occur at or near the surface of mining areas located nearest these residential dwellings.

With implementation of the proposed mitigation measures predicted noise levels at nearby receptors would range from 42 to 53 dBA L_{eq}. (See **Table 4.7-6**) As with unmitigated operational noise levels, mitigated operational noise levels would be greatest at receptors located closest to the proposed mining areas. Noise from the processing area, which is centrally located on the project site, was not found to contribute substantially to predicted noise levels at nearby receptors. Implementation of mitigation measures MM4.7-2a-f would reduce the overall predicted noise levels associated with onsite processing, mining, and reclamation activities below the County's daytime noise standard of 55 dBA L_{eq}. As a result, this impact is considered **less than significant**. **[LS]**

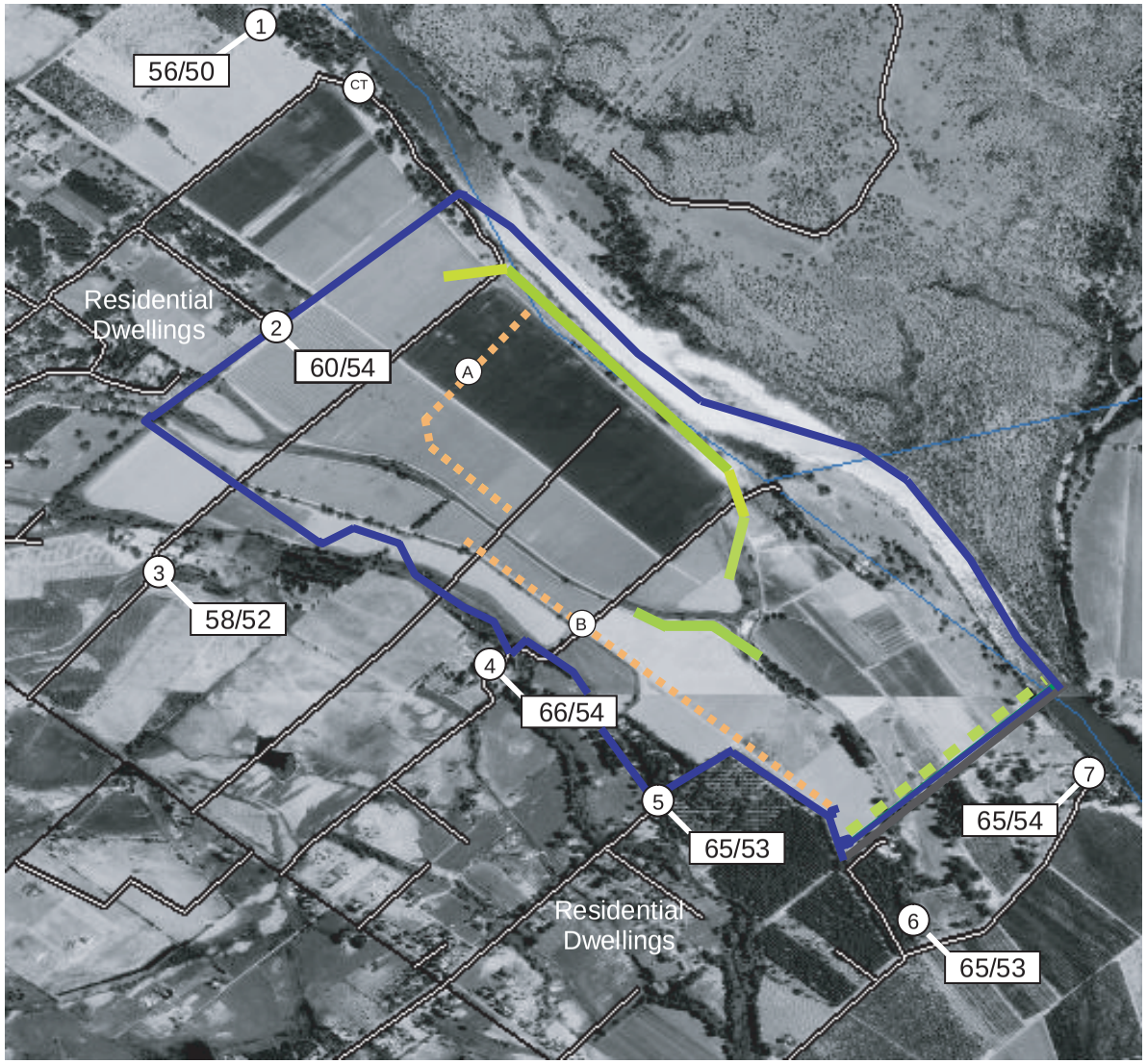
TABLE 4.7-6

PREDICTED OPERATIONAL NOISE LEVELS

Receptor		Distance From Source to Receptor (Feet)	Unmitigated/ Mitigated (dBA L_{eq}) [1]						Combined Noise Level Exceeds County Noise Standards without Mitigation?		Combined Noise Level Exceeds County Noise Standards with Mitigation?	
			Phase 1A	Phase 1B	Phase 1C	Phase 1D	Phase 2	Phase 3	Daytime (7am-10pm)	Nighttime (10pm-7am)	Daytime (7am-10pm)	Nighttime (10pm-7am)
***Shasta County Stationary-Source Noise Standards* (dBA L_{eq}) [1]:**									***55***	***45***	***55***	***45***
1	Residential	2,700	51/45	51/45	51/45	52/46	54/48	56/50	Yes	Yes	No	Yes
2	Residential	1,700	53/47	53/47	54/48	54/48	59/53	60/54	Yes	Yes	No	Yes
3	Residential	2,400	54/48	54/48	55/49	55/49	58/52	57/51	Yes	Yes	No	Yes
4	Residential	1,200	63/52	63/52	63/52	63/52	66/54	62/50	Yes	Yes	No	Yes
5	Residential	1,300	62/52	62/52	62/52	62/52	65/53	58/47	Yes	Yes	No	Yes
6	Residential	1,400	62/52	61/50	61/50	60/50	65/53	53/43	Yes	Yes	No	No
7	Residential	1,000	65/54	61/50	60/49	59/48	65/54	54/44	Yes	Yes	No	No

[1] A Fundamental unit of sound that predicts the energy-mean noise level.
Notes: Receptor numbers correspond to those depicted in Exhibit 4.7-2. Predicted operational noise levels include simultaneous operation of onsite stationary sources and off-highway equipment associated with onsite processing equipment, reclamation, and mining activities. Predicted noise levels based on estimated distance from the source to a point 100 feet from receptor based on maximum predicted operational noise levels, assuming a noise attenuation rate of 6 dBA per doubling of distance from the source. Assumes no shielding from either existing or proposed intervening terrain or structures. Mitigation includes limiting activities to daytime hours, use of mufflers/engine shrouds for off-highway equipment, construction of noise barriers (earthen berms), and reversal of phasing order for Phases 1A-1D.

Source: Ambient Air Quality and Noise Consulting, 2006.



59/53 Unmitigated/ Mitigated Maximum Average-Hourly Noise Level (dBAL eq)

Proposed Noise Barriers

(A) Mitigation: (Receptor Group 2 and Receptor 3.) Barrier to be constructed to a minimum height of 8 feet above ground level (AGL) prior to start of Phase 3.

(B) Mitigation: (Receptor 4 and Receptor Group 5) Barrier to be constructed to a minimum height of 12 feet AGL prior to or concurrent with start of Phase 1a reclamation.

Proposed Leeves

Spur Dike

Mitigation: (Receptors 6 and 7.) Levee to be constructed to a minimum height of 12 feet AGL prior to or concurrent with start of Phase1a.

Project Boundary

(1) Noise-Sensitive Receptors & Receptor Groups

Depicts nearest residence in areas where multiple residential dwellings are present. Receptor numbers correspond to those depicted in tables 4.7-6 and 4.7-8 of this report.

(CT) Caretaker Residence

Caretaker residence is included as part of the proposed project. Caretaker residences associated with commercial and industrial land uses are exempt from complance with County noise standards.

Not To Scale

SOURCE: Image, USGS 2005

FIGURE 4.7-3
PREDICTED STATIONARY SOURCE NOISE LEVELS

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Impact 4.7.3 During temperature inversions and windy conditions, predicted onsite operational noise levels would result in noticeable increases in ambient noise levels at nearby receptors that will exceed County noise standards. As a result, this impact is ***significant and unavoidable*. [SU]**

Inversions and high-wind conditions can affect noise propagation, resulting in less-than-normal attenuation rates and thus increased noise levels at nearby receptors. Atmospheric conditions in the project vicinity vary considerably from season to season. Conditions such as temperature inversions and high wind conditions can greatly affect the propagation of sound. On most days, the temperature of air in the atmosphere decreases with increases in height. Sometimes, however, the temperature of air actually increases with height, which is referred to as a temperature inversion. Within the project area, temperature inversions are most prevalent at night. Conditions that favor the development of a strong surface inversion are calm winds, clear skies, and long nights. Calm winds prevent warmer air above the surface from mixing down to the ground, and clear skies increase the rate of cooling at the earth's surface. Long nights allow for the cooling of the ground to continue over a longer period of time, resulting in a greater temperature decrease at the surface. Because the nights in the wintertime are much longer than nights during the summertime, surface inversions are typically stronger and more common during the winter months.

Within the vicinity of the project site, temperature inversions during the fall and winter months, when inversions are more likely to occur, typically average approximately 6 days per month (Bell, pers. comm., 2006). High wind conditions in which the average mean speeds of predominant winds exceed 10 miles per hour typically occur approximately 107 days/year (ARB 1984).

Because of the varying influences that can affect noise levels during inclement weather conditions (e.g., wind speeds, wind directions, ambient temperature, inversions, cloud cover, etc.) it is difficult to accurately predict of noise levels that would be anticipated to occur under various meteorological conditions. However, in comparison to noise levels that are predicted to occur during normal meteorological conditions, as noted in **Table 4.7-6**, predicted noise levels during inclement weather conditions, such as temperature inversions and high wind conditions, can often increase by as much as approximately 10 dB (FHWA 2000, ASA 1998). Predicted operational noise levels during temperature inversions and high wind conditions would result in a noticeable increase in ambient noise levels that would exceed the County's noise standards at nearby residences. As a result, this impact is considered ***potentially significant, therefore subject to mitigation***.

Mitigation Measures

See **MM 4.7.2(a) through MM 4.7.2(f).**

Significance After Mitigation

As discussed in Impact 4.7-2, implementation of Mitigation Measure MM 4.7-2 would substantially reduce operational noise levels, but not to a less-than-significant level. Because mitigated operational noise levels at nearby receptors would exceed the County's daytime average hourly noise standard of 55 dBA L_{eq} and may exceed the intermittent noise level 60 dBA L_{max}, resulting in a ***significant and unavoidable impact***.

Impact 4.7.4 The project will result in a noticeable increase in traffic noise levels that exceed the County's noise standard of 60dBA L_{dn}/CNEL at receptors located along proposed haul routes. As a result, this impact would be considered ***potentially significant, therefore subject to mitigation*. [PSM].**

Haul trucks on local roads are a major contributor to traffic noise levels. In general, noise generated by heavy-duty haul trucks is typically a composite of four vehicle noise sources; including tire-to-pavement contact, the application of brakes, engine noise, and exhaust noise. Noise associated with the application of brakes, and increases in exhaust noise caused by acceleration, are of particular concern. This is especially the case near traffic stops, yields, and/or curves in the road that occur within the vicinity of noise-sensitive receptors where changes in truck speeds typically occur.

TABLE 4.7-7

PREDICTED TRAFFIC NOISE LEVELS

BASELINE AND BASELINE-PLUS-PROJECT CONDITIONS

Roadway Segment	CNEL/L_{dn} 50 Feet From Near Travel Lane Centerline (dBA)		
	Baseline	Baseline-Plus-Project	Net Difference
Balls Ferry Road, Deschutes Rd to Kimberly Rd	55.52	63.41	+7.9
Balls Ferry Road, Kimberly Rd to Panorama Point	52.57	59.73	+7.2
Balls Ferry Road, Panorama Point to Fourth St	54.88	60.27	+5.4
Balls Ferry Road, Deschutes Rd to Shelly Lane	59.19	59.19	No Change
Deschutes Road, SR-273 to Locust Rd	68.16	68.37	+0.2
Kimberly Road, Balls Ferry Rd to Locust Rd	48.02	48.02	No Change
SR-273, South to Deschutes Rd	66.18	66.84	+0.7
Note: Predicted traffic noise levels are based on data obtained from the traffic analysis prepared for this project and do not take into account shielding due to intervening terrain or structures.			

Source: AMBIENT Air Quality & Noise Consulting 2006

Implementation of the proposed project would result in an increase in heavy truck traffic along area roadways. Increased truck traffic would predominantly occur along

Balls Ferry Road. Based on the traffic analysis conducted for this project, implementation of the proposed project would generate a maximum of approximately 64 truck trips (128 one-way trips) on a daily basis (Fehr & Peers 2006). Predicted traffic noise levels, with and without implementation of the proposed project, were calculated using the FHWA roadway noise prediction model, based on predicted traffic volumes obtained from the traffic analysis. Predicted traffic noise levels were calculated for "baseline" (existing plus approved projects) and "baseline-plus-project" conditions and are summarized in **Table 4.7-7.** Input variables such as daily traffic volumes, traffic distribution characteristics, vehicle speeds, ground attenuation factors, and roadway widths were based on information obtained from the traffic report prepared for this project and default model settings. The percentage of heavy-duty trucks associated with baseline-plus-project conditions was adjusted to account for the increase in heavy-duty trucks attributable to the proposed project.

Based on the comparison between "baseline" and "baseline-plus-project" conditions, as indicated in **Table 4.7-7**, implementation of the proposed project would result in increased traffic noise levels ranging from approximately 5 to 8 dBA along portions of Balls Ferry Road. As a result, receptors located along portions of Balls Ferry Road would likely experience noticeable increases in ambient noise levels (i.e., 3 dB or greater). Noticeable increases in predicted traffic noise levels along Balls Ferry Road, between Deschutes Road and Kimberly Road, would also result in traffic noise levels that could potentially exceed the County's noise standard of 60 dBA CNEL/L_{dn} at receptors located within approximately 94 feet of the roadway centerline. Noise-sensitive receptors located along this roadway segment consist primarily of residential dwellings, the nearest of which are located within approximately 50 feet of the roadway centerline. Because implementation of the proposed project is not anticipated to result in increased traffic volumes along Kimberly Road or Balls Ferry Road, between Deschutes and Shelly Lane, receptors located along these roadway segments are not anticipated to experience noticeable increases in ambient noise levels.

Because the proposed project would result in a noticeable increase in traffic noise levels that could also potentially exceed the County's noise standard of 60 dBA CNEL/L_{dn} at receptors located along proposed haul routes, this impact is considered ***potentially significant, therefore subject to mitigation***. **[PSM]**

Mitigation Measures

See **MM 4.7-2(b).**

Implementation of MM 4.7-2(b) would limit operational hours for the proposed project to between the less noise-sensitive daytime hours of 7 a.m. to 7 p.m. However, noticeable increases in traffic noise levels along adversely affected roadway segments would still be anticipated to occur. No additional mitigation measures have been identified that would reduce this impact to less-than-significant levels. Additional

mitigation measures considered for implementation included construction of sound walls and sound proofing of homes located along the adversely affected haul routes. However, because construction of sound walls along these roadway segments would interfere with access to adjacent parcels, this measure was considered infeasible. Soundproofing of residential dwellings located along adversely affected roadways would help to reduce interior noise levels, but would not be effective in reducing exterior noise levels at outdoor activity areas to within acceptable levels. As a result, this impact is considered ***significant and unavoidable***. **[SU]**

Impact 4.7.5 Exposure of Noise-Sensitive Receptors to Intermittent Noise Events. Predicted impulsive noise levels at nearby residences could exceed the County's recommended noise standard. This impact is considered ***potentially significant, therefore subject to mitigation.*** **[PSM]**

In addition to increases in average daily or average hourly noise levels, as discussed in Impacts 4.7.2 and 4.7.4, impulsive noise levels are of additional concern, particularly those that occur during the more noise-sensitive evening and nighttime hours. Although the average daily noise descriptors (i.e., L_{dn} and CNEL) incorporate a nighttime weighting or "penalty", which is intended to reflect the expected increased sensitivity to annoyance at night, these descriptors do not necessarily protect people from sleep disturbance or increased levels of annoyance. For this reason, impulsive noise events are often evaluated based on the L_{max} noise descriptor.

Impulsive noise events associated with onsite mining operations would be primarily associated with the loading of material into haul trucks and hoppers and the sounding of backup alarms. Haul trucks traveling along haul routes can also generate impulsive noise levels. Based on noise measurements conducted at similar facilities, maximum impulsive noise levels typically associated with the loading of trucks and hoppers can reach levels of up to approximately 90 dBA L_{max} at approximately 50 feet. Impulsive haul truck noise levels, including brake squeal and trailer spring impact noise, typically range from approximately 85 to 95 dBA L_{max} at approximately 15 feet. Truck-generated impulsive noise events are largely associated with brake squeal, backup alarms, and impact noise generated by the haul trailers when traveling over rough or uneven surfaces.

Noise from backup beepers can reach levels of approximately 90 dBA L_{max} at 50 feet. However, it is important to note that audible backup warning devices are required for compliance with state construction safety and health regulations and, therefore, are typically considered exempt from local noise ordinances. Other types of safety backup warning devices are currently available, including motion-sensing and visual warning devices that may result in less intrusive noise levels. However, according to the Occupational Safety and Health Administration (OSHA), these types of devices do not provide the necessary employee protection required by the construction safety and

health regulations. As a result, OSHA-approved warning devices must produce audible warning immediately upon back-up of vehicles (Barker, pers. comm., 2006).

Predicted maximum impulsive noise levels at residences located in the vicinity of the proposed project site were calculated based on the distance to the nearest mining phase, which is the nearest location at which material transfer activities and equipment use would be anticipated to occur. To be conservative, predicted noise levels were calculated assuming a maximum impulsive noise level of 90 dBA L_{max} at 50 feet, based on levels typically associated with material handling activities, including material drops into trucks and back-up beepers. Predicted maximum intermittent noise levels were also calculated, taking into account mitigation measures proposed for Impact 4.7.2 (e.g., increased levee heights and berms). Predicted impulsive noise levels are summarized in **Table 4.7-8.**

Based on the modeling conducted, predicted maximum intermittent noise levels at nearby residences would range from approximately 55 to 64 dBA L_{max}. As depicted in **Table 4.7-8**, predicted intermittent noise levels at the nearest residential dwellings (i.e., Receptors 4 through 7) would exceed the noise threshold of 60 dBA L_{max}. Intermittent noise levels in excess of 60 dBA L_{max} may result in increased levels of annoyance, as well as, potential speech interference and sleep disruption to occupants of these nearest residential dwellings. For this reason, this impact is considered ***potentially significant, therefore subject to mitigation.***

TABLE 4.7-8

PREDICTED IMPULSIVE NOISE LEVELS AT NEARBY RECEPTORS

Receptor/ Land Use		Distance from Nearest Mining Area or Haul Route	Maximum Noise Level without Mitigation (L_{max})	Exceed Noise Standard without Mitigation?	Maximum Noise Level with Mitigation (L_{max})	Exceed Noise Standard with Mitigation?
				Daytime (7am-10pm)		Daytime (7am-10pm)
Shasta County Noise Standards for Impulsive Noise Events:				***60[1]***		***60[1]***
1	Residential	2,700 (Phase 3)	55	No	49	No
2	Residential	1,700 (Phase 3)	59	Yes	53	No
3	Residential	2,400 (Phase 3)	56	Yes	50	No
4	Residential	1,200 (Phase 2)	62	Yes	51	No
5	Residential	1,300 (Phase 2)	62	Yes	51	No
6	Residential	1,400 (Phase 2)	61	Yes	50	No
7	Residential	1,000 (Phase1a)	64	Yes	53	No

[1] US EPA, March 1974, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety
Note: Based on maximum predicted operational noise levels. Predicted noise levels were calculated assuming a noise attenuation rate of 6 dBA per doubling of distance from the source, based on normal meteorological conditions.

Assumes no shielding from either existing or proposed intervening terrain or structures. Mitigation includes limiting operational activities to daytime hours.
Source: AMBIENT Air Quality & Noise Consulting 2006

Mitigation Measures

See **MM 4.7-2(a) through MM 4.7-2(f).**

Implementation of MM 4.7-2, onsite processing and excavation activities would be limited to the less noise-sensitive periods of the day (i.e., 7 a.m. to 7 p.m.). Because operational activities would be prohibited during the nighttime hours, potential increases in levels of sleep disruption to occupants of nearby residential dwellings would be reduced to **less than significant** levels. Construction of proposed noise barriers (e.g., earthen berms and increased levee heights), as noted in Impact 4.7.2, would reduce intermittent daytime noise levels. As depicted in **Table 4.7-8** predicted noise levels at nearby receptors would range from approximately 49 to 53 dBA L_{max}, with construction of proposed noise barriers. With implementation of MM4.7.2, predicted daytime noise levels at the nearest residential dwellings would not exceed the noise standard of 60 dBA L_{max}. As a result, this impact is considered **less than *significant*. [LS]**

Impact 4.7.6 Exposure to Project-Generated Groundbourne Vibration. Exposure to groundbourne vibration levels at land uses located near the project site along proposed haul routes would not exceed applicable thresholds. As a result, this impact is considered ***less than significant.* [LS]**

Construction and mining activities can result in varying degrees of ground vibration, depending on the equipment and methods employed. Operation of construction equipment causes ground vibrations, which spread through the ground and diminish in strength with distance. Buildings founded in soil in the vicinity of the activities respond to these vibrations, with varying results ranging from no perceptible effects at the lowest levels, low rumbling sounds and discernible vibrations at moderate levels, and slight damage to structures at the highest levels. Ground vibrations from associated construction and mining projects rarely reach the levels that can cause damage to structures, but may cause perceptible levels at buildings located near the site or along haul routes. Vibration levels typically associated with off-highway equipment are summarized in **Table 4.7-9**.

TABLE 4.7-9

TYPICAL VIBRATION LEVELS FOR OFF-HIGHWAY EQUIPMENT

Equipment	PPC at 25 feet (in/sec)
Clam Shovel Drop (slurry wall)	0.202
Large Bulldozer	0.089
Loaded Trucks	0.076
Jackhammer	0.035
Small Bulldozer	0.003
Source: U.S. Department of Transportation 1995	

As previously discussed earlier in this section, a threshold of 0.2 in/sec PPV is the most conservative threshold used for evaluating potential risk of structural damage or when evaluating potential increases in levels of annoyance to occupants of nearby structures. At noted in **Table 4.7-9**, the most intensive onsite construction and mining activities would generate groundborne vibration levels of approximately 0.2 in/sec PPV, or less, at 25 feet. Loaded haul trucks would generate levels of approximately 0.076 in/sec PPV at 25 feet. The nearest residential dwellings are located at distances of approximately 770 feet from onsite mining areas and approximately 60 feet from nearby haul truck routes. Assuming a maximum groundborne vibration level of 0.2 in/sec at 25 feet and given the distances to nearby receptors, predicted groundborne vibration levels at nearby land uses would not exceed even the most conservative threshold of 0.2 in/sec PPV. As a result, exposure to groundborne vibration levels associated with onsite construction and mining activities, as well as the transport of materials along proposed haul routes would be considered **less than significant. [LS]**

CUMULATIVE IMPACT

Impact 4.7.7 The proposed project would result in a noticeable increase in traffic noise levels that could potentially exceed the County's noise standard of 60 dBA CNEL/Ldn at some receptors located along area haul routes. The project's contribution to future cumulative traffic noise levels would be considered **significant and unavoidable. [SU]**

As discussed earlier, ambient noise levels in the project vicinity are primarily affected by vehicle traffic on area roadways. Predicted future cumulative traffic noise levels, with and without implementation of the proposed project, were calculated using the FHWA roadway noise prediction model, based on predicted traffic volumes obtained from the traffic analysis. The project's contribution to future cumulative noise levels was evaluated by comparing predicted traffic noise levels with and without implementation of the proposed project. Predicted "cumulative" and "cumulative-plus-project" traffic noise levels along primarily affected roadways are summarized in **Table 4.7-10**.

As indicated in **Table 4.7-10**, implementation of the proposed project would result in increased traffic noise levels ranging from approximately 2 to 3 dBA along portions of Balls Ferry Road. Noticeable increase (i.e., 3 dBA, or greater) in future cumulative traffic noise levels were predicted to occur along Balls Ferry Road, between Panorama Point to Fourth Street. Predicted increases in traffic noise levels along Balls Ferry Road, between Panorama Point and Fourth Street, would also result in traffic noise levels that could potentially exceed the County's noise standard of 60 dBA CNEL/L_{dn} at receptors located within approximately 67 feet of the roadway centerline. Noise-sensitive receptors located along this roadway segment consist primarily of residential dwellings, the nearest of which are located within approximately 60 feet of the roadway centerline. Because implementation of the proposed project is not anticipated to result in increased traffic volumes along Kimberly Road or Balls Ferry Road, between Deschutes and Shelly Lane, receptors located along these roadway segments are not anticipated to experience noticeable increases in future cumulative traffic noise levels.

Because the proposed project would result in a noticeable increase in traffic noise levels that could potentially exceed the County's noise standard of 60 dBA CNEL/L_{dn} at receptors located along area haul routes, the project's contribution to future cumulative traffic noise levels would be considered **potentially significant, subject to mitigation. [PSM]**

TABLE 4.7-10
PREDICTED TRAFFIC NOISE LEVELS

FUTURE CUMULATIVE AND CUMULATIVE-PLUS-PROJECT CONDITIONS

Roadway Segment	CNEL/L_{dn} 50 Feet From Near Travel Lane Centerline (dBA)		
	Cumulative	Cumulative-Plus-Project	Net Difference
Balls Ferry Road, Deschutes Rd to Kimberly Rd	60.88	63.17	+2.3
Balls Ferry Road, Kimberly Rd to Panorama Point	58.37	61.18	+2.8
Balls Ferry Road, Panorama Point to Fourth St	57.78	61.20	+3.4
Balls Ferry Road, Deschutes Rd to Shelly Lane	65.70	65.70	No Change
Deschutes Road, SR-273 to Locust Rd	70.57	70.76	+0.2
Kimberly Road, Balls Ferry Rd to Locust Rd	56.23	56.23	No Change
SR-273, South to Deschutes Rd	70.62	70.81	+0.2

Note: Predicted traffic noise levels are based on data obtained from the traffic analysis prepared for this project and do not take into account shielding due to intervening terrain or structures.

Source: AMBIENT Air Quality & Noise Consulting 2006

Mitigation Measures

See MM 4.7-6 and MM 4.7-2(b)

Implementation of MM 4.7-2(b) would limit operational hours for the proposed project to between the less noise-sensitive daytime hours of 7 a.m. to 7 p.m. However, noticeable increases in traffic noise levels along adversely affected roadway segments would still be anticipated to occur. No additional feasible mitigation measures have been identified that would reduce this impact to less-than-significant levels. Additional mitigation measures considered for implementation included construction of sound walls and sound proofing of homes located along the adversely affected haul routes. However, because construction of sound walls along these roadway segments would interfere with access to adjacent parcels, this measure was considered infeasible. Soundproofing of residential dwellings located along adversely affected roadways would help to reduce interior noise levels, but would not be effective in reducing exterior noise levels at outdoor activity areas to within acceptable levels. As a result, this impact is considered **significant and unavoidable. [SU]**

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GLOSSARY

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Amplitude	Amplitude is the difference between ambient air pressure and the peak pressure of the sound wave that is measured in decibels (dB) on a logarithmic scale.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel (dB)	Fundamental unit of sound. A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
Community Noise Equivalent Level (CNEL)	Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
Day-night noise level (Ldn)	The 24-hour L_{eq} with a 10 dBA "penalty" for the noise sensitive hours between 10 p.m. and 6 a.m. The L_{dn} attempts to account for the fact that noise during this specified period of time is a potential source of disturbance with respect to normal sleeping hours.
Energy equivalent noise level (Leq)	The energy-mean noise level. The instantaneous noise levels during a specific period of time, in dBA, are converted to relative energy values. From the sum of the relative energy values, an average energy value is calculated, which is then converted to dBA to determine the L_{eq}.

Maximum noise level (Lmax)	The maximum instantaneous noise level during a specified period of time.
Loudness	A subjective term for the sensation of the magnitude of sound.
Noise	Unwanted sound.
Threshold of Hearing	The lowest sound perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Inversion	A layer of warm air in the atmosphere that prevents the rise of cooling air and traps pollutants beneath it.

ACRONYMS

AQMD	Shasta County Air Quality District Manager.
ARB	California Air Resources Board.
Cal OSHA	California Occupational Safety & Health Administration.
Caltrans	California Department of Transportation.
CNEL	Community Noise Equivalent Level.
dB	Decibel
dBA	A-weighted decibel
FHA	Federal Highway Administration
Ldn	Day-night noise level
Leq	LEquivalent noise level
Lmax	Maximum noise level

PPV	Peak Particle Velocity
U.S. DOT	U.S. Department of Transportation.
U.S. EPA	United States Environmental Protection Agency.
WHO	World Health Organization.

This section of the Shasta Ranch Mining and Reclamation Plan Draft EIR discusses the current geologic and soil conditions of the Shasta Ranch Mining and Reclamation Plan project site and identifies the potential geologic and soil related impacts and construction constraints associated with the project. Mitigation measures are provided in order to reduce potential impacts. Information for this section was obtained primarily from previously prepared reports as referenced throughout this document, public and agency contacts, and site reconnaissance.

4.8.1 ENVIRONMENTAL SETTING

California is made up of eleven geomorphic provinces that include five of the most complex formations known as the Coast Range, the Klamath Mountains, the Great Valley, the Cascade Range, and the Modoc Plateau all of which are located within the Shasta County region. As a result several mineral resources can be found within the region including an abundance of sand and gravel minerals along the river and streambeds throughout the Sacramento Valley.

Shasta Ranch features 947-acres of agricultural farmland and open space that is located in the northern Sacramento River Valley along the west banks of the Sacramento River in Shasta County, California. This ranch features alluvial floodplains, oak woodlands, and agricultural fields with an abundance of open space and riparian corridors. According to the U.S. Geological Survey 7-1/2-minute topographic map of the Balls Ferry Quadrangle, slope elevations range from 385-feet above mean sea level (MSL) at the western edge of the property to approximately 372-feet MSL, gradually sloping towards the southern boundary. Anderson Creek, a natural perennial creek that meanders along the southwest project boundary approximately a half-mile west of the Sacramento River flows almost parallel to the Anderson Cottonwood Irrigation District drainage (ACID) just east of Anderson Creek.

Historical uses of the site include agricultural farming, ranching, and disposal of wastewater effluent material that was derived from an offsite paper mill company located upstream, west of the project area. According to the Phase 1 Environmental Site Assessment, prepared by Geomatrix Consultants, Inc. Oct. 11, 2004 (See Appendix 4.9-4 for a complete review) dioxin and furan contaminants were detected in the soils and groundwater. However, groundwater-monitoring results required by the Regional Water Quality Control Board indicate the toxicity levels are below maximum contaminant drinking water levels. Additional soil samples were recommended to identify potential concentrations of dioxin and furan found onsite. See Section 4.12 Hazards and Hazardous Materials for a complete discussion of environmental health and public health risks associated with the existing on site conditions of dioxin and furan contaminants.

GEOLOGIC SETTING

The Shasta Ranch project site and surrounding area is underlain by a thin mantle of Holocene-age alluvium and the latest Pleistocene age formation of unconsolidated

sand, gravel, cobble and levee deposits associated with the Sacramento River (Keinfelder, 2005). On-site, these Holocene-age deposits exist within the proposed Phase 1 mining area and along the northeast margin of the Phase 3 mining area. The Modesto Formation exists within the proposed Phase 2 mining area and within the majority of the Phase 3 mining area. (Kleinfelder, 2005)

Underlying the Holocene and Late Pleistocene alluvial deposits are Pliocene-age weak bedrock deposits of the Tuscan and Tehama formations. The Tuscan formation consists of alluvium and volcanic mudflow deposits derived from now-extinct volcanic vents located east of the Sacramento Valley. The Tehama Formation is almost exclusively alluvial and derived from the Coast Ranges and Klamath Mountains west of the Sacramento Valley. Bedrock of these two Pliocene-age formations is typically weak due to poor compaction and cementation. At this site, sandy tuff (volcanic ash rock) of the Tuscan Formation was encountered at depths ranging from 18 to 32 feet beneath the existing ground surface and borings (Dupras, 1997). In the vicinity of the site older alluvial terrace deposits of the Riverbank and Red Bluff formations exist. In summary the site is underlain by 15 to 27 feet of alluvial material (Sacramento River Channel and Flood Plain Deposits), which overlies weak bedrock (sandy tuff and tuffaceous sandstone) of the Tuscan formation, which is significantly less permeable. See **Figure 4.8-1, Geologic Map**.

SOILS

The proposed mining activities will disturb the native surface and subsurface soils to such a degree that they will be altered from their existing conditions. Many of the soils located within the proposed mining operations are considered Prime Farmland or Farmland of Statewide Importance by the Department of Conservation Farmland Mapping and Monitoring Program. (See Section 4.2, Land Use) According to the Soil Survey of Shasta County, California there are four soil series that exist within the proposed project area. Those four identified are the Anderson, Reiff, Churn, and Tujunga Series (USDA 1974).

In Shasta County these soils are typically found along the Sacramento River floodplain, and alluvium plains associated with level to gentle slopes ranging from 0-9 percent. Both the Anderson and Reiff Series have moderately rapid permeability with very slow to medium surface runoff. These well-drained soils are formed from alluvium weathered mixed sources. According to the Shasta County soil survey map the Reiff Series covers the majority of the project site. The geotechnical investigation report describes the southern portion of the site as shallow topsoil with aggregate resources appearing close to the subsurface (Kleinfelder, 2005). This field observation indicates the existing soil classification may be misrepresented as shown on the Shasta County Soil Survey map. See **Figure 4.8.2, Soils Map**.

Based on the Geotechnical Investigation Reports findings the following soil characteristics were identified in the project area: soils ranging between 5 feet beneath the surface to 16 feet contained silty gravel (GM); sand silty sand (SM); sandy

silt/silty sand (ML/SM); silty sand/ sandy silt (SM/ML); silty clay (ML-CL); and lean clay (CL). The granular soils were predominantly loose to medium-dense, while the fine-grained soils were typically soft to medium stiff. Underlying the surficial soils were dense to very dense gravel granular materials including well-graded gravel (GW), poorly graded gravel with sand (GP), and silty gravel (GM). These were encountered to depths ranging from 18 to approximately 28 feet. In the maximum depths beneath the gravel, at 33.5 feet below grade, poorly graded sand (SP), silty sand (SM), clayey sand (SC), silty gravel (GM), lean clay (CM), and sandy tuff were present (Kleinfelder. 2005). Subsurface conditions as well as the locations of the test pits are further described in **Appendix 4.8-3.**

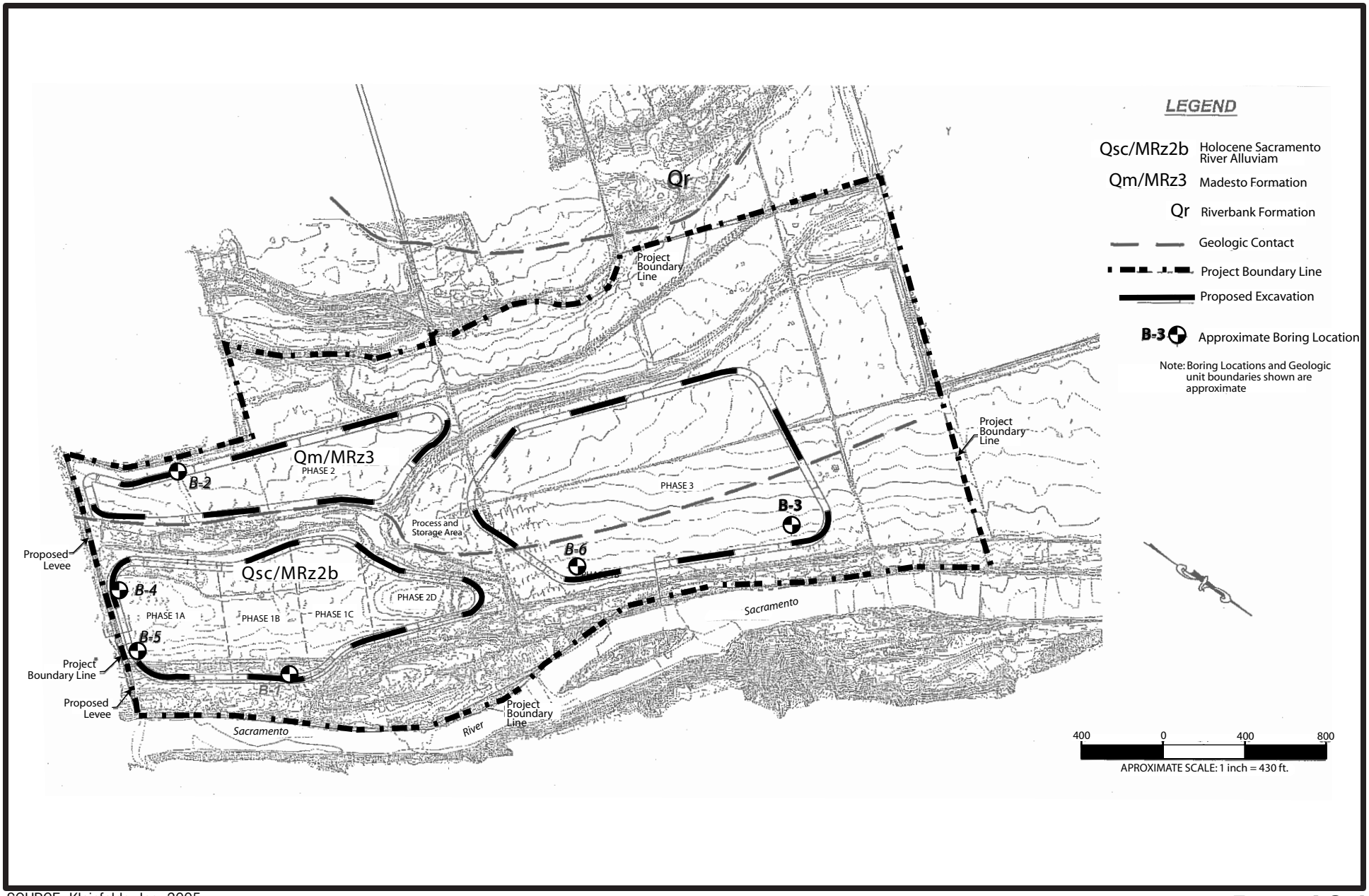
MINERAL RESOURCES

In 1975, Sections 2761(a), (b), and 2790 of the Surface Mining and Reclamation Act (SMARA) were enacted to provide an inventory list of the potential mineral resource availability based on a mineral lands classification system. In the early stages of development this system required mineral resource areas to be classified by the State Geologist on the basis of geologic factors, without regard to existing land use and land ownership. Since the development of the Mineral Resource Areas (MRA's) and Aggregate Resource Areas (ARA's) land use, land ownership and parcel size are used today to reference areas containing mineral resources. Mineral resource areas are categorized into four mineral resource zones MRZ-1 through MRZ-4. The MRZ-2 classification adopted by the State Mining and Geology Board (SMGB) is defined as an area where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood exists for their presence.

A Mineral Land Classification Study has been completed for Shasta County for alluvial sand and gravel, crushed stone, volcanic cinders, limestone, and diatomite (Dupras, 1997). Five areas totaling 14,599 acres in Shasta County have been classified as MRZ-2b for alluvial aggregate by the State Geologist. Approximately 363 acres of the project site that borders the Sacramento River is classified as Sacramento River, MRZ-2b$^{SG(pcc-3)}$. The MRZ-2b designation implies this area is underlain by mineral deposits where geologic information indicates resources are present. Land located within MRZ-2b areas is of prime importance because it contains known economic mineral deposits. The "SG(pcc-3)" part of the MRZ-2b classification states alluvial sand and gravel is suitable for use as Portland concrete cement grade aggregate (PCC-grade aggregate). (See **Figure 4.8-3**, Mineral Resource Zone Map)

The project site is located within the Sacramento River Clear Creek Aggregate Resource Area (ARA) C-11. An ARA is an area classified by the State Geologist as MRZ-2a$^{SG(pcc)}$ and MRZ-2b$^{SG(pcc)}$ for PCC-grade aggregate and is deemed available for mining based upon criteria for compatibility provided by the SMGB. Lands that have compatible uses are defined as those that are non-urbanized or that have very low density residential development (one unit per 10 acres), land that does not have high cost improvements, and lands used for agriculture, silviculture, grazing or open space. ARA C-11 is estimated to contain 658,000 tons of aggregate resources. Approximately

313 acres of the project site are within the boundaries of the approximate 829-acre Sacramento River Clear Creek ARA C-11. (See **Figure 4.8-4**, ARA Map)



SOURCE: Kleinfelder Inc. 2005,

FIGURE 4.8-1
SHASTA RANCH
GEOLOGIC MAP

PMC

Project Boundary

Soil Map Unit

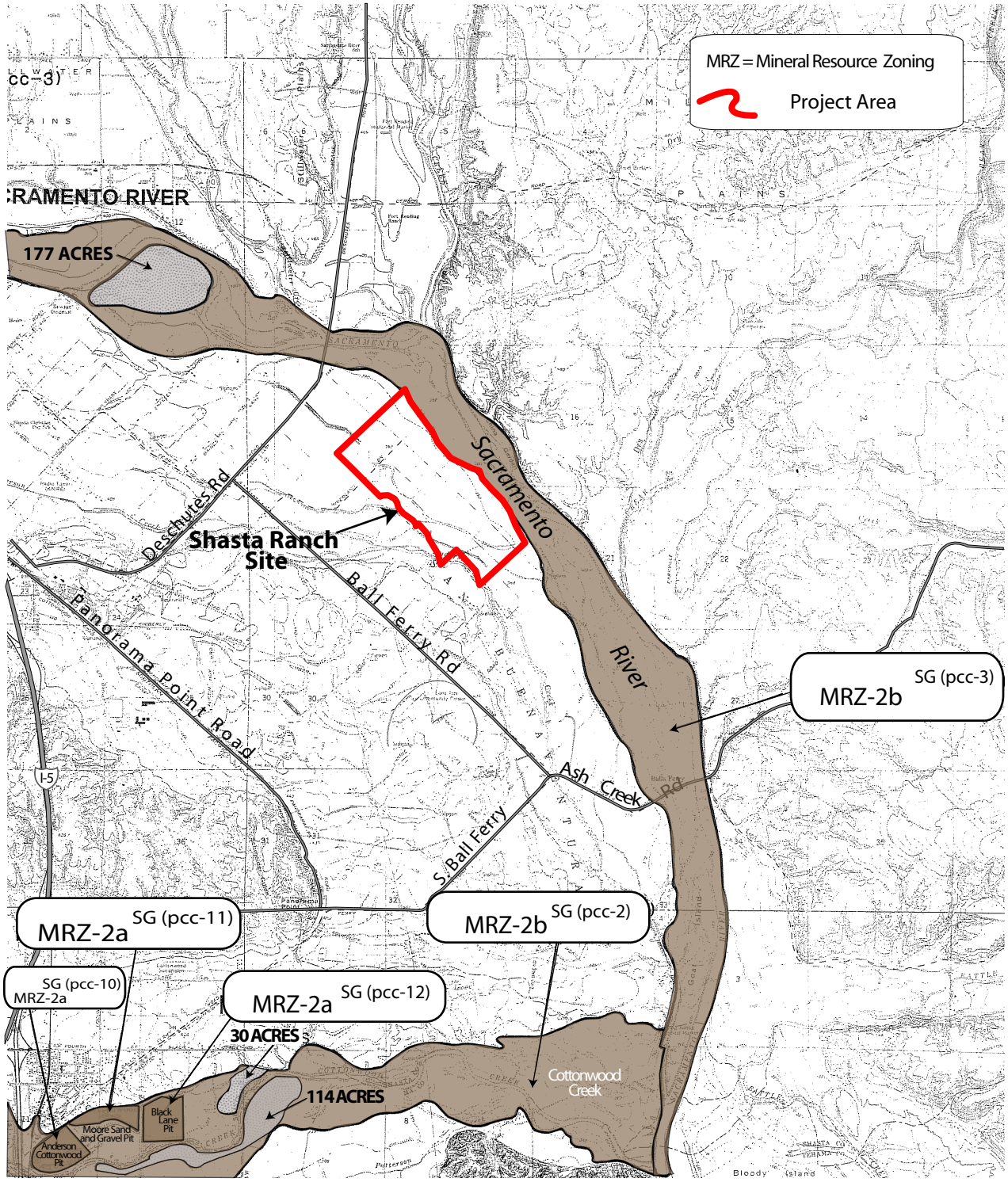
Ad Anderson gravelly sandy loam
CcA Churn loam, 0 to 3% slopes
CcB Churn loam, 3 to 8% slopes
Ch Cobbly alluvial land
Ck Cobbly alluvial land, frequently flooded
MhA Moda loam, seeped, 0 to 3% slopes
MkB Moda loam, shallow, 0 to 5% slopes
PnA Perkins gravelly loam, 15 to 30 % slopes
PoA Perkins gravelly loam, moderately deep 0 to 3% slopes
RgA Reiff fine sandy loam, 0 to 3% slopes
RhA Reiff fine sandy loam, deep, 0 to 3% slopes
RlA Reiff loam, 0 to 3% slopes
RmA Reiff loam, seeped, 0 to 3% slopes
TfA Tugunga loamy sand, 0 to 3% slopes
TfB Tugunga loamy sand, 3 to 8% slopes
W Water
Wa Wet alluvial land

0 750 1,500 3,000 Feet

SOURCE: VESTRA, NOVEMBER 2005
NATURAL RESOURCE CONSERVATTION SERVICE

FIGURE 4.8-2
SOIL MAP
SHASTA RANCH

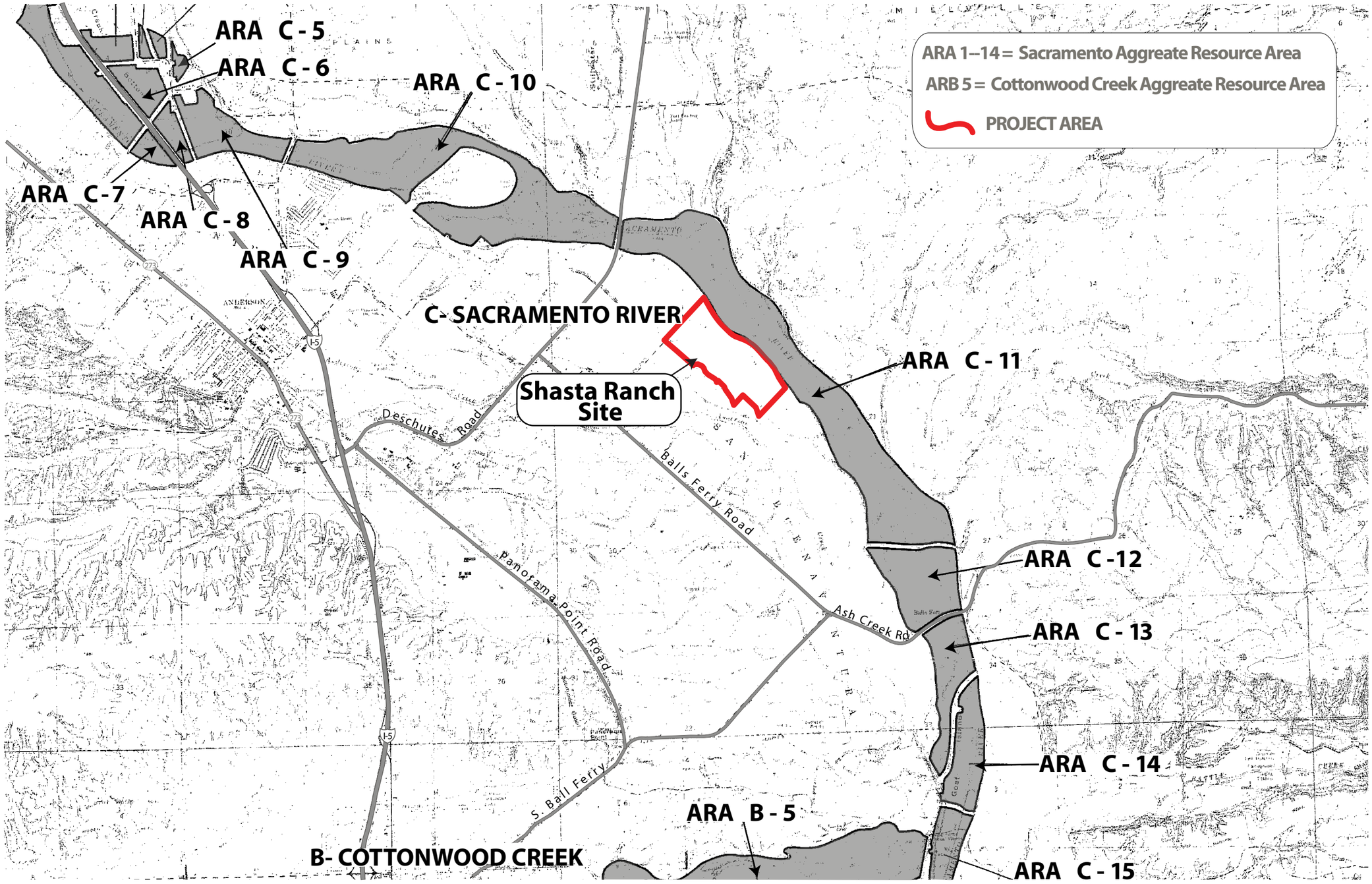
PMC



SOURCE: NRCS DEPT. OF AGRICULTURE

FIGURE 4.8-1
MINERAL RESOURCE ZONE MAP

PMC



SOURCE: NRCS DEPT. OF AGRICULTURE

FIGURE 4.8-4
ARRIGATE RESOURCE AREAS

PMC

GEOLOGIC HAZARDS

SEISMICITY

According to the Shasta County General Plan, Shasta County has a low level of historic seismic activity compared to other areas throughout California. Shasta County has adopted the Uniform Building Code, which establishes building requirements for all new structures based on predicted earthquake intensities. The project site is located in the Uniform Building Code Zone 3, described as an area of "moderate seismicity".

Earthquakes are generally expressed in terms of *intensity* and *magnitude*. Intensity is based on the observed effects of ground shaking on people, buildings, and natural features. By comparison, *magnitude* is based on the amplitude of the earthquake waves recorded on instruments, which have a common calibration. The Richter scale, a logarithmic scale ranging from 0.1 to 9.0, with 9.0 being the strongest, measures the magnitude of an earthquake relative to ground shaking. **Table 4.8-1** provides a description and a comparison of *intensity* and *magnitude*.

TABLE 4.8-1
MODIFIED MERCALLI INTENSITY SCALE FOR EARTHQUAKES

Richter Magnitude	Modified Mercalli Scale	Effects of Intensity
0.1 – 0.9	**I**	Earthquake shaking not felt
1.0 – 2.9	**II**	Shaking felt by those at rest.
3.0 – 3.9	**III**	Felt by most people indoors, some can estimate duration of shaking.
4.0 – 4.5	**IV**	Felt by most people indoors. Hanging objects rattle, wooden walls and frames creak.
4.6 – 4.9	**V**	Felt by everyone indoors, many can estimate duration of shaking. Standing autos rock. Crockery clashes, dishes rattle and glasses clink. Doors open, close and swing.
5.0 – 5.5	**VI**	Felt by all who estimate duration of shaking. Sleepers awaken, liquids spill, objects are displaced, and weak materials crack.
5.6 – 6.4	**VII**	People frightened and walls unsteady. Pictures and books thrown, dishes and glass are broken. Weak chimneys break. Plaster, loose bricks and parapets fall.
6.5 – 6.9	**VIII**	Difficult to stand. Waves on ponds, cohesionless soils slump. Stucco and masonry walls fall. Chimneys, stacks, towers, and elevated tanks twist and fall.
7.0 – 7.4	**IX**	General fright as people are thrown down, hard to drive. Trees broken, damage to foundations and frames. Reservoirs damaged, underground pipes broken.
7.5 – 7.9	**X**	General panic. Ground cracks, masonry and frame buildings destroyed. Bridges destroyed, railroads bent slightly. Dams, dikes and embankments damaged.

Richter Magnitude	Modified Mercalli Scale	Effects of Intensity
8.0 – 8.4	XI	Large landslides, water thrown, general destruction of buildings. Pipelines destroyed, railroads bent.
8.5 +	XII	Total nearby damage, rock masses displaced. Lines of sight/level distorted. Objects thrown into air.

Source: Division of Mines and Geology

FAULTING

Anderson and the Sacramento Valley in general are not characterized by an abundance of active faulting. The site is not located within an Alquist-Priolo Earthquake Fault Zone designated by the State of California (Hart and Bryant, 1997). Published mapping indicates that the closest active Holocene[1] fault system considered to have ruptured the ground surface is the Hat Creek fault zone located about 48 miles northeast of the site (Jennings, 1994). The closest fault known to have been active during the Pleistocene[2] thus considered to be potentially active is the Battle Creek fault, located approximately 3 miles south of the site.

The northern terminations of the Corning and Chico Monocline faults are mapped by the California Geology Society about 20 miles south and 22 miles southeast of the project site, respectively. Although these faults do not break the ground surface, and interpretation of associated geologic structures indicate that large earthquakes likely have recurrence intervals on the tens of thousands of years, they are considered to be possible sources of significant earthquakes. Numerous microseismic events and at least two earthquakes greater than Richter magnitude 4 have been recorded at the southern end of the Corning fault. Additionally, the Corning fault has deformed the ground surface through folding of latest Pleistocene sediments and is, therefore, also considered a potential seismic source in the region.

There are a series of thrust faults located along the western margin of the Sacramento Valley, about 30 to 40 miles west of the site, which comprise the northern portion of the Great Valley fault system. The Great Valley fault system, like the Chico Monocline and Corning faults does not reach the ground surface, but is known to be active. These active and potentially active faults are potential sources of earthquakes that could result in moderate to strong shaking in the Anderson area.

Based on historical seismicity, the California Division of Mines and Geology Map Sheet 49 illustrates that six magnitude 5 or greater earthquakes, and zero M6 or greater earthquakes have been recorded within a 70-mile radius of the project site between the period of 1800-1999. The closest active fault system considered to have ruptured the ground surface is Hat Creek fault zone located about 48 miles northeast of the site. To date, the largest historical earthquake observed in the Redding region was the 1940 Chico event at a magnitude of 5.7. (See **Table 4.8-2**. Significant Historical Earthquakes)

TABLE 4.8-2
SIGNIFICANT HISTORICAL EARTHQUAKES

Date	Magnitude (M)	Approximate distance & direction from site (miles)	Location (Approx.)
01-07-1881	5.0	32SE	Los Molinas
04-15-1928	5.5	37 SW	Newville
02-08-1940	5.7	44SE	NE of Chico
07-07-1946	5.0	38 E	Lassen Peak
03-20-1950	5.5	38 E	Lassen Peak
11-26-1998	5.2	13 N	Redding

Note: Based on Epicenters and Areas Damages by M>5 Earthquakes in California, Map Sheet 49, prepared by CDMG in 2000, and the Seismic Hazards Assessment for the City of Redding, California, prepared by Woodward-Clyde in 1995. Seismographic values for magnitude (M) are used as available, moment magnitude is used where available, otherwise Richter (local) magnitude of surface wave magnitude is used.

In addition, an earthquake with a magnitude of 4.5 was recorded in the Anderson area on April 16, 1904. Though geologic and geophysical evidence can predict the possibility of larger earthquakes, moderate levels of earthquake activity, generally less than a magnitude of 3 on the Richter Scale, characterizes the Shasta County region.

GROUND FAILURE

The process grouped within ground failure includes seismically induced landslides, liquefaction and lateral spreading. All of these processes involve a displacement of the ground surface due to loss of strength or failure of the underlying materials during earthquake shaking.

Seismically Induced Landslides

Landslides do occur throughout Shasta County. Landslides are more prevalent in the eastern and northern portions of Shasta County and are commonly related to the sedimentary and volcanic rocks in these vicinities. As discussed in the *Shasta County General Plan* seismically-induced land sliding is not considered a significant hazard in Shasta County.

Additionally, the project site is situated on relatively level topography, with little to no elevation change. Levees and dikes constructed, as part of the proposed project will be engineered to ensure on-site slope stability to eliminate the potential for localized landslides. Recommended soil compaction is discussed in **Appendix 4.8-3.**

Liquefaction

Liquefaction potential is determined from a variety of factors, including: soil type, soil density, depth to the groundwater table, and the duration and intensity of ground

shaking. The term liquefaction is known as saturated soils that lose shear strength and mobilize as a result of increased pore water pressure induced by significant ground shaking. Structures or levees found on or above potentially liquefiable soils may experience settling and loss of foundation support.

Soils most susceptible are saturated, Holocene-age, and loose clean sand and silty sand. Liquefaction is most likely to occur in deposits of water-saturated alluvium, in stream channel deposits (especially where the ground water table is high), and in areas of substantial artificial fill. Areas in Shasta County with the highest potential for liquefaction are located along the Sacramento River and its tributaries.

The potential for an earthquake with the intensity and duration characteristics capable of promoting liquefaction is a possibility during the design life of the proposed project. In addition, relatively clean granular soils are common in the subsurface. The geotechnical report notes that relatively low-density silty sands were encountered in three of the six borings extending from near-surface to as deep as 12 feet beneath existing grade, with groundwater at depths of 8 to 9 feet. Results of liquefaction analysis indicate that very loose to loose sands are susceptible to liquefaction when subjected to the seismicity expected in the vicinity of the site. Estimates of potential settlements range from ½ inch to 5 inches if a seismic event were to occur while the quarry was flooded such that the existing site elevations become submerged (Kleinfelder, 2005).

Lateral Spreading and Slope Stability

Lateral spreading can be described as liquefaction induced lateral displacement on gently sloping grounds, with or without incised depressions. The presence of liquefiable silty sands were encountered in half of the soil sample tests, which indicates the potential for lateral spreading exists on the project site. The results conclude the very loose to loose silty sands encountered will experience lateral spreading on the order of 1 to 3 feet under the seismic accelerations expected during the life of the project.

Slope stability is another factor of concern that is directly affected by liquefaction. The proposed levee slopes and excavation slopes were analyzed to prevent floodwaters from entering the ponds, fish entrapment during flood events, and increase native plant growth (See Section 4.9 Hydrology and Water Quality for further discussion). As previously noted liquefiable soils are present on the site meaning it will be necessary to reduce the potential impacts of soil liquefaction in the levee foundation and structure by improving the strength and/or drainage in the native soils.

EROSIVE SOILS

Erosion is a normal and inevitable geologic process generally involving the removal of earth materials from one area with deposition to another area. Examples of concentrated erosion include gullied land surfaces and undercut stream banks. Expansive erosion includes sheetwash and slope denudation. Excessive erosion causes sedimentation and can damage or destroy waterway and riparian habitat, clog drainage structures, lakes, reservoirs, and floodplains. The greatest potential for erosion, particularly when disturbed by construction or vegetation removal, is typically found on

slopes exceeding 15 percent. Slopes located on the project site are typically level or minimal ranging from 0-9 percent.

EXPANSIVE SOILS

Most of Shasta County is characterized by moderately expansive soils, soils that swell when wet and shrink as they dry. These expansive soils generally contain clays that expand when moisture is absorbed into the crystal structure. This results in a rise in the ground surface. Though expansive soils are not considered to pose a significant hazard within Shasta County, standard soil tests are necessary in order to determine the expansive soil potential for a particular area. The effects of expansive soils on structures can be mitigated through proper engineering design and standard corrective measures. (See **Appendix 4.8-3**, Geotechnical Investigation Report)

SUBSIDENCE

Land subsidence is the gradual settling or sinking of an area with little or no horizontal motion due to changes taking place underground. It is a natural process, although it can also occur (and is greatly accelerated) as a result of human activities. Common causes of land subsidence from human activity include: pumping water, oil, and gas from underground reservoirs; dissolution of limestone aquifers (sinkholes); collapse of underground mines; drainage of organic soils; and initial wetting of dry soils (hydrocompaction). Subsidence is not considered to readily occur within Shasta County.

Dependent upon the depth of excavation below groundwater, soil conditions encountered along the excavation face, and slope inclination could affect the potential for caving or sloughing of excavated slopes within the vicinity of a sump dewatering system (Kleinfelder, 2005). See **Section 4.12, Hazards and Hazardous Materials**.

VOLCANOES

Shasta County is at the southern end of the Cascade Range, an active volcanic chain that extends from Lassen Peak northward into British Columbia. The most recent volcanic activity in Shasta County was in 1914-1917, when eruption of Lassen Peak produced lava flows on the flank of the crater, numerous ash falls, and a large mudflow. The project area is considered distant enough from the three area volcanoes, including Lassen Peak, Mount Shasta, and Medicine Lake Volcano, that it is unlikely that the area would be significantly affected by a volcanic eruption. The U.S. Geological Survey and the State of California monitor activities at Lassen Pak and Mt. Shasta using seismometers and tiltmeters. With this system established, there would be sufficient warning of renewed volcanic activity.

SEICHES

A seiche is an oscillation of a body of water in an enclosed or semi-enclosed basin that varies in size and period from a few millimeters to a few meters and from a few minutes to several hours, depending on the physical dimensions of the basin. Seiches chiefly

arise as a result of sudden local changes in atmospheric pressure, aided by wind and occasionally tidal currents. Strong ground shaking can also trigger seiches as well as landslides entering the lake, reservoir, or bay.

Given the large holding capacity of Shasta Lake and Whiskeytown Lake, strong ground shaking could potentially generate seiches in both water bodies. In the case of Shasta Lake, the seiche would have to be over 20 meters in height in order to overtop Shasta Dam at full capacity. As flow is further regulated downstream from the dams, seiches are not considered a significant threat at the project area.

4.8.2 REGULATORY FRAMEWORK

STATE

CALIFORNIA DIVISION OF MINES AND GEOLOGY

In 1997, the California Division of Mines and Geology published DMG Open File Report 97-03 entitled: "Mineral Land Classification of Alluvial Sand and Gravel, Crushed Stone, Volcanic Cinders, Limestone and Diatomite within Shasta County, California." The primary purpose of the report was to identify the known or inferred mineral potential of lands within Shasta County. This was done to ensure that the mineral potential of land is recognized by local government decision makers and considered before land use decisions are made that could preclude future mining. Land classifications utilized in the DMG report were presented in the form of Mineral Resource Zones. The study was limited to the five industrial minerals which are presently being commercially extracted in Shasta County.

CALIFORNIA SURFACE MINING AND RECLAMATION PLAN (SMARA)

In 1975, the State passed the Surface Mining and Reclamation Act (SMARA) partly in response to the loss of significant mineral resources to urban expansion. Under SMARA guidelines adopted by the State Mining and Geology Board, the State geologist is required to classify specified areas into Mineral Resource Zones (MRZs). Classification is the process of identifying lands containing significant mineral deposits, based solely upon geologic factors and without regard to present land use or ownership.

REGIONAL WATER QUALITY CONTROL BOARD

The State Water Resources Control Board (SWRCB) has the authority to issue National Pollution Discharge Elimination System (NPDES) permits, but generally delegates this responsibility to the Regional Water Quality Control Board (RWQCB). There are two types of stormwater permits: a general permit for non-point municipal stormwater discharges, and a permit for discharges from industrial and construction activities. Construction activity subject to a General Permit for Discharges of Storm Water Associated with Construction Activities include discharges associated with projects that disturb one or more acres of soil.

Site development within the Project Area would fall under the SWRCB general NPDES permit process for discharge generated from construction activities. The construction

permit authorizes the discharge of stormwater and prohibits the discharge of materials other than stormwater and all discharges which contain a hazardous substance in excess of reportable quantities established in 40 CFR 117.3 or 40 CFR 302.4, unless a separate NPDES discharge permit has been issued to regulate those discharges. A Storm Water Pollution Prevention Plan (SWPPP) is required with a SWRCB construction permit for compliance with the Clean Water Act (CWA) 402(b) for all associated construction activities on the project site.

UNIFORM BUILDING CODE

The County has adopted the Uniform Building Code, which establishes building requirements for all new structures. Therefore the Uniform Building Code regulates the construction of structures associated with the proposed project. The project is located in Seismic Zone 3, as defined by the Uniform Building code, which is defined as an area of potentially major damage from earthquakes corresponding to intensity VII and higher on the Modified Mercalli Intensity Scale. Such areas are subject to strict building regulations designed to enhance the ability of a structure to withstand potential earthquakes.

LOCAL

SHASTA COUNTY GRADING ORDINANCE

Shasta County Code Chapter 12.12 sets forth regulations concerning grading, excavating and filling. The County Code prohibits any grading of more than 250 cubic yards or 10,000 square feet of disturbance area without a grading permit from the County. The grading permit must include an approved grading plan provided by the project applicant, and it shall set forth terms and conditions of grading operations that conform to the County's grading standards. The permit also requires the project applicant to provide a permanent erosion plan that must be approved and implemented upon completion of the project. In addition, each permit shall require approval of a plan for ongoing maintenance of erosion control measures for the duration of the project and for three years after completion of the project, unless the project is released earlier by the enforcing officer designated by the County Board of Supervisors.

SHASTA COUNTY GENERAL PLAN

The Shasta County General Plan contains the following objectives and policies concerning geology, soils and minerals that pertain to the project:

<u>Seismic and Geologic Hazards</u>

Objectives

SG-1. Protection of all development from seismic hazards by developing standards for the location of development relative to these hazards; and protection of essential or critical structures, such as schools, public meeting facilities,

emergency services, high-rise and high-density structures, by developing standards appropriate for such protection.

SG-3. Protection of development from other geologic hazards, such as volcanoes, erosion, and expansive soils.

SG-4. Protection of waterways from adverse water quality impacts caused by development on highly erodible soils.

Policies

SG-c. Shasta County shall coordinate with State and Federal agencies monitoring volcanic activity and shall periodically review and update the *Shasta County Emergency Plan* with respect to volcanic hazards.

SG-d. Shasta County shall develop and maintain standards for erosion and sediment control plans for new land use development. Special attention shall be given to erosion prone hillside areas, including those with extremely erodible soils types such as those evolved from decomposed granite.

SG-e. When soil tests reveal the presence of expansive soils, engineering design measures designed to eliminate or mitigate their impacts shall be employed.

Minerals

Objectives

MR-2 To encourage the production and conservation of minerals while giving consideration to values relating to recreation, watersheds, wildlife, range, forage, timberlands and aesthetics.

MR-3 To ensure that mining operations are conducted in such a manner as to protect the public health, safety and welfare; to minimize impacts on adjacent land uses; and to mitigate other potential adverse environmental impacts.

MR-4 To ensure that mined lands are reclaimed to minimize adverse impacts on the environment, to protect the public health and safety, and to restore mined lands sites to a usable condition which is readily adaptable to alternative land uses.

Policies

MR-i All new and expanded mining operations shall have a use permit to ensure that they are conducted in a manner to protect the public health, safety and welfare, and to minimize adverse impacts on adjacent land uses and the environment.

MR-j On-site processing, including crushing, washing, screening, sorting and stockpiling, should be allowed as much as possible at all mineral resource sites, subject to consideration of potential conflicts with adjacent and nearby land uses, and to mitigation of potential adverse environmental effects. However, concrete plants and asphalt plants should only be permitted in the Mineral Resource (MR) and General Industrial (M) zone districts, subject to approval of a use permit.

MR-n An operating term shall be required for each mining use permit. This would set a defined length of time during which mining may occur. Any extensions beyond the permit expiration would require further environmental review and discretionary approval. The term of mining should be balanced so as to allow sufficient time for the operator to amortize investments, without sacrificing regulatory effectiveness. The maximum length of time for which any mining permit may be approved is 30 years.

MR-o Aggregate recycling facilities should be included as a permitted use subject to a use permit in General Industrial and Mineral Resource zone districts.

MR-q The County should maintain a Surface Mining and Reclamation Act regulatory program to provide current information on mineral resources and mining operations, to review applications for mining permits and reclamation plans, to review mine reclamation financial assurances, to perform annual mine inspections and file inspection reports, to monitor reclamation of mine sites, and to enforce compliance with State and County mining regulations.

SHASTA COUNTY ZONING ORDINANCE

Interim Mineral Resource (IMR)

17.72.010 The interim mineral resource district is intended to be combined with any principal district to protect mining operations which are short-term (i.e., less than 30 years of expected operation), and to allow for compatible land uses while protecting the potential for mineral resource development.

17.72.020-A Uses permitted in the IMR district are all uses permitted in the principal district with which the IMR district is combined, provided the use does not conflict with existing mineral resource development nor preclude future mineral resource development. The conditional use permit requirements of the principal district shall apply.

17.72.020-B Discretionary land use permits within one-half mile of an IMR district shall be mitigated, as determined necessary by CEQA review, to prevent conflicts with existing and potential mining operations. 1

4.8.3 STANDARDS OF SIGNIFICANCE

Based on Appendix G of the CEQA Guidelines, the County concludes that a project may have significant impacts on minerals, geology and soils if it does any of the following:

- Exposes people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault.
  - Strong seismic ground shaking.
  - Seismic-related ground failure, including liquefaction.
  - Landslides.
- Results in substantial soil erosion or the loss of topsoil.
- Is located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.
- Is located on expansive soil, as defined in Table 18-1-B of the California Building Code (1994), creating substantial risks to life or property.
- Use non-renewable resources in a wasteful and inefficient manner.
- Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State.

METHODOLOGY

PMC staff reviewed pertinent documents with information on the minerals, geology and soils of the area. The evaluation of potential minerals, geology, and soil impacts were based on the review of the Geotechnical Investigation Report (Kleinfelder, 2005), documents published by the Division of Mines and Geology, Phase I Environmental Assessment, applicable Shasta County General Plan policies, as well as field visits. A list of reviewed documents is provided in the References portion of this section.

Levee and Slope Construction

The project site contains potential liquefiable soils that extend to depths up to 13 feet beneath the surface grade. Because the soils located on site may be susceptible to seismically induced settlement, lateral spreading, and liquefaction it is necessary to reduce the potential seismic impacts by improving the foundations strength and drainage beneath the surface grade. The foundations would require engineered fill below grade at an approximate depth of eight feet. This would be accomplished through excavation and removal of loose soils and then reconstruction of the foundations with engineered fill and native soil. (soils not suitable for aggregate production and dried to provide suitable moisture content for compaction to the standards for engineered fill). Of course, under intermediate flood conditions (i.e., 10-year event) some liquefaction of foundation soils beneath the spur dike could result in settlement and lateral spreading, however, it is not expected to result in a levee breach as there should be sufficient freeboard above the flood elevation to retain flood waters. (See **Section 4.9, Hydrology and Water Quality**)

Phase One will involve construction of the " spur levee" on the southeast portion of the site that wraps around Phase 1A and Phase 1B excavation to the north along the east and west sides of the Phase 1 excavation. This levee is expected to range up to a maximum of 11 feet in height. The levee was modeled using the maximum levee height (11 feet high, crest elevation 382.4 feet, downstream toe elevation 371.5 feet), with levee slope gradients of 2-1/2:1 (upstream slope) and 2:1 (downstream slope). The crest width of the levee was modeled at 10 feet, and a 20-foot wide working bench included between the toe of the levee and the crest of the quarry excavation. (Kleinfelder, 2005)

In accordance with the geotechnical report the recommended slope gradient is 2:1. However slopes created during the excavation process for all three phases shall be constructed at a slope that does not exceed 2.5:1 in native silty sand and no steeper than 1:1 in dense gravel. As for reclaimed slopes the backfill and final grading will not exceed slopes greater than 1.5: 1 below groundwater surface elevation and 3: 1 above groundwater. (See **Figure 18, Appendix 3.0-3**, Phase 2 & 3, Slope Cross-Sections for the proposed ponds). The proposed "spur dike" levee cross-section is illustrated in Plate 3 of **Appendix 4.8-3** and **Table 7** provides a list of the engineered fill requirements. Based on the soil boring results, locations of silty sand are expected to occur along the southwest slope of the Phase 3 pit and along the northwestern slope of the Phase 1 pit (EIP, 2005).

4.8.4 IMPACTS AND MITIGATION MEASURES

SEISMIC ACTIVITY

Impact 4.8.1 In the event of a major earthquake, seismic ground shaking could potentially result in substantial adverse effects, including the risk of loss, injury, death, or cause structural damage to existing structures. This impact is considered ***less than significant.*** **[LS]**

Based on seismic activity and history within the Shasta County region trends are typically less than a magnitude of 3 on the Richter Scale. The project site is not located within an Alquist-Priolo Earthquake Fault Zone (EFZ). According to the California Geological Surveys peak ground acceleration is estimated at 0.25g. (Kleinfelder, 2005). This level of moderate earthquake activity could result in sizeable ground shaking within the Shasta Ranch project area. The project site is located in the Seismic Zone 3, as defined by the Uniform Building Code. The construction of structures and the installation of equipment, including the processing plant, must be designed and constructed in accordance with State and local seismic safety regulations (See **Table 2 of Appendix 4.8-3**, for seismic design standards). Construction to these standards would reduce the potential severity of damage to structures on the project site, which would increase the safety to people on the project site during a seismic event. Compliance with State and local seismic standards will reduce this impact to ***less than significant*****. [LS]**

Mitigation Measures**:**

None Required.

Impact 4.8.2 Seismic-related ground failure, liquefaction and/ or landslides could potentially occur on the project site. This impact is considered ***potentially significant subject to mitigation*****. [PSM]**

Seismic-induced ground failure includes lateral spreading, liquefaction and landslides. Lateral spreading is a secondary result of severe shaking and horizontal movement in unconfined alluvium terraces. Within the project area the California Geological Surveys peak ground acceleration is estimated at 0.25g. (Kleinfelder, 2005). This level of moderate earthquake activity and the soil and rock structures underlying the Shasta County region could result in sizeable ground shaking within the Shasta Ranch project area. However the probability for surface faulting in and around the project site is considered minimal.

Liquefaction would most likely occur on site due to the nature of the soil characteristics. The Geotechnical Report concludes relatively low-density silty sands were encountered at depths of up to 12 feet beneath the existing grade, with groundwater depths of 8 to 9 feet below the existing grade. The estimated potential settlements range from ½ inch to 5 inches if a seismic event were to occur while the quarry was flooded in such that the existing site elevations become submerged (Kleinfelder, 2005). This seismic activity would result in on-site seepages; settlement and lateral spreading that could adversely impact the proposed levee system for the project. The following are the most likely

places where liquefaction would occur: levee foundations, levees, slope banks of the excavated quarry pits, use of artificial fill for pond and bank stabilization. The engineer's geotechnical report includes the following recommendations to reduce the potential impacts of ground shaking, liquefaction and landslide activity:

- Liquefiable soils shall be excavated and removed to reconstruct levee foundations with engineered fill constructed with the native soil (soils not suitable for aggregate production, dried to provide a suitable moisture content for compaction to the standards for engineered fill) to reduce the potential for liquefaction (**See Table 7**, **Appendix 4.8-3).**

- Engineered fill shall generally consist of soil and/or soil-aggregate mixtures less than 3 inches in maximum dimension; remain nearly free of organic or other deleterious debris; and remain essentially non-plastic. Typically, well-graded mixtures of sand, non-plastic silt, and small quantities of clay are acceptable for use as engineered fill. (Specific requirements for engineered fill, as well as applicable test procedures to verify material suitability, are provided by the latest editions of the American Society for Testing and Materials Standards and the American Association of State Highway and Transportation Officials, Standard Specifications for Transportation Materials and Methods of Sampling and Testing).

- All excavation depths, specified slope height, and/or slope inclination must comply with applicable local, state, and federal safety regulations including the current OSHA Excavation and Trench Safety Standards.

- Levee embankment slopes shall be constructed with engineered fill with slopes no steeper than 2-1/2: 1 upstream and 2:1 downstream. The spur levee should be designed and constructed as shown on Plate 3, **Appendix 4.8-3**, with the understanding and acceptance of the risks that, in the event very loose to loose silty sand foundation soils beneath the levee liquefy due to the design seismic event, lateral deformations on the order of 1 to 3 feet could occur. In the event of a seismic event, the levees should be evaluated by the geotechnical engineer for distress, and if appropriate, remedial recommendations should be prepared for reconstructing the levees. Such reconstruction will likely be required to be performed under adverse weather conditions to prevent further levee distress and/ or unacceptable water releases.

- Quarry excavation slopes shall be constructed no steeper than 2/-1/2: 1 in the native silty sand and no steeper than 1:1 in dense gravel.

- Levee embankment slopes should be constructed with engineered fill with slopes no steeper than 2-1/2:1 upstream and 2:1 downstream.

- Heavy construction equipment, building materials, excavated soil, and vehicular traffic should not be within 1/3 the slope height from the top of any excavation activity. During wet weather, earthen berms or other methods should be used to prevent runoff water from entering all excavations. All runoff water should be collected and disposed of outside to the construction limits.

Implementation of the engineers recommendations listed above would reduce the potential impacts caused by ground failure, liquefaction and onsite landslide activity. In addition, the following mitigation measure is provided:

Mitigation Measures:

MM 4.8.2 Prior to approval of the project, a detailed erosion control plan shall be prepared by the project applicant and submitted to the County for approval. The erosion control plan will be designed to limit the effects of soil erosion and water degradation during construction, and limit the hazards associated with streambank erosion within the creek areas. This plan will be prepared and implemented in accordance with any current regulation, and shall include (but not limited to) the following:

- Construction timing for initial placement of onsite equipment (processing area), road grading/paving, and levee construction operations (May 15- Oct 15);
- Erosion control methods which utilized sediment traps, barriers, covers or other methods approved by the County;
- Recommendations for cut and fill slopes, consistent with the geotechnical report;
- Recommendations for mulching, seeding, revegetation and other stabilization measures as approved by the County;
- Plans for deposition and storage of excavated materials; and
- Construction phasing plans for each excavation pit that identifies the sequence and extent (acreage) of graded areas for the phase under mining.

Timing/ Implementation: During the initial road construction and equipment installation.

Enforcement/ Monitoring: Shasta County Department of Resource Management, Environmental Health Division and Planning Division.

Implementation of federal, state, and local seismic construction standards, the Geotechnical Report recommendations, and **MM 4.8.1** would significantly reduce the potential seismic-related damage to the project site. As mitigated impacts are considered ***less than significant***. **[LS]**

Impact 4.8.3 Mining operations would require extensive grading, excavation, filling, and site preparation that will increase the potential for erosion and could lead to slope instability resulting in a ***potentially significant impact, subject to mitigation*. [PSM]**

Soil erosion hazards may occur during mining and reclamation activities, especially during the initial site grading, stripping and grubbing, when stockpiles of loose soil and rock material would be present, and during the replacement and compaction for reclamation features. A substantial amount of soil erosion is contributed to precipitation and storm water runoff, however wind erosion can increase erosion rates, especially in loose, fine-grained soils.

Based on the project description mining operations will result in the removal of topsoil and overburden to depths of 8 to10 feet. The total estimated volume of overburden proposed for removal is 3.43 million cubic yards. All topsoil and overburden will be stockpiled and reused for the construction of levees, bank stabilization, and infill development of reclaimed farmland for Phase 1 reclamation activities. Soil that is stockpiled will be planted to reduce the potential for erosion.

Currently the majority of the project site is level with flat to gently rolling slopes. The mining project will create a total of three mining excavation pits and four levees that will produce variable slopes as identified in the Project Description Section 3.0. The slopes along the excavation pits may become unstable during a seismic-induced event. The slopes along the excavation pits could experience debris and sediment caving or sloughing back into the pit, but generally landslide activity occurs on slopes that are 15 percent or greater. The three excavation pits and slopes will be constructed in accordance with slope height, slope inclination and/ or excavation depths as recommended by local, state, and federal safety regulations. In addition all construction activities associated with site preparation, active quarry operations, and reclamation activities shall comply with the engineers specifications noted in the geotechnical report. See **Appendix 4.8-3.**

Excavation activities will create the base side slopes for the areas near the reclaimed ponds and levees. The side slopes of the pits would be a maximum of 2:1 towards the excavation areas near ponds and levees. The stability of the slopes would be constructed in accordance with the Slope Stability Analysis provided in the geotechnical report, See **Appendix 4.8-3**. Slope stability will be monitored throughout the mining phase of the project to ensure that underlying geologic formations and material would remain stable within the planned mining and reclamation slope areas.

The design of haul roads and pond levees would be sloped toward the excavated pits/ pond areas to prevent storm water runoff and erosion control from leaving or impeding the site. This includes floodwaters from entering the ponds and maintaining all drainage flows within the mining portion of the projects site. Because of the previous activity on the site erosion may have secondary environmental impacts which are discussed in **Section 4.9 Hydrology and Water Quality and 4.5, Biological Resources**.

The project is designed to meet federal, state, and local laws. Consultation has been initiated with the Regional Water Quality Control Board in regards to water discharge requirements for the review, approval and completion of the mining project and reclamation plan. Without proper erosion and sediment controls throughout the duration of the proposed mining and reclamation activities, the project could result in ***potentially significant impacts, subject to mitigation*. [PSM]**

In addition to the following mitigation measures, state law requires compliance with a number of provisions that will further reduce the potential for erosion. These include:

- A Storm Water Pollution Prevention Plan (SWPPP) is required with a SWRCB construction permit for compliance with the Clean Water Act (VCWA) 402(B) for all associated construction activities on site. This plan addresses erosion potential during construction and ongoing mining operations.

- An National Pollution Discharge Elimination System Permit (NPDES) is required from SWRCB for operation of the quarry. Similar to the SWPPP, the NPDES establishes erosion control methods and may also address operational aspects of the quarry.

- Construction of the proposed levees and excavation pits shall be in compliance with all slopes heights, slope inclination, or excavation depths (including utility trench excavation) should in no case exceed those specified in local, state, or federal safety regulations. (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations).

- While cuts, fills, drainage, and erosion control are required to be designed and constructed per the engineers specifications as outlined in the geotechnical report, and the Uniform Building Code (Ordinance 2246 § 2 (part), 1999), the following provisions are also necessary in order to reduce erosion related impacts:

- The Developer shall submit an Erosion and Sediment Control Plan, prepared by a licensed engineer, to the Shasta County Environmental Health Division, pursuant to the Clearing, Grading, Fills, and Excavation Ordinance (Shasta County Code, 12.12).

- Under the SMARA reclamation plan requirements the performance standards identified for erosion control and revegetation measures shall be incorporated in the final reclamation plan prior to approval of the final site Reclamation Plan.

- All topsoil and overburden stockpiled onsite and proposed for reuse shall meet the requirements of SMARA Section 3711 (a-e).

In order to ensure that full disclosure of the potential magnitude of impacts to water quality, wetlands, and fisheries are considered, the developer shall also submit the Erosion and Sediment Control Plan, as part of each permit application, to the following regulatory organizations:

- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers
- Central Valley Regional Water Quality Control Board
- California Fish and Game

Mitigation Measures:

In addition refer to **MM 4.9.3 in Section 4.9 Hydrology and Water Quality, MM 4.4.1(a) and 4.4.2(a) in Section 4.4 Air Quality, MM 4.5-3(a) in Section 4.5 Biological Resources**.

MM 4.8.3(a) All excavated slopes shall be hydroseeded with indigenous grasses or plants to minimize surface erosion.

Timing/Implementation: During project implementation and thereafter as part of the annual mine inspection program.

Enforcement/Monitoring: Shasta County Department of Resource Management, Environmental Health Division and Planning Division.

MM 4.8.3(b) Topsoil and overburden piles shall be treated with hydroseed and/or mulch to restore the structure of the bare soil during storage and reduce soil erosion from wind and heavy rains.

Timing/Implementation: During project implementation and thereafter as part of the annual mine inspection program.

Enforcement/Monitoring: Shasta County Department of Resource Management, Environmental Health Division and Planning Division.

MM 4.8.3(c) Soil disturbance, grading, and other site preparation (levee construction, road improvements, and construction of the processing area), including vegetative clearance shall occur between May 1 and October 15 of any project construction year to avoid the rainy season and reduce soil erosion and potential runoff.

Timing/Implementation: During project implementation and thereafter as part of the annual mine inspection program.

Enforcement/Monitoring: Shasta County Department of Resource Management, Environmental Health Division and Planning Division.

MM 4.8.3(d) Drainage and storm water runoff control systems and related facilities shall be designed to fit the hydrology of the site under full development and have full flow capacity plus adequate safety features. The systems shall be non-erosive in design, should conduct runoff to a stable outlet, and be installed prior to October 15 of each construction year.

Timing/Implementation: During the initial road construction and equipment installation.

Enforcement/Monitoring: Shasta County Department of Resource Management, Environmental Health Division and Planning Division.

MM 4.8.3(e) Excavated slopes shall be protected from concentrated runoff and sheet flows using v-ditches at the tops of the slopes to keep the drainage from running over the slope face.

Timing/Implementation: During project implementation and thereafter as part of the annual mine inspection program.

Enforcement/Monitoring: Shasta County Department of Resource Management, Environmental Health Division and Planning Division.

Compliance with local and state regulations as well as implementation of **MM 4.8.2a-e, MM 4.9.3, Section 4.9 Hydrology and Water Quality, MM 4.4.1(a) and 4.4.2(a) in Section 4.4 Air Quality, and MM 4.5-3(a), Section 4.5 Biological Resources** would reduce the potential for erosion and slope stability impacts and secondary biological and storm drainage impacts to a **less than significant impact. [LS]**

Impact 4.8.4. Structures associated with the project may be constructed on potential expansive soils as defined in Table 18-1-B of the California Building Code. This is considered a ***potentially significant impact, subject to mitigation*. [PSM]**

The proposed processing area would be located on the Reiff Series soil, which has a low to moderate shrink-swell potential. The processing area, which includes the crushing and screening operations, would be located on this soil structure. Although it is not known if this potential could actually lead to structural damage, this impact is considered ***potentially significant, subject to mitigation*. [PSM]**

Mitigation Measures:

Potential problems with expansive soils would be mitigated by compliance with the construction requirements of the currently adopted version of the Uniform Building Code. See discussion 4.8.1. In addition the following mitigation measure is proposed:

MM 4.8.4 For portion of the project site where structures would be placed, the project applicant shall submit a report from a qualified engineer or soils specialist that identifies the location of expansive soils and demonstrates how the potential negative impacts of these soils can be minimized or avoided, in accordance with Policy SG-e of the Shasta County General Plan.

Timing/Implementation: Prior to construction and equipment installation.

Enforcement/Monitoring: Shasta County Department of Resource Management, Environmental Health Division and Planning Division.

Implementation of **Mitigation Measure MM 4.8.4** would minimize or eliminate the negative effects that expansive soils may have to structures and equipment located on the site. Impacts after mitigation would be ***less than significant***. **[LS]**

Impact 4.8.5 The project might result in the loss of topsoil and the compaction of other soils resulting in a ***less than significant*** **[LS]** impact.

Most of the topsoil throughout the project site has been disturbed or compacted by previous agricultural activities, including tilling, disking, harvest operations, and site irrigation. Areas of the site will be graded and excavated below the subsurface soils. Topsoil and overburden will be excavated at depths of 8 to10 feet with a total volume of 3.43 million cubic yards of topsoil and overburden removed. These soils will be stockpiled on site and reused for the duration of the mining and reclamation activities (i.e., construction of levees, bank stabilization, and infill development of reclaimed farmland).

After removal of the processing area and equipment, the ground beneath the former processing area and access roads no longer in use will be deep tilled to eliminate soil compaction from the processing area and roadway use. The area would then be resoiled with stockpiled overburden remaining from Phase 3 mining activities to a minimum depth of 6 inches or as needed to ensure revegetation is established on the site. Final grading would be completed to match the existing landscape and topography and then revegetated. A drainage and grading plan will be prepared as part of the site preparation in conformance with the adopted County standards as indicated by County ordinance. Compliance with the reclamation plan as proposed and state and county ordinances will reduce this impact to a ***less than significant*** level**. [LS]**

Mitigation Measures:

None Required.

4.8.6 CUMULATIVE IMPACTS AND MITIGATION

No cumulative impacts were identified.

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ENDNOTES:

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[1] The Holocene geological period refers to the present day back about 10,000 radiocarbon years, approximately 11,430 ± 130 calendar years before present.

[2] The Pleistocene geological period refers to the time period between 12,000 to 1.8 million years before present.

This section describes hydrologic features within and in the vicinity of the proposed project and addresses potential issues associated with storm drainage and flooding, surface water quality, groundwater, and exposure of structures to flood hazards. Information provided in this section has been based on field reconnaissance, existing regulations, data, reports and information from County staff and other governmental agencies. Supporting documentation pertaining to Hydrology and Water Quality is included in **Appendix 4.9-1** thorough **Appendix 4.9-6.**

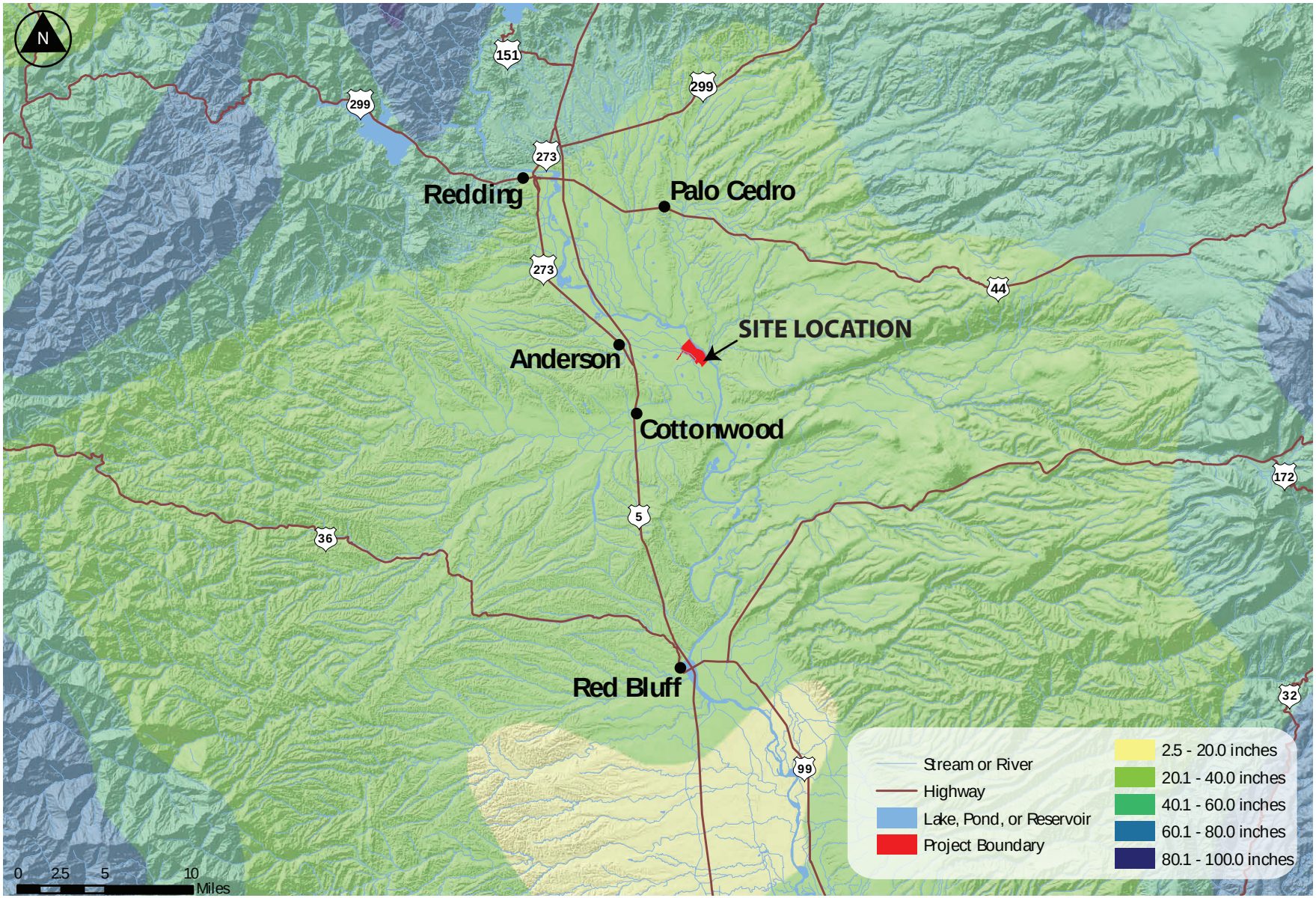
4.9.2 ENVIRONMENTAL SETTING

HYDROLOGY AND FLOODING

The climate within the general area of the project site is characterized by hot, dry summers and mild winters, with typically light precipitation. Approximately 90 percent of the annual precipitation occurs during the period from October through March. Precipitation occurs almost entirely as rain; however in the mountainous regions of the upper Sacramento River Basin, much of the seasonal precipitation occurs as snow. Average annual precipitation along the Sacramento River in the vicinity of the project site is approximately 34 inches. Average annual precipitation in the upper elevations of the Sacramento River in the broader watershed context is greater than the local precipitation as shown in **Figure 4.9-1, Isohyetal Map.** A 100-year storm in the local area will have a 24-hour precipitation total of approximately 5.0 inches.

Topography within the project site generally tends to slope toward the southeast, in the direction of flow in the Sacramento River. However, the eastern portions of the site currently drain toward the Sacramento River, the central portion of the site drains toward the depressed Oak Woodland/Riparian/Wetland Reserve area, and the west portion of the site drains toward Anderson Creek. Elevations range from about Elevation 390 feet above mean sea level (msl) at the north central portion of the site to about Elevation 370 feet (msl) within the central wetland area along the south boundary of the site.

The project site is situated in the upper Sacramento River Valley and is bordered on the east/northeast by the Sacramento River itself. The Sacramento River flows in a southeasterly direction adjacent to the site. The project site is situated on alluvial floodplain and ancient channel of the Sacramento River. This river channel was transformed and redirected due to the heavy amount of gold mining that historically occurred in the area and the alteration of flow as a result of the construction of the Shasta Dam in the early 1940s, approximately 10 miles upstream of the project site. Dredge tailings and hydraulic mining eventually filled the river channel, transforming the channel to its current depth and route as it exists today, (EIP Associates and Sharrah, Dunlap Sawyer, April, 2005). A review of several aerial photographs and topographic maps covering the time frame between 1965 and 2004 revealed that the alignment of the Sacramento River adjacent to and upstream and downstream of the project site has been stable during the past 40 years.



SOURCE: CALIFORNIA SPATIAL INFORMATION LIBRARY
Vestra, 2006

FIGURE 4.9-1
ISOHYETAL MAP

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Flows in the Sacramento River at the project site are significantly regulated and influenced by the Shasta Dam, which was constructed upstream approximately 10 miles north of the City of Redding in the early 1940s. Shasta Dam captures runoff and stream flows from a watershed area of approximately 6,421 square miles (FEMA, 1999). Elevations in the upper watershed range from approximately 350 feet to over 14,000 feet. The construction of Shasta Dam resulted in regulation of the 10-, 50-, and 100-year floods to the current 100-year flood flow of 79,000 cfs in the Redding area according to Federal Emergency Management Agency (FEMA). There are also significant tributary contributions to flow to the Sacramento River between Shasta Dam and the vicinity of the project site provided by Clear Creek, Stillwater Creek, Cow Creek, Anderson Creek, Bear Creek and other tributaries. The largest floods that have occurred along the Sacramento River since the construction of Shasta Dam recorded peak discharges at Keswick (just north of Redding) of 73,100 cfs (1953), 78,800 cfs (1958), 78,900 cfs (1970), 81,400 cfs (1974), 78,900 cfs (1986), 75,500 cfs (1995), and 79,200 cfs (1997).

Whiskeytown Dam, constructed on Clear Creek approximately 6 miles west of Redding, is also a significant structure that provides upstream flood protection. Although Whiskeytown Dam did not include flood control as a project purpose, the Water and Power Resources Service operates the top 10 feet of the impounded reservoir for flood control, which provides significant flood reduction on Clear Creek.

The Federal Emergency Management Agency (FEMA) has adopted the following discharges for the Sacramento River as shown on **Table 4.9-1, Sacramento River Peak Discharges Adopted by FEMA.**

TABLE 4.9-1

SACRAMENTO RIVER PEAK DISCHARGES ADOPTED BY FEMA

Location	Drainage Area (square miles)	Peak Discharges (cfs)			
		10-year flood event	50-year flood event	100-year flood event	500-year flood event
Above Clear Creek	6,500	79,000	79,000	79,000	319,000
Above Churn Creek	6,800	88,000	102,000	112,000	351,000
Below Battle Creek	8,800	131,000	219,000	281,000	525,000

Source: FEMA, Flood Insurance Study, Shasta County, California, Unincorporated Areas

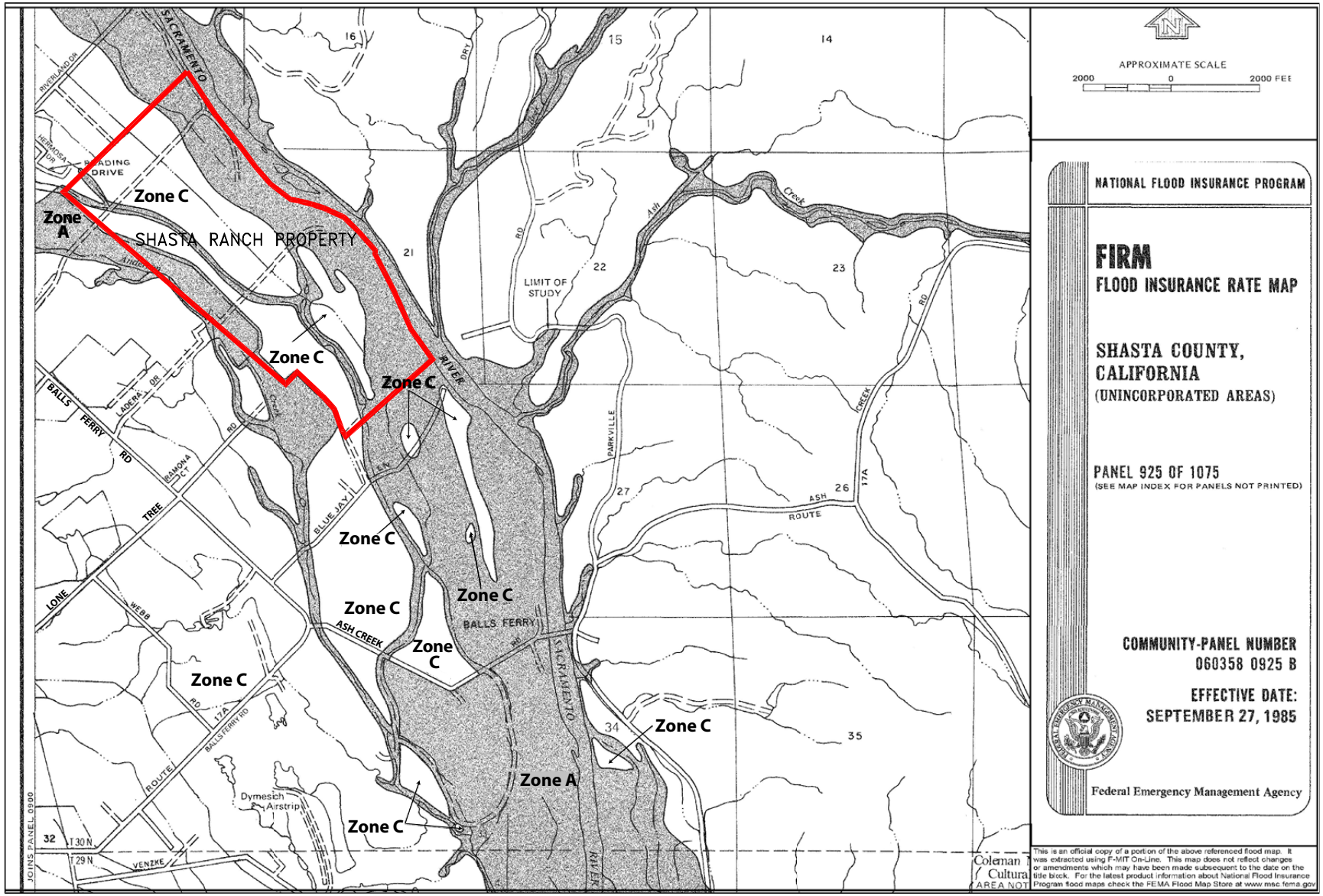
Churn Creek has its confluence with the Sacramento River approximately 5 miles upstream of the project site, and the Battle Creek confluence with the Sacramento River is located at the Shasta County/Tehama County line approximately 3 miles downstream of the project site.

FEMA has estimated the extent of the regulatory floodplain (100-year floodplain) for the Sacramento River in the vicinity of the project site using "approximate methods", and portions of the site are designated as being located in Zone A (Special Flood Hazard Area inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown). **Figure 4.9-2, FEMA, Flood Insurance Rate Map,** is a portion of FEMA Flood Insurance Rate Map (FIRM) Panel 925 depicting the extent of the Zone A flood hazard area for the Sacramento River in the vicinity of the project site.

The project site is also impacted by Anderson Creek, a perennial creek with headwaters approximately 10 miles west of the City of Anderson. Anderson Creek extends southeasterly along the west/southwest boundary of the project site. In the vicinity of the site, Anderson Creek has a contributing watershed of approximately 17 square miles (as extrapolated from data provided by Hydmet, Inc.). According to Frequency-Discharge, Drainage Area Curves developed for Anderson Creek (FEMA, 1995) as shown on **Figure 4.9-3 Frequency Discharge, Drainage Area Curves for Anderson Creek** the 100-year discharge for the creek in the vicinity of the project site is estimated to be approximately 3,200 cfs. FEMA also studied Anderson Creek using approximate methods in this area, and a Zone A flood hazard zone delineation in the vicinity of the project site is also shown on **Figure 4.9-2, FEMA, Flood Insurance Rate Map**.

Though flood flows in Anderson Creek do not encroach into proposed sand and gravel extraction areas, the creek does cross the proposed site access roadway about ½ mile east of Balls Ferry Road. The existing crossing of the creek is low lying and is served by corrugated metal pipe culverts that are not currently adequate to conduct annual high flows. Hence, flows in Anderson Creek will overtop the access roadway periodically. Under existing conditions, the potential flooding of the access road may be expected to periodically curtail active ingress and egress to and from the site for short periods of time.

Given the limited nature of the floodplain information available for the Sacramento River and Anderson Creek at the project site, detailed technical evaluations were performed for the proposed project by Hydmet, Inc., and included in **Appendix 4.9-5,** to refine discharge estimates and determine floodplain limits and characteristics for these two flooding sources. The flood studies performed relevant to these sources (Hydmet, Inc., January 2006) included a flood frequency analysis of annual peak flows recorded by the U.S. Geological Survey along the Sacramento River at Keswick (upstream of Redding) and the Big Bend Bridge (downstream of the Cottonwood Creek confluence), using the 60 years of available record after the flow regulating effects of Shasta Dam were realized. Discharge-frequency results were interpolated between these two locations to estimate discharges for the Sacramento River at the project site based on contributing watershed areas. The watershed areas contributing to Keswick, Big Bend Bridge and the project site are 6,498 square miles, 8.900 square miles, and 7,460 square miles, respectively.



SOURCE: FEMA, 1985

FIGURE 4.9-2
FEMA FLOOD MAP, SHASTA RANCH

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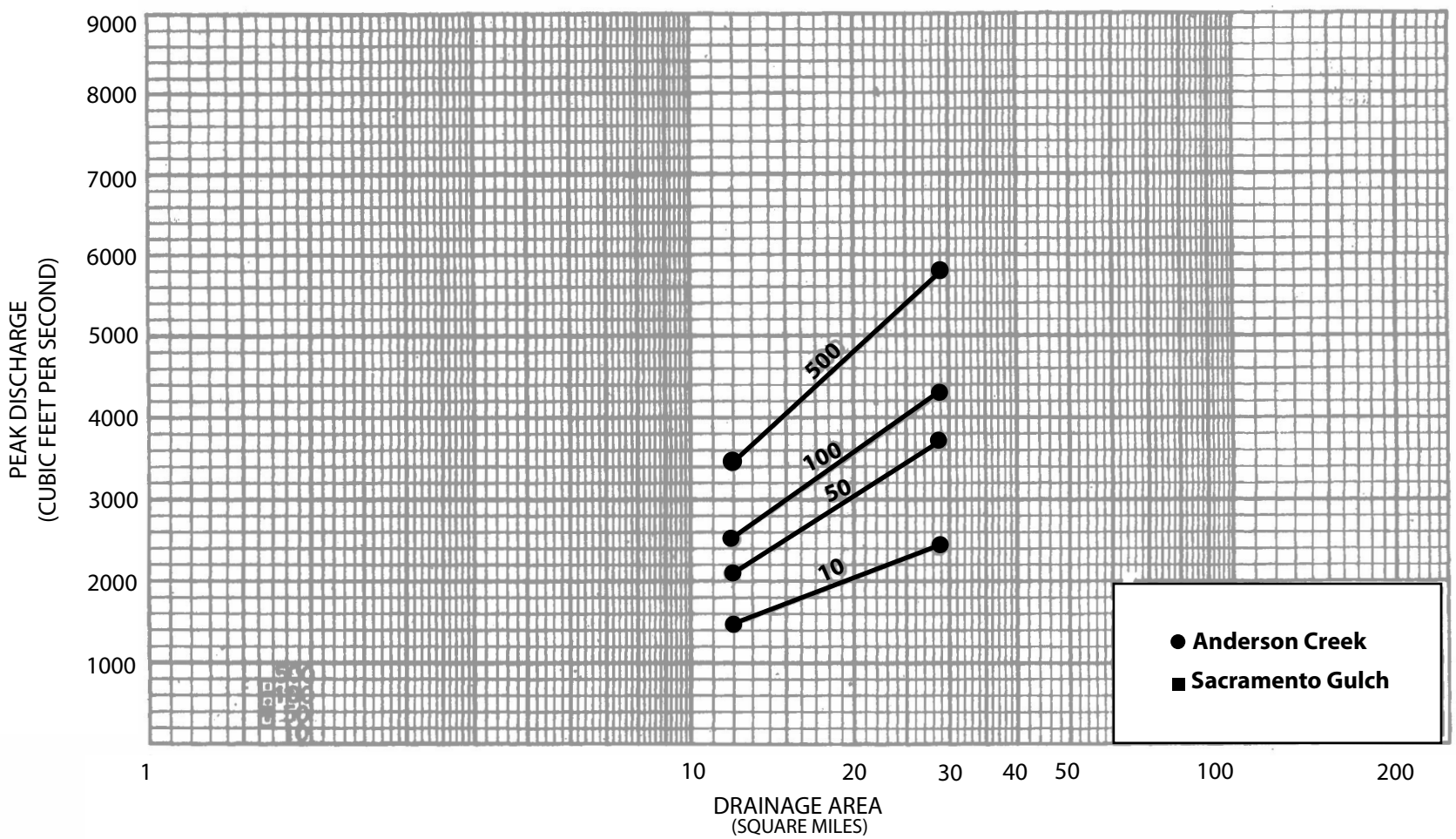

SOURCE: FEMA, 1995

FIGURE 4.9-3
FREQUENCY-DISCHAGE, DRAINAGE AREA CURVES, ANDERSON CREEK

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Discharges resulting from the analysis of Sacramento River flows performed by Hydmet, Inc. are shown on **Table 4.9-2, Sacramento River Peak Discharges Estimated by Hydmet, Inc.**

TABLE 4.9-2

SACRAMENTO RIVER PEAK DISCHARGES ESTIMATED BY HYDMET, INC.

Location	Drainage Area (square miles)	Peak Discharges (cfs)					
		2-year	5-year	10-year	25-year	50-year	100-year
Keswick	6,498	35,000	58,000	76,000	79,000	80,000	80,000
Big Bend Bridge	8,900	78,000	115,000	135,000	155,000	180,000	200,000
Shasta Ranch*	7,460	53,060	81,940	100,780	110,920	122,000	130,400

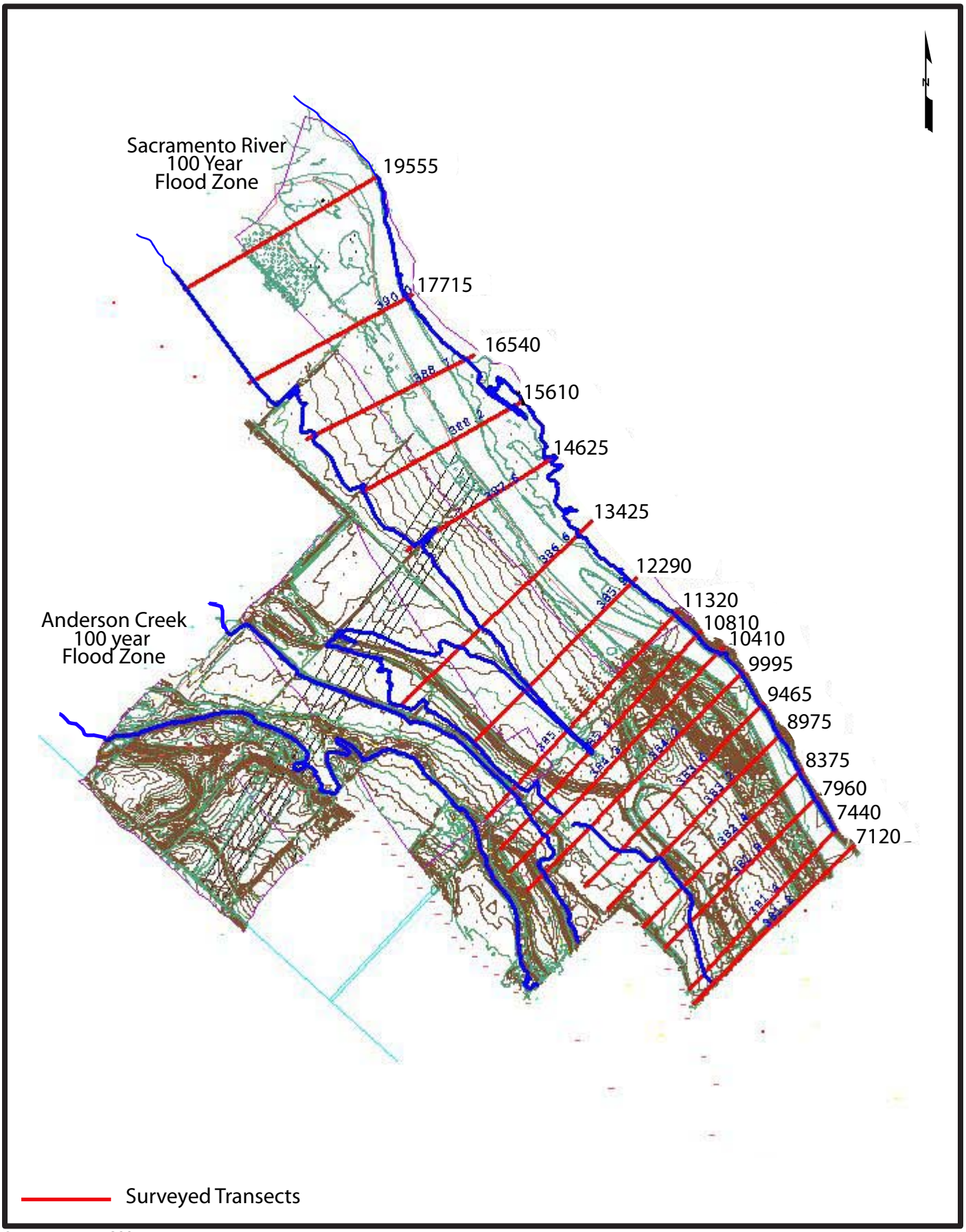
Flow at Shasta Ranch = Keswick Flow + (0.42 x Big Bend Bridge Flow)

Note: The ratio of increase (0.42) is the ratio of the increase in drainage area downstream of Keswick between the Shasta Ranch location and the Big Bend Bridge location (Hydmet Inc., 2005)

Hydmet, Inc. subsequently performed a hydraulic analysis (using the HEC-RAS hydraulic model developed by the U.S. Army Corps of Engineers) to map the limits of the 100-year floodplain across the site. The analysis evaluated the Sacramento River and Anderson Creek and was based on peak flows of 130,400 cfs for the Sacramento River (Hydmet, Inc.) and 3,200 cfs for Anderson Creek (FEMA). The results of this floodplain analysis are depicted on **Figure 4.9-4, Floodplain Analysis** flood studies report. The analysis indicates that the majority of the proposed sand and gravel extraction areas are located in the 100-year floodplain for the Sacramento River and none of the proposed sand and gravel extraction areas are located in the 100-year floodplain for Anderson Creek.

DAM FAILURE

Two reservoirs located upstream of the proposed project, Shasta Lake and Whiskeytown Lake, could cause significant or catastrophic flooding of the project site and other downstream areas if their dams were to fail. However, the probability of dam failure at any given time is very remote and is considered to be beyond the realm of reasonably foreseeable in the analysis of the project site. Shasta Dam and Whiskeytown dam are Federally owned and are operated by the Bureau of Reclamation. According to the Bureau of Reclamation, both of these dams are inspected on an annual basis and are subject to a separate inspection by an external party every 3 years. The most recent inspections concluded that both dams are in excellent condition.



SOURCE: HYDMET, 2005

FIGURE 4.9-4
FLOODPLAIN ANALYSIS
SHASTA RANCH

PMC

GROUNDWATER

The project site is underlain by between 15 to 27 feet of alluvial material (ancient Sacramento River channel and alluvial deposits), which overlies weak bedrock (sandy tuff and sandstone) of the Tuscan formation, which is significantly less permeable (Kleinfelder, 2005). The project area is characterized by a high groundwater table, which is encountered approximately 5 to 10 feet below the ground surface. The groundwater gradient within the project area slopes from west to east and is locally affected by irrigation and contributions from surface water (Hydmet, Inc. March, 2005). In addition to natural high ground water, the water table fluctuates in response to the irrigation season associated with the Anderson Cottonwood Irrigation District (ACID) canal, which bisects the project area. From May to October the canal is utilized to transport irrigation water diverted from the Sacramento River at Redding throughout southern Shasta County and northern Tehama County. During this time the water table is notably higher than during the winter months (ACID, 2005).

WATER QUALITY

As described in **Section 3.0, Project Description**, the proposed project site was utilized for the operation of a paper mill. Solid and liquid wastes were disposed of onsite, and offsite in areas located north of the proposed mining operations. The proposed project area has been irrigated with water that was extracted from the Sacramento River, downstream of the paper mill's effluent discharge pipe into the Sacramento River. Therefore it is assumed that the proposed project site has been affected by materials that may impact water quality. For a more complete discussion of toxic materials, including dioxins and furans, please refer to **Section 4.12, Hazards and Hazardous Materials** of this EIR.

Sampling and laboratory analysis revealed that 2,3,7,8 TCDD and 2,3,7,8 TCDF were present in both the effluent and treatment plant sludge. Continued sampling was conducted as a stipulation of the plant's discharge permit issued by the RWQCB (GEOPlus, 2006).

Groundwater within the project area has been extensively monitored since 1989. Records, included in the appendices to this EIR, present the results of groundwater monitoring for each of the following years: 1989, 1990, 1992 through 2002 and 2005. Monitoring was conducted on a semi–annual or quarterly schedule for each year sampled. In 2004 the Regional Water Quality Control Board issued a Cleanup and Abatement Order (C&A Order No. R5-2004-0700) requiring that groundwater monitoring be resumed. Groundwater was monitored on a quarterly basis for 2005 by Geomatrix Consultants (See **Appendix 4.9-1**).

There exist seven dioxin cogeners including 2,3,7,8-TCDD and 10 furans including 2,3,7,8 TCDF that are similar in chemical structure but differ in level of toxicity. According to regulatory convention the concentrations of these compounds are expressed as "toxic equivalents" (TEQ) by the laboratory such that the concentration level of each

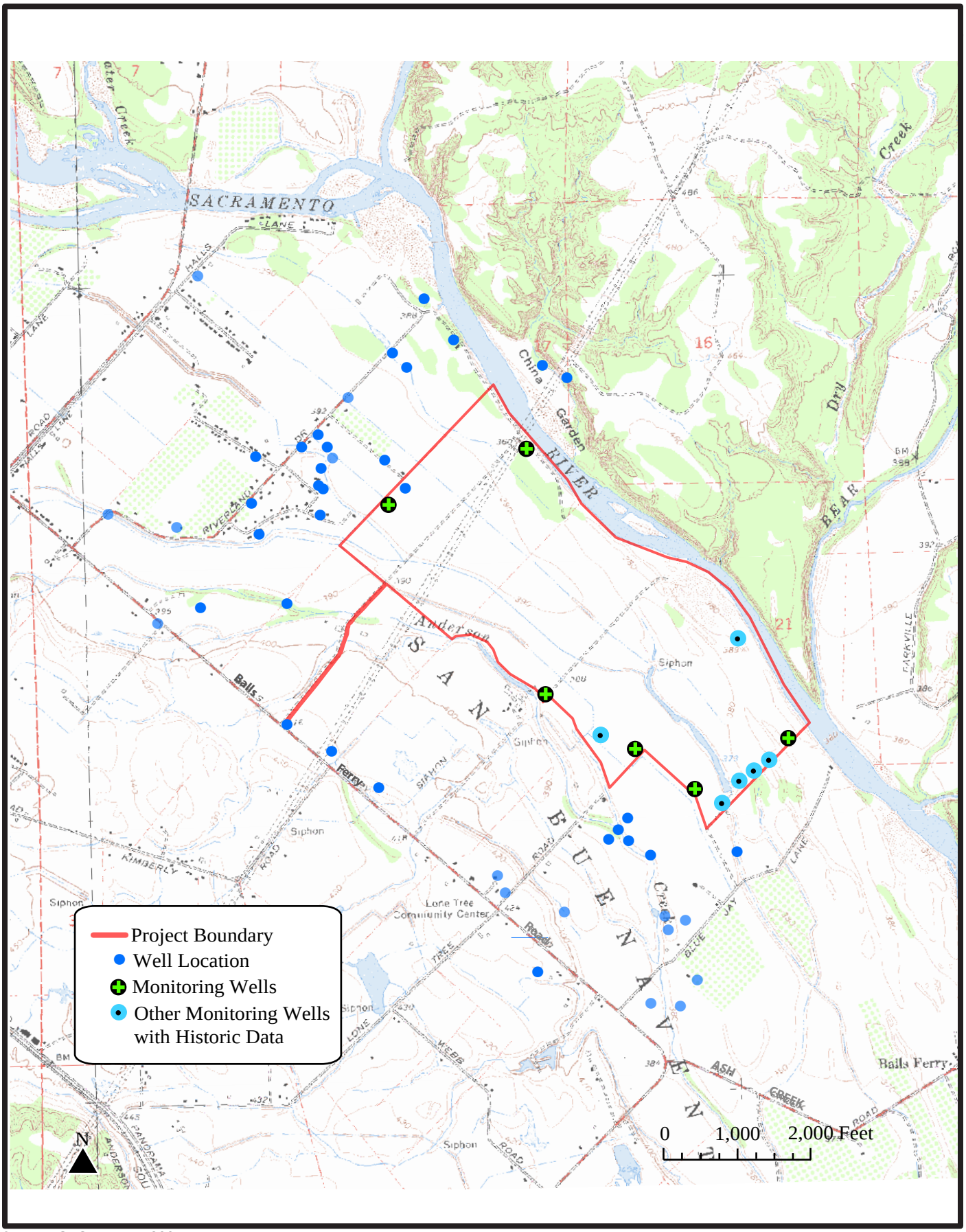
compound is weighted by its degree of toxicity relative to 2,3,7,8-TCDD, which is recognized as being the most toxic. The reported levels can then be compared to various evaluation criteria promulgated by various regulatory agencies. For soils these criteria include but are not limited to preliminary remediation (or "screening level" goals (PRGs), and U.S. EPA Residential and Industrial Guidance levels. For water, these criteria include but are not limited to tap water PRGs, and federal and state maximum contaminant level (MCL) drinking water standards. There is no single "safe" concentration that applies to all sites and site uses. Environmental professionals typically regard the selection of which criteria to apply as a point whose ultimate decision rests with the reviewing regulatory agency. For example, although the residential PRG for dioxin in soil is 0.0039 parts per billion (ppb) (equivalent to 3.9 nanograms per kilogram (ng/kg), the U.S. EPA has in some cases selected 1 ppb (equivalent to 1,000 ng/kg) as a cleanup level in residential soils at Superfund cleanup sites where dioxin is the principal contaminant of concern (U.S. EPA, 1998).

Groundwater samples were collected from seven monitoring wells between August 8, 1989 and September 7, 2005, **Figure 4.9-5, Groundwater Monitoring Well Locations**. The concentrations of 2,3,7,8-TCDD and 2,3,7,8-TCDF expressed as TEQs range between 0.072 pg/L and 8.7 pg/L. These concentrations are less than the U.S. EPA and State of California EPA drinking water standard (MCL) (30 picograms per liter (pg/L) 2,3,7,8-TCDD) (Geomatrix Consultants, *Groundwater Quality Data from Regional Water Quality Control Board* and *Geomatrix Consultants, Groundwater Monitoring Report-Third Quarter 2005, Shasta Ranch, Anderson, California, prepared for California RWQCB, November 2005*)(See **Appendix 4.9-1**). Groundwater monitoring is being compiled for the fourth quarter of 2005 (September 8 thorough December 31) and an official report is still pending. It is not expected that TEQ's will exceed the U.S. EPA and State of California EPA drinking water standards, since these standards have not been exceeded in past monitoring of groundwater.

PROPOSED PROJECT

As indicated in **Section 3.0, Project Description**, of this EIR, the proposed project will include the construction of several "fish exclusion" levees along the northeasterly edges of proposed sand and gravel extraction areas. These levees are intended to prevent overbank flows of the Sacramento River from causing fish entrapment during selected major storm events. The fish exclusion levee adjacent to the Phase 1 extraction and reclamation area was originally proposed to be constructed to the elevation of the 25-year flood. The fish exclusion levees adjacent to the Phase 2 and Phase 3 extraction areas were originally proposed to be constructed to the elevation of the 50-year flood. It was eventually decided that all fish exclusion levees would be constructed to the elevation of the 10-year flood.

There is also a flood control levee (spur dike) proposed along the south boundary of the project site (See **Figure 3.0-9, Fish Exclusion Levees and Spur Dike and Figure 3.0-10. Final Reclamation Plan)**. This flood control levee will be constructed to a height that



SOURCE: GEOMATRIX, 2005

FIGURE 4-9.5
MONITORING WELLS

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exceeds the elevation of the 100-year flood for the Sacramento River. The purpose and intended function of this flood control levee is to prevent excavation induced redirection of overbank flood flow from the Sacramento River from continuing to the south. Per Hydmet, Inc., it will also prevent the sand and gravel extraction areas from altering the course of the Sacramento River during a major flood event (See **Appendix 4.9-4**).

Studies performed by Hydmet, Inc. have indicated that during operations, the water levels in the sand and gravel extraction areas will be the same as the surrounding groundwater elevations, approximately halfway between the near surface elevation of the groundwater at the Anderson Cottonwood Irrigation District (ACID) lateral that traverses the site and the adjacent normal winter flow elevation of the Sacramento River. During a major flood event where the water surface elevation of the Sacramento River rise above the elevation of the fish exclusion levees, the pit areas will fill with river water within a few minutes.

This will only cause a slight delay in overtopping flows proceeding south. This short duration for filling of aggregate excavation pit areas with water, working in conjunction with the effect of the flood control levee along the south boundary of the project site, will limit the potential for the sand and gravel extraction areas to alter the course of the Sacramento River (Hydmet, Inc., 2005).

An evaluation of the impact of levee installation on Sacramento River flood elevations (both fish exclusion levees and the flood control levee along the south boundary of the project site) was conducted as a part of the mining and reclamation planning process by Hydmet, Inc. The analysis was performed for a broad range of flood events (2-year to 100-year return period) by Hydmet, Inc. using the HEC-RAS computer hydraulic model. The hydraulic analysis indicated that the maximum rise in flood elevation that will be realized as a result of levee construction during these flood events will be 0.1 feet as shown in **Table 5, Sacramento River at Shasta Ranch – Dike Design Parameters** of the Hydmet Inc. report*, Shasta Ranch Flood Studies*, included in this EIR as **Appendix 4.9-4***.*

The proposed development of the project site may produce minor increases in impervious surfaces associated with the aggregate processing and storage areas. Further, runoff produced within the proposed active development areas during local storms is proposed to be retained onsite within the Oak Woodland/Riparian/Wetland Reserve and within extraction areas. Hence, post project runoff rates will be reduced as a result of site development activities when compared against existing conditions.

The applicant has indicated that there is a possibility that the project will include upgrades to augment the capacity of the existing crossing(s) of Anderson Creek along the primary access to the site, and if implemented, will likely consist of clear spans that are placed over the existing crossings to avoid any disturbance to the existing jurisdictional wetland areas for Anderson Creek adjacent to the crossing(s).

The proposed project will utilize approximately 50,000 gallons per day of water from a pond located north of the proposed Phase 1 mine area. This equates to 0.15 acre-feet (the amount of water needed to cover one acre of land to a depth of one foot) per day, or less than 35 gallons per minute on a continuous 24-hours per day basis. This would amount to approximately 1-inch of water applied each year if spread over the entire 660-acre project area. The water will be kept onsite and will be recycled. Therefore, the only apparent losses will be from evaporation occurring from the ponds, aggregate washing and dust control spraying (GEOPlus).

4.9.3 REGULATORY CONTEXT

FEDERAL

Clean Water Act (CWA)

The Federal Clean Water Act (CWA) regulates the discharge of pollutants into watersheds throughout the nation. Section 402(p) of the act establishes a framework for regulating municipal and industrial storm water discharges under the National Pollution Discharge Elimination System (NPDES) Program. Section 402(p) requires that storm water associated with industrial activities that discharge either directly to surface waters or indirectly through municipal separate storm sewers must be regulated by an NPDES permit.

Federal Emergency Management Agency (FEMA)

Shasta County is a participant in the National Flood Insurance Program (NFIP), a Federal program administered by Federal Emergency Management Agency (FEMA). Participants in the NFIP must satisfy certain mandated floodplain management criteria. The National Flood Insurance Act of 1968 has adopted as a desired level of protection, an expectation that buildings and related structures should be protected from floodwater damage of the Intermediate Regional Flood (IRF). The IRF is defined as a flood that has an average frequency of occurrence on the order of once in 100 years although such a flood may occur in any given year. Communities are occasionally audited by the Department of Water Resources to insure the proper implementation of FEMA floodplain management regulations.

Responsibility for the safety of dams under federal jurisdiction belongs to the agency constructing the dam. Federal agency programs to maintain dam safety are based on the *Federal Guidelines for Dam Safety* prepared by FEMA.

Safe Drinking Water Act, United States Environmental Protection Agency (US EPA)

The Safe Drinking Water Act (SDWA) is the main federal law that ensures the quality of Americans' drinking water. The SDWA authorizes the United States Environmental Protection Agency (US EPA) to set national health-based standards for drinking water to protect against both naturally-occurring and man-made contaminants that may be

found in drinking water. US EPA, states, and water systems then work together to make sure that these standards are met. The US EPA sets threshold standards for dioxin and furan contaminant levels.

STATE

State Water Resources Control Board (SWRCB) and Regional Water Quality Control Board (RWQCB)

The State Water Resources Control Board (SWRCB) is responsible for implementing the Federal Clean Water Act and does so through issuing National Pollution Discharge Elimination System (NPDES) permits through regional water quality control boards. The project site is located within a portion of the State that is regulated by the Regional Water Quality Control Board, Central Valley Region (RWQCB).

The SWRCB has issued a statewide General Permit (Water Quality Order No. 99-08-DWQ) for construction activities within the state. The Construction General Permit is implemented and enforced by the Regional Water Quality Control Boards. The Construction General Permit applies to construction activity that disturbs one acre or more of land and requires the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) that identifies Best Management Practices (BMPs) to minimize pollutants from discharging from the construction site to the maximum extent practicable. The Regional Water Quality Control Board evaluates each project on a project-by-project basis and Best Management Practices (BMPs) appropriate for the proposed project will be approved by the RWQCB to ensure water quality protection.

The SWRCB has also issued a statewide General Permit (Water Quality Order No. 97-03-DWQ) for regulating storm water discharges associated with industrial activities. This General Permit requires the implementation of management measures that will achieve the performance standard of best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT). It also requires the development of an SWPPP, a monitoring plan, and the filing of an annual report. In a letter to the project applicant dated May 23, 2005, the Regional Water Quality Control Board, Central Valley Region, has indicated that the applicant must submit either a Notice of Intent (for a storm water permit) of a Notice of Non-Applicability (if no storm water is discharged offsite).

Certain actions also need to conform to a General Permit (Water Quality Order No. 5-00-175) that requires that a permit be acquired for dewatering and other low threat discharges to surface waters, provided that they do not contain significant quantities of pollutants and are either (1) four months or less in duration, or (2) the average dry weather discharge does not exceed 0.25 mgd. Examples of activities that may require the acquisition of such a permit include well development water, construction dewatering, pump/well testing, pipeline/tank pressure testing, pipeline/tank flushing or dewatering, condensate discharges, water supply system discharges, and other miscellaneous dewatering/low threat discharges. Given that the proposed activities

associated with this project will not result in any offsite discharges of water, this General Permit may not apply.

Currently, Shasta County falls under the jurisdiction of Water Quality Order No. 2003-0005-DWQ pertaining to post construction storm water Best Management Practices (BMPs) for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems associated with NPDES Phase II program communities. Permitees must meet the requirements in Provision D of the General Permit, which require the development and implementation of a Storm Water Management Plan (SWMP) with the goal of reducing the discharge of pollutants to the maximum extent practicable. The SWMP must include the following six minimum control measures:

- Public Education and Outreach on Storm Water Impacts
- Public Involvement/Participation
- Illicit Discharge Detection and Elimination
- Construction Site Storm Water Runoff Control
- Post-Construction Storm Water Management in New Development
- Redevelopment and Pollution Prevention/Good Housekeeping for Municipal Operations.

California Safe Drinking Water Act (CA SDWA)

The California Safe Drinking Water Act (CA SDWA) was passed to build on and strengthen the federal Safe Drinking Water Act (SDWA). The CA SDWA authorizes the state's Department of Health Services (DHS) to protect the public from contaminants in drinking water by establishing maximum contaminants levels (MCLs) that are at least as stringent as those developed by the U.S. EPA, as required by the federal SDWA. The California DHS lists any contaminants that may have any adverse health effects, based on expert opinion, and may occur in public water systems, including all the substances for which federal MCLs exist.

LOCAL

Shasta County

The proposed mining and reclamation project will need to meet the standards and requirements set forth by the Shasta County Department of Public Works, the Shasta County Department of Resource Management and the Shasta County Zoning Code.

Flood Protection

The following policies included in the Shasta County General Plan pertain to the proposed project and water resources.

FL-a New development in floodplains shall be regulated through zoning regulations addressing land use type, density, and siting of structures.

FL-b County flood control measures should advance, insofar as possible, the goals of providing for domestic and agricultural water uses, recreation, resource conservation (including streamside vegetation and habitat) and the preservation of the scenic values of the County's water resources.

FL-c Whenever possible, flood control measures should consist of channel diversions or limited floodplain designs which avoid alteration of creeks and their immediate environs.

FL-f Known flood hazard information shall be reported as part of every General Plan amendment, zone change, use permit, variance, building site approval, or other land development applications subject to environmental assessment.

FL-g Flood Hazard Maps shall be maintained by the County to aid in the project review process.

FL-h The impacts of new development on the floodplain or other downstream areas due to increased runoff from the development shall be mitigated. In the case of the urban or suburban areas, and in the urban and town centers, the County may require urban or suburban development to pay fees which would be used to make improvements on downstream drainage facilities in order to mitigate the impacts of upstream development.

Dam Failure and Inundation

The following policies included in the Shasta County General Plan pertain to the proposed project and water resources.

DI-b When development is proposed in areas adjacent to or downstream from an existing dam, the County shall determine if preparation of a dam failure inundation map is warranted.

DI-c The County should consider developing a system which assures that both small and large privately-constructed dams meet all county and state requirements, including for grading.

Water Resources

The following objectives and policies included in the Shasta County General Plan pertain to the proposed project and water resources.

Objectives

W-9 Institute effective measures to protect groundwater quality from potential adverse effects of increased pumping or potential sources of contamination.

Policies

W-a Sedimentation and erosion from proposed developments shall be minimized through grading and hillside development ordinances and other similar safeguards as adopted and implemented by the County

W-b Septic systems, waste disposal sites, and other sources of hazardous or polluting materials shall be designed to prevent contamination to streams, creeks, rivers, reservoirs, or groundwater basins in accordance with standards and water resource management plans adopted by the County.

W-c All proposed land divisions and developments in Shasta County shall have an adequate water supply of a quaintly and quality for the planned uses. Project proponents shall submit sufficient data and reports, when requested, which demonstrate that potential adverse impacts on the existing water users will not be significant. The reports for land divisions shall be submitted to the County for review and acceptance prior to the completeness determination of a tentative map. This policy will not apply to developments in special districts which have committed and documented, in writing, the ability to provide the needed water supply.

W-f The County shall encourage and participate in interagency planning efforts, such as the Redding Area Water Council, to protect and enhance the quality of all groundwater and surface water resources.

4.9.4 STANDARDS OF SIGNIFICANCE

Shasta County has determined that the following criteria determine whether the proposed project will have a significant impact on hydrology and water quality.

- Violate any water quality or waste discharge requirements.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on- or off-site.
- Substantially alter the existing drainage pattern of the site or area, including t20hrough the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site.
- Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.
- Otherwise substantially degrade water quality.
- Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Inundation by seiche, tsunami, or mudflow.

METHODOLOGY

The hydrology and water quality analysis is based on a review of existing literature, technical studies conducted within the project area, existing regulatory framework, comment letters received relevant to the Notice of Preparation for the proposed project, the Western Regional Climate Center (WRCC) Monthly Climate Data, USGS quadrangle maps, aerial photographs and a site visit.

4.9.5 IMPACT ANALYSIS AND MITIGATION MEASURES

Storm Water Runoff Generation and Water Quality

Impact 4.9.1 Potential violation of any water quality or waste discharge requirements or otherwise substantially degrade water quality, create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff. This impact is considered ***less than significant [LS].***

The proposed mining and reclamation activities would create a minor increase in impervious surfaces associated with processing and storage areas. However, these increases in impervious surfaces would not significantly alter onsite runoff production rates and volumes. Further, runoff produced within the proposed active development areas during local storms will be retained onsite within the Oak Woodland/Riparian/Wetland Reserve and within extraction areas. Hence, runoff rates exiting the site will be reduced as a result of site development activities when compared against existing conditions. There for the project will have ***no impact*** on runoff rates.

Groundwater samples were collected from seven monitoring wells between August 8, 1989 and September 7, 2005, **Figure 3.9-5, Groundwater Monitoring Well Locations**. The concentrations of 2,3,7,8-TCDD and 2,3,7,8-TCDF expressed as TEQs (toxic equivalents) range between 0.072 pg/L and 8.7 pg/L. These concentrations do not exceed the thresholds of the U.S. EPA and State of California EPA drinking water standard (MCL) (30 picograms per liter (pg/L) 2,3,7,8-TCDD) (Geomatrix Consultants, *Groundwater Quality Data from Regional Water Quality Control Board* and *Geomatrix Consultants, Groundwater Monitoring Report-Third Quarter 2005, Shasta Ranch, Anderson, California, prepared for California RWQCB, November 2005*). Given the underlying soils and geology of the project site it has been concluded that in the absence of greater degree of contamination in the shallow monitoring wells, monitoring of deeper groundwater is not warranted (GEOPlus, 2006). This impact is considered ***less than significant***.

The disturbance of soils on the site is not expected to increase toxic concentration levels in groundwater, as it is scientifically agreed that 2,3,7,8-TCDD and 2,3,7,8-TCDF are insoluble in water (US EPA). A more thorough discussion of dioxin and furans with respect to public health is included in **Section 3.12, Hazards and Hazardous Materials**, of this EIR. The proposed project does not include the utilization or installation of a septic system. The proposed project would result in a ***less than significant impact*** **[LS]**.

Impact 4.9.2 Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. This impact is considered ***less than significant*** **[LS]**.

The proposed mining and reclamation activities are not expected to adversely impact the quantity of groundwater available within the region. The quantity of groundwater used on the site will be approximately 50,000 gallons per day (EIP, 2004). This amount equates to approximately 0.15 acre-feet per year, or less than 35 gallons per minute on a continuous 24-hour per day basis. The water will be kept onsite and will be recycled. Therefore, the only apparent losses will be from evaporation, occurring from the pond(s), aggregate washing, and dust control spraying. However given the small overall use described above, the impact is considered negligible (See **Appendix 4.9-6)**.

The land use in the project area in the short term will transition from irrigated alfalfa and fallow ground to water surfaces, irrigated alfalfa and similar crops and fallow land. Evapotranspiration from irrigated alfalfa fields and large water surfaces is very similar in quantity (Hydmet, Shasta Ranch Flood Studies, **Appendix 4.9-4**), the principal differences occurring when alfalfa evapotranspiration is reduced after mowing. This consumptive use will result in the overall drawdown of the aquifer of approximately 3 to 5 inches, assuming an aquifer effective porosity of 20- to 30-percent and zero recharge/underflow (a very conservative assumption) (GEOPlus, See **Appendix 4.9-6**). The project will have minimal impacts on surrounding wells. The proposed project will result in a minimal amount of impervious surfaces, and will therefore have no impact on recharge rates. The proposed mining and reclamation activities will have a ***less than significant*** **[LS]** impact on groundwater supplies and recharge**.**

Alteration of Drainage Patterns for the Site

Impact 4.9.3 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on-or off-site, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on-or off-site. This impact is considered ***potentially significant, therefore subject to mitigation*** **[PSM].**

Though flows in Anderson Creek do not encroach into proposed sand and gravel extraction areas, the creek does cross the proposed site access roadway about ½ mile east of Balls Ferry Road. The existing crossing(s) of the creek are low lying and are served by pipe culverts that will have their capacity exceeded relatively frequently. Hence, flows in Anderson Creek will overtop the access roadway periodically. The frequency of this occurrence will vary from once every few years to more than once in a given year. Under existing conditions, the potential flooding of the access road may be expected to periodically curtail active ingress and egress to and from the site for short periods of time. The applicant has indicated that there is a possibility that the project will include upgrades to augment the capacity of the existing crossing(s) of Anderson Creek along the primary access to the site, and if implemented, will likely consist of clear spans that are placed over the existing crossings to avoid any disturbance to the existing jurisdictional wetland areas for Anderson Creek adjacent to the crossing(s). This impact is considered ***potentially significant subject to mitigation*** **[PSM].**

The proposed mining and reclamation activities would result in substantial re-grading of the site and alter existing drainage patterns. This re-grading could result in local storm drainage concentrating in and being discharged to offsite areas at different rates, volumes, and/or locations when compared with existing conditions. As such, this impact is considered to be ***potentially significant***.

The proposed sand and gravel extraction areas and ponds could result in an alteration of the course of the Sacramento River if river levels rise sufficiently to cause flow within

the overbank of the river and through these onsite features during a major flood event. This impact is considered to be ***potentially significant***.

The proposed project will result in a significant amount of grading associated with the phased development of the mining and reclamation areas. The sand and gravel extraction process will significantly alter the local drainage patterns at the three extraction sites. Further, the construction of "fish exclusion" levees along the northeasterly edges of proposed sand and gravel extraction areas and the flood control levee (spur dike) along the south boundary of the site will also alter existing drainage patterns. However, the mining and reclamation plan for the project has incorporated the following provisions for local drainage control:

- Surface runoff generated within proposed mining operation areas will be prevented from discharging into the river.
- Construction of the site levees and grading performed during mining operations will be performed in a manner such that onsite runoff will be directed to the interior of the mining phases. The site haul roads and pond levees will be sloped toward the pond areas and the internal Oak Woodland/Riparian/Wetland Reserve area to prevent storm water from leaving the site.
- The construction of the flood control levee along the south boundary of the project site will prevent runoff from mining operations from entering the property to the south.
- The project is subject to review by the Regional Water Quality Control Board and will be required to prepare a Storm Water Pollution Prevention Plan (SWPPP) that will include Best Management Practices to ensure protection of water quality.

Incorporation of these provisions will mitigate the impacts of site grading and mining operations on local surface drainage patterns.

With regard to the potential that significant flooding of the overbank and across the proposed mining pits and ponds may cause or contribute to the alteration of the Sacramento River alignment during a major storm event, flood studies performed by Hydmet, Inc. have indicated that construction of the proposed flood control levee (spur dike) along the south boundary of the project site will effectively eliminate this potential. This levee will be constructed in conjunction with the initial phase of the project using topsoil and overburden produced by initial grading operations. According to the mining and reclamation plan, it will incorporate an engineered fill keyway beneath it, extending to a depth of approximately 8 feet beneath existing grade. Potentially liquefiable soils are present at the site and extend to depths as deep as about 13 feet beneath grade, leaving approximately 5 feet of potentially liquefiable material beneath the bottom of the levee. Because seismically induced settlement and lateral spreading could be expected to occur at the site (assuming a concurrent

seismic event and high flood stage event), it is necessary to reduce the potential for liquefaction affecting the integrity of the levee.

Construction of the flood control levee will include excavation and removal of the loose soils and reconstruction of the foundation with engineered fill in conformance with the requirements set forth in the geotechnical investigation report prepared for the project by Kleinfelder. Engineered fill requirements are specified in Table 7 of the geotechnical investigation report. The flood control levee shall be compacted to at least 92 percent relative compaction. Embankment slopes for the flood control levee shall be no steeper than 2 1/2 to 1 on the upstream side (north side) and 2 to 1 on the downstream side (south side). Appropriate freeboard will need to be provided for the levee height above the 100-year flood elevation for the Sacramento River, considering wave action, velocity head, settlement potential and other factors. Provision will need to be made for armoring of any portions of the levee that may be subject to erosion due to flow velocities or other concerns. The levee will also need to be periodically inspected and maintained in order for its structural integrity to be relied upon. This impact is considered ***potentially significant, therefore subject to mitigation*** **[PSM].**

Mitigation Measures:

The following mitigation measures are proposed to reduce the impacts of alteration of drainage patterns for the site:

MM 4.9.3(a) Prior to the construction of any drainage improvements for the access roadway to the project site in the vicinity of the crossing(s) of Anderson Creek that will raise the elevation of the roadway embankment or result in construction outside of the limits of the existing roadway, plans and specifications for the modifications to the access roadway and crossing(s) shall be prepared by a registered professional engineer and submitted to the County for approval. Additionally, the design shall be supported by a hydrologic and hydraulic analysis that demonstrates that the proposed crossing modifications will not impede or redirect flood flows.

Timing/Implementation: Prior to the acquisition of a Conditional Use Permit.

Enforcement/Monitoring: Shasta County Department of Resource Management.

MM 4.9.3(b) The project shall incorporate the following provisions for local drainage control as represented in the submitted Reclamation Plan: 1) Surface runoff generated within proposed mining operation areas will be prevented from discharging into the river; 2) Construction of the site levees and grading performed during mining operations will be performed in a manner such that onsite runoff will be directed to the

interior of the mining phases. The onsite haul roads and pond levees will be sloped toward the pond areas and the internal Oak Woodland/Riparian/Wetland Reserve area to prevent storm water from leaving the site; and 3) A flood control levee will be constructed along the south boundary of the project site to prevent runoff from mining operations from entering the property to the south.

Timing/Implementation: Prior to the commencement of operations.

Enforcement/Monitoring: Shasta County Department of Resource Management.

MM 4.9.3(c) Construction plans and specifications and a maintenance plan shall be prepared by a registered professional engineer and submitted to the County for the proposed flood control levee (spur dike) along the south boundary of the project site. This levee will be constructed in conjunction with the initial phase of the project using topsoil and overburden produced by initial grading operations. The construction plans and specifications and maintenance plan shall include and conform to the following: 1) Relevant provisions set forth in the geotechnical investigation report prepared for the project by Kleinfelder; 2) Provision for an appropriate level of freeboard for the levee height above the 100-year flood elevation for the Sacramento River, considering wave action, velocity head, settlement potential and other factors; 3) Provision for armoring of any portions of the levee that may be subject to erosion due to flow velocities or other concerns; and 4) A plan/program for inspection and maintenance of the levee, including the period beyond the life of the project.

Timing/Implementation: Prior to the acquisition of a Conditional Use Permit.

Enforcement/Monitoring: Shasta County Department of Public Works.

Implementation of mitigation measures **MM 4.9.3a, MM 4.9.3b, MM 4.9.3c** will reduce Impact 4.9.3 to a level that is ***less than significant* [LS].**

Exposure of Structures and Facilities to Flood Hazards and Potential Damage

Impact 4.9.4 Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation. This impact is considered to be ***less than significant* [LS].**

Site mining activities will substantially occur within the 100-year floodplain area for the Sacramento River. During major flood events along the Sacramento River, the river will

exceed its banks and begin to flood portions of the overbank that will include site mining and reclamation activities. However, the project will not place housing or similar permanent structures within the 100-year floodplain. Therefore, this is considered to be a ***less than significant*** **[LS]** impact.

Placement of Structures within a Flood Hazard Area that Would Impede or Redirect Flood Flows

Impact 4.9.5 Place within a 100-year flood hazard area structures which would impede or redirect flood flows. This impact is considered to be a ***less than significant. [LS]***

The proposed mining and reclamation plan includes the construction of "fish exclusion" levees along the northeasterly edges of proposed sand and gravel extraction areas and a flood control levee (spur dike) proposed along the south boundary of the project site. An evaluation of the impact of levee installation on Sacramento River flood elevations (both fish exclusion levees and the flood control levee along the south boundary of the project site) was conducted as a part of the mining and reclamation planning process by Hydmet, Inc. The analysis was performed for a broad range of flood events (2-year to 100-year return period) by Hydmet, Inc. using the HEC-RAS hydraulic model. The hydraulic analysis indicated that the maximum rise in flood elevation that will be realized as a result of levee construction during these flood events would be 0.1 feet. This rise in flood level is negligible, and therefore, this would be considered to be a ***less than significant*** impact. **[LS]**

Impact 4.9.6 Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, inundation by seiche, tsunami or mudflow. This impact is considered to be ***potentially significant, therefore subject to mitigation [PSM]***.

The proposed project is located in central Shasta County, a landscape that is characterized by relatively level topography and is therefore not subject to tsunami or mudflow. The potential for failure of Shasta Dam or Whiskeytown dam is exceedingly remote, and beyond the realm of reasonable foresee ability. Seiche impacts would be limited to short-term and localized "sloshing" that may occur during a seismic event. MM 4.9.3c will ensure that the flood control levee that is constructed as a part of the proposed project is adequately built, maintained and inspected to reduce the possibility of failure.

<u>Mitigation Measures:</u>

Apply Mitigation Measure **MM 4.9.3(c).**

With the implementation of **MM 4.9.3c** this impact is considered to be ***less than significant*** **[LS].**

4.9.6 CUMULATIVE IMPACTS AND MITIGATION

Elements of this project have the potential for adversely impacting hydrology and water quality. However, proper implementation of mitigation measures MM 4.6.2, MM 4.6.3, and MM 4.6.6 will effectively provide mitigation against their individual and cumulative impacts. As such, the cumulative impacts of this project on hydrology and water quality are considered to be ***less than significant.***

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This section describes the potential impacts of the proposed project on aesthetics and visual resources. The primary focus of the analysis is on scenic areas and scenic views from the Sacramento River and from adjacent properties. The impact analysis is based upon field reconnaissance and review of pertinent documents.

4.10.1 SETTING

Visual Characteristics of the Area

Shasta County is located in the northern Sacramento Valley region where the valley transitions to mountain ranges on three sides. With views of the Coastal Mountains and the Trinity Alps to the west, the Klamath Mountains to the northwest and the Cascade Mountain Range to the east and north, the scenic value of the area is high. Shasta County, being located at the convergence of the mountain ranges, has a unique climate with generally warm temperatures and ample precipitation that allows for a lengthy growing season and diversified vegetation communities.

The project area is located at an approximate elevation of 370 to 420 feet above mean sea level. Prominent geographic features in the area that have intrinsic scenic values include the Sacramento River and, in the background the area of Mount Lassen area. The local landscape is characterized by cultivated pastureland, oak woodlands, orchards and commercial woodlots, annual grasslands, dispersed emergent wetlands and riparian corridors.

The proposed project is located on private property owned by Shasta Ranch, LLC. The project site is located west of the Sacramento River between the Sacramento River, Balls Ferry Road and south of Deschutes Road in southern Shasta County. This site is bound by the river to the northeast, a walnut grove and redwood seed farm to the north, a rural residential area to the northwest, Balls Ferry Road to the southwest, and rural land with a walnut grove to the south. (See **Photos 4.10-1** through **4.10-4)**

According to historic maps of the area, the Sacramento River channel previously flowed through portions of the property. Mining activities during the gold mining era of the mid- to late-1800's contributed to an altering of the river channel to its current location east of the ranch site. Following mining activity, much of the property was converted to agricultural farmland. Portions of the property were also used as a waste disposal site for an off-site paper mill. All of these activities have cumulatively shaped the site's visual setting to its current condition.

The proposed mining and reclamation plan project site encompasses a total of 947 acres, of which 268 acres would be mined for aggregate production in three phases. According to the Reclamation Plan, the area to be mined and otherwise disturbed by mining and processing processes will be converted back to agricultural farmland, open space, and open ponds for aquatic habitat. During the excavation stages, the mining pits will be backfilled concurrently and reclaimed to agricultural uses and aquatic

ponds enhancing the wildlife diversity and habitats in the area, and increasing aesthetic value.

Approximately 679 acres (roughly 71 percent of the 947-acre project site) will not be disturbed by the proposed aggregate mining and processing activity. These areas will be used for agricultural purposes or retained as open space.

Shasta County recognizes the importance of implementing the Oak Woodlands Conservation Act (Program) to encourage preservation of oak woodland habitats. On the Shasta Ranch site, much of the oak woodland habitat borders cultivated lands, the upper banks of the Anderson-Cottonwood Irrigation District (ACID) canal and areas near the Sacramento River. These oak woodland communities provide aesthetic value to the landscape, protection to waterways through bank stabilization, erosion control, cover, and forage. These areas also provide visual screening of the proposed excavation operations from some surrounding locations. The project does not include removal of oak trees or oak woodland habitat. These areas are proposed to remain undisturbed to enhance the visual setting and aid in the reclamation process.

In a visual context, the project vicinity can generally be characterized as agricultural land that is bisected by an imposing Pacific Gas and Electric (PG&E) easement. This broad easement includes two high-voltage transmission and distribution lines that traverse the project site property in a southwest to northeast direction. Similar to the regional landscape the site is dominated by cultivated fields, scattered annual grasslands, foothill-valley oaks, emergent wetlands and vegetated riparian corridors along the Sacramento River and Anderson Creek drainage of which all provide visual relief. The site is situated on a flat alluvial floodplain with areas of gentle to moderate slopes. There are no residential structures located on the project site. The viewshed west of the project site is partially screened by a Eucalyptus grove and riparian vegetation along an Anderson-Cottonwood Irrigation District (ACID) ditch and along Anderson Creek.

Photo 4.10.1 - Southeast view of PG&E power lines from the intersection of the access road and ACID canal.

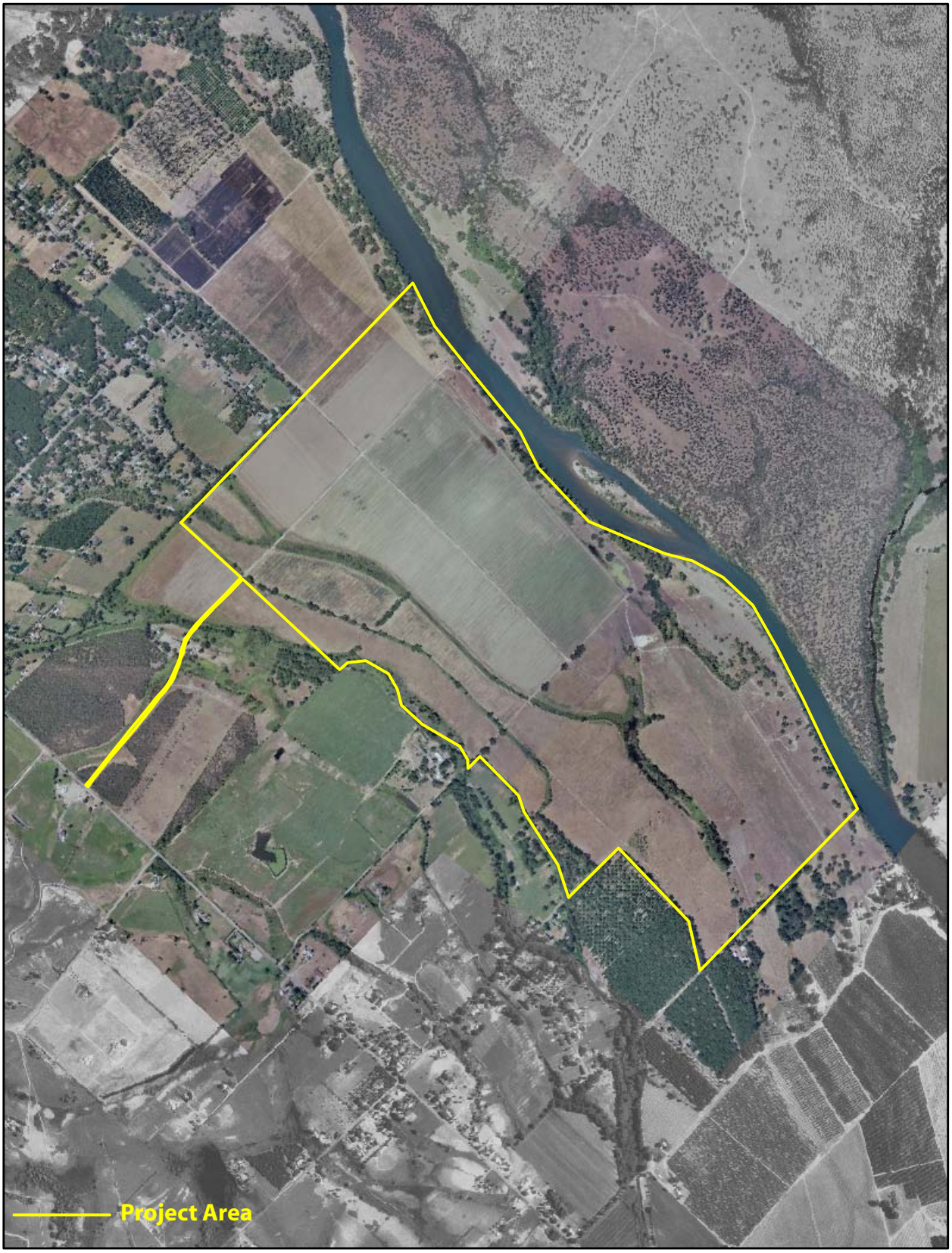
Photo 4.10.2 - Facing south overlooking irrigated cropland for proposed processing area.

Additional features that exist on the site include pedestrian pathways and riverfront access, numerous agricultural wells, and bee boxes. Throughout various times of the year the property is subject to agricultural activities that are not necessarily appealing in terms of aesthetics. These activities include burning of brush piles, noise associated with heavy equipment operations during cultivation and harvest, and ACID maintenance activities including removal of debris from waterways. The existing visual characteristics of the project site are illustrated in **Photos 4.10.1** through **4.10.4,** which were taken from various locations on the project site December 12, 2005.

Long-range views of the surrounding valley and Sacramento River are available from portions of the site. The project is surrounded on the northwest, southwest and southeast by agricultural and rural residential uses. There is a small feedlot with some cattle corrals and homes adjacent to Anderson Creek, adjoining the southwest property boundary. Residential developments to the south, west, and north of the project site illustrate the transitional character of agricultural lands in the area to rural residential use. Row crops and orchards exist to the south while ranching and farming activities are further north and west. Across the river to the east is a large-scale agricultural operation that is an existing land conservation easement maintained by the Shasta Land Trust. (See **Figure 4.10-1, Aerial Photo)**

Photo 4.10.4 – View looking northwest from the proposed Phase 3 mining area.

Photo 4.10.3 - Facing south from the ACID canal and access road intersection.



Source: PMC, 2006

FIGURE 4.10-1
AERIAL PHOTO OF PROJECT SITE

PMC

Most of the surrounding residences would have obstructed views of the proposed project operation due to existing vegetation. Some views of the project site from properties to the southeast and northwest are currently unobstructed. These direct and diffused public views of the project site are available from three adjacent residences and from the Sacramento River. Diffused views are those that are partially obstructed by trees and vegetation (e.g., along Anderson Creek, the ACID ditch, and the Sacramento River). Although the PG&E transmission lines may not obstruct views into the proposed project site, the transmission lines already compromise the scenic quality of the area.

Project operations would be visible from the property to the east across the river. The land conservation easement across the river from the project site includes land that is situated on a bluff at a higher elevation than the project site.

Visual impacts may be of concern as perceived from existing collector and arterial roadways near the project site. This impact could involve Balls Ferry Road and Deschutes Road. Of the two, Balls Ferry Road, situated west of the project site, is the closest road. It would also serve as the primary access road to the site. Balls Ferry Road is not designated by the County as a scenic route. Although the proposed operation may be partially visible form Balls Ferry Road, the viewshed from the road would not be impaired by the proposed project due to the shape of the site, distance from the road, topographic relief, riparian vegetation along Anderson Creek and obstruction by the Eucalyptus grove that exists at the point of access east of Balls Ferry Road.

Sacramento River Viewshed

The project site is visible from the Sacramento River in places where vegetation is sparse. The river is located approximately 200 feet east, at a minimum, of the proposed Phase I area of the project. The existing topographic elevation difference between the riverbank and the location of the proposed 25-year levee is nine feet. This temporary 25-year levee is proposed to be constructed between the Phase 1 excavation pit and the Sacramento River and would be, at a maximum, 10 feet high. This would be a maximum height of 19 feet above the river grade, thus creating a visual barrier that would reduce the visibility of the proposed mining operation from the river. Any existing topographical slopes and elevations on the project site located outside of the proposed excavation and processing area will remain undisturbed.

Bureau of Land Management (BLM) has identified a number of Shasta County rivers and streams that possess the characteristics of federal “wild and scenic rivers”.[1] The Sacramento River from Balls Ferry Bridge (located approximately 1.5 miles below the proposed project site) downstream to Seven Mile Creek in Tehama County is recognized by BLM for its scenic values and recreational uses. The river in the vicinity of the project site may share similar aesthetic characteristics of federally recognized Wild and Scenic Rivers, but the Sacramento River is not designated under the National Wild and Scenic Rivers System.

Lighting Plan

The Shasta Ranch Quarry will sustain normal operational conditions between the hours of 7am to 5pm. However, in the event the project operations are extended beyond dusk, night operations will be required to meet the Illuminating Engineering Society of North America (IESNA) requirements for reduction/illuminations of light trespass as set forth in *Recommended Practice Manual: Lighting for Exterior Environments (RP-33-99)*, whereby all exterior light fixtures with more than 3500 initial lamp lumens meet the Full Cutoff IESNA Classification.[2] This lighting plan provides alternative lighting methods and improvements to be incorporated into the projects scope reducing the effects of light and glare on nearby residents and the surrounding natural environment.

The lighting plan includes implementation of specific design standards using the following guidelines:

- Review areas adjacent to the project location to identify and consider any potential special considerations involving nearby residences and roadways.
- Select luminaries with tightly controlled candela distributions, using sharp-cutoff reflectors and refractors where appropriate to shield any potential light spillage.
- Contain light within the design area by carefully selecting, locating and mounting the selected luminaries.
- Keep floodlight-aiming angles low so that the entire beam always falls within the intended lighted area during and after the design and installation process.

The IESNA guidelines and procedures are provided to temporarily accommodate extended operational periods that may occur beyond normal operational conditions during daylight hours as stated above. See Mitigation Measure 4.10-3 in Section 4.10.4, Impacts and Mitigation Measures of this section.

4.10.2 REGULATORY FRAMEWORK

FEDERAL

National Wild and Scenic Rivers

According to the Wild and Scenic Rivers Act classification system, scenic rivers are those rivers or segments of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by road. Recreational rivers are those rivers readily accessible by road or railroad, that may have some development along their shorelines, and that may have in undergone some impoundment or diversion in the past. [3]

STATE

The Oak Woodland Conservation Act, enacted by Chapter 588, Statutes of 2001 has been implemented and operated by the Wildlife Conservation Board. This program provides private landowners, conservation organizations, cities and counties, the opportunity for funding to restore California's oak woodlands. The legislative goals are as follows:

- Support and encourage voluntary, long-term private stewardship and conservation of California oak woodlands by offering landowners financial incentives to protect and promote biologically functional oak woodlands.
- Provide incentives to protect and encourage farming and ranching operations that are operated in a manner that protect and promote healthy oak woodlands.
- Provide incentives for the protection of oak trees providing superior wildlife values on private land, and;
- Encourage planning that is consistent with oak woodlands preservation.

COUNTY

Shasta County General Plan

The EIR analyzes the project's consistency with the General Plan pursuant to CEQA Section 15125(d), it is the Shasta County Planning Commission and/or County Council that will make the determination of the project's consistency with the identified General Plan policies.

The County General Plan contains the following objectives and policies concerning aesthetics and visual resources that pertain to the project:

a. Aesthetics and Visual Values. Reclaimed lands should, to the extent that it is feasible, conform to the visual aspects of the surrounding landscape. The reclamation design and procedures should take into consideration the proximity to public high use areas and the visual impact within the context of the viewing distance.

b. Visual Degraders. The administering agency determines what conditions are visually degrading and should be considered for visual improvement. Visual degraders may include, but are not limited to, high walls, erosion, discolored water, haul roads, refuse piles, slurry ponds, spoil piles, abandoned mining equipment and structures, garbage and refuse dumps, open pits, and deforestation.

c. Aesthetics Problem Solutions. Solutions for aesthetics problems may involve removal of offensive material or condition, strategic placement of screening materials, and/or the use of appropriate plant species.

Design Review

Objectives

DR-1 Promote a visually appealing developed environment in urban, suburban, town center, mixed use, and rural residential settings.

Policies

DR-a Design review zoning should be applied to identify areas where special design considerations are needed to promote a design theme for a community center, large commercial or industrial areas, or for a major urban highway corridor. The application of design review zoning should be avoided where a single parcel or small groups of parcels are involved, or where the protection of natural resources or viewshed can be assured by implementation of more appropriate zoning.

Open Space and Recreation

Objectives

OSR-1 Protection of the open space and recreation resources of Shasta County for the use and enjoyment by County residents both now and in the future.

Policies

OSR-a Protection the open space resources under Shasta County jurisdiction shall be achieved primarily through policies recognizing the contributions of these resources to the economy of the County. Specifically, the Timber, Croplands, Grazing, and Small-Scale Croplands/ Grazing, and Natural Resource Protection-Habitat land use designations shall be used for this purpose. Other open space resources generally with no known economic value ...shall be classified as Natural Resource Protection-Open Space (N-O). Typically, lands classified as N-O are adjacent to major landforms, riparian corridors, habitat areas, etc.

OSR-c When land within a recreation resource area is classified as Timber, Cropland, Grazing, or Mining, the N-R classification is not mapped but is expressed as a policy which overlays these other classifications. The purpose of the N-R classification is to mitigate any visual impacts, which may result from the use of the lands.

OSR-e The significant river and creek side corridors of Shasta County shall be designated on General Plan maps except in those areas designed as A-C, A-

G, T or NH. Public access and public easement along the corridors listed below shall be required as provided by the Subdivision Map Act:

- Sacramento River between Keswick and the Shasta-Tehama County line.

In all other cases, public access and easements for recreation purposes may be provided if:

- Riparian habitat will not be significantly impacted;
- Public access to the corridor is not available within a reasonable distance from the project. Public access includes, but is not limited to, public road access, hiking trails, and public land adjacent to the corridor; or

The location and type of public access required shall take into consideration minimizing the likelihood of trespassing across private property and minimizing impact on private property rights.

Fish and Wildlife Habitat

Objectives

FW-2 Provide for a balance between wildlife habitat protection and enhancement and the need to manage and use agricultural, mineral extraction, and timberland resources.

Policies

FW-h The County shall encourage efforts to develop tree protection standards which focus on the County's differing land use types, namely; lowland urban, upland urban, rural residential and resource lands. Urban tree protection standards shall focus on landscaping that promotes energy conservation and design aesthetics, as opposed to preserving native vegetation.

FW-k The County should support efforts to develop a Stream Corridor Protection Plan along the Sacramento River from the south Redding City limits to the Tehama County line.

Mineral Resource

Objectives

MR-2 To encourage the production and conservation of minerals while giving consideration to values related to recreation, watershed, wildlife, range, forage, timberlands and aesthetics.

Policies

MR-m Mining may be permitted in areas of agricultural soils, provided that a plan is submitted by a qualified professional including data and analysis to show that

the soil shall be replaced in such a way as to maintain the same or better agricultural qualities and class as existed prior to mining disturbance.

SHASTA COUNTY ZONING ORDINANCE

Design Review District

17.78.010 The design review district is intended to be combined with any principal district for one or more of the following purposes:

1. To protect areas having unique environmental, physical, historical, and scenic features;

4. To obtain the advantages of coordinated, flexible, comprehensive, long-range planning;

5. To ensure the compatibility with surrounding land uses;

6. To protect the public's health and safety.

Open Space District

17.16.010 The purpose of the open space district is to protect as open space, lots, or portions of lots, that are (A) most properly kept as open space, (B) needed as a greenbelt or buffer along significant river and creek side corridors or around important natural features, or (C) kept in open space for health or safety reasons. This district is consistent with the natural resource protection-open space (N-O) general plan land use designation. This district may also be applied to other areas to protect significant river or creek side corridor habitat areas or other important natural areas, or to properties where development should be limited due to health or safety reasons.

4.10.3 STANDARDS OF SIGNIFICANCE

SIGNIFICANCE CRITERIA

Based on Appendix G of the CEQA Guidelines, the County concludes that a project may have significant impacts on aesthetics and visual resources if it does any of the following:

- Has a substantial adverse effect on a scenic vista.
- Substantially damages scenic resources, including but not limited to trees, rock outcroppings and historic buildings within a state scenic highway.

- Substantially degrades the existing visual character or quality of the site and its surroundings.
- Create a new source of substantial light and/or glare that would adversely affect day or nighttime views in the area.

METHODOLOGY

Preparation of this section included site visits and the use of photographs to pictorially represent the features of the project as closely as possible. The area was reviewed to identify any designated scenic rivers, roadways and other scenic resources that could occur on site or in the area.

Analysis of impacts to visual character is subjective by nature, because the qualities that create an aesthetically pleasing setting will vary from person to person. For the purposes of this analysis, the site and its vicinity have been visited in order to consider the existing community character and to determine the proposed project's consistency with this setting and General Plan policy. Site photographs presented in this section depict the existing visual character of the project site and have contributed to the visual analysis of the project.

4.10.4 IMPACTS AND MITIGATION MEASURES

Impact 4.10-1 The project will impact scenic vistas within the vicinity of the project area. This impact is considered ***less than significant.*** **[LS]**

The proposed Shasta Ranch construction activities and mining operations will be visible from adjacent property owners and individuals recreating along the Sacramento River. The Shasta Ranch can be characterized as an aesthetic pastoral setting with viewsheds of farmland, open space, and wildlife. Typically scenic vistas are characterized as a designated area with panoramic views that are unobstructed and preserved for public enjoyment. As the Shasta Ranch property may be visually appealing and have many aesthetic qualities it is private property. As the area is predominantly flat and level with a moderate down gradient occurring towards the Sacramento River corridor there are no known vistas within the immediate project vicinity that would jeopardize the scenic integrity to the surrounding area.

Panoramic views such as Mount Lassen, Mount Shasta, and the Trinity Mountain range are all located at such a distance that visibility from onsite activities associated with the project would not be compromised any more than current site conditions. The project site is located approximately 200 feet from the Sacramento River and includes a substantial amount of riparian vegetation, screening viewsheds from the Sacramento River corridor. With the combination of the existing waterways, riparian vegetation, trees and proposed levee systems the site will not degrade any known scenic vistas in the surrounding area. Therefore, this impact is considered ***less than significant*****. [LS]**

Impact 4.10-2 The project will substantially degrade the visual character or quality of the site and the surrounding area. This impact is considered ***potentially significant, therefore subject to mitigation*. [PSM]**

As described in the Project Description and Setting, the Shasta Ranch project site is identified in this EIR to contain high visual quality and the surrounding area is considered to be predominantly agricultural and rural residential (low-density). Shasta County does recognize portions of the Sacramento River, as having similar qualities to the Wild and Scenic Rivers designation but the area referenced is located south of the Balls Ferry Bridge area, south of the project site.

The sites existing aesthetic character can be described as rural agricultural farmland surrounded by open space, oak woodlands, and riparian corridors that are home to many wildlife species. The property is buffered on both the east and southwest perimeters by existing waterways including the Sacramento River, Anderson Creek, and Anderson Cottonwood Irrigation District canal (ACID). The existing PG&E power lines that cross the northern portion of the project site include large transformers (steel structures) that would not be classified by most as highly scenic or blending in with the natural setting of Shasta Ranch landscape. Wildlife viewing is common throughout the site and will be compromised during the duration of the mining activities (24-29 years).

The proposed project would result in both permanent and temporary visual changes on the project site. The proposed project would permanently alter the landscape over the next 29 years based on the conditional use permit approval for the proposed mining project. The project would remove a substantial amount of agricultural farmland and vegetation from this area and create large excavation pits that will expose overburden and aggregate in the area throughout the mining operations. In addition, the proposed mining would include the placement and operation of construction equipment and vehicles during the 29-year operational period within the Shasta Ranch mining area. The proposed permanent alteration in landscape and introduction of active mining operations to the Shasta Ranch property during the life of the permit would significantly alter the current natural, rural-open space appearance and visual character of the Shasta Ranch as seen from adjacent properties and surrounding areas.

Figures 3.0-6 to 3.0-8 presents the proposed mining phases and topographical cross-sections and **Figure 3.0-10** presents the proposed reclamation plan for the Shasta Ranch property. The mining operations are proposed in three phases moving from south to north. The operational time for each phase is anticipated to last 8 to 10 years. During the initial onsite construction phase construction activities will be visible to nearby residences. See **Section 4.7, Noise**, **Table 4.7-8** for the nearest residential distances from the excavation pits and/ or processing area. The construction phase includes the grading of topsoil and overburden, installation of stationary equipment, excavation equipment, construction of levees and paving of roadways. Views from the south and southwest would be temporarily obstructed until the completion of the levee construction. Once construction is complete and the proposed levee structures are in place views from residence to the south would be screened from the processing and

excavation activities.

Mining activities will be located approximately 200 feet away from the Sacramento River. There will be a total of two levees constructed between the mining pits and the Sacramento River channel. An 8-foot spur dike will also be constructed along the southern property boundary for flood protection and additional screening from nearby residences. Upon completion of the mining operations the fill material used to construct the levees will be removed and used to backfill the exposed Phase 1 mining pit and bank stabilization for Phases 2 and 3. Areas near the Sacramento River will remain undisturbed from the project activities.

Upon completion of mining operations for Phase 1, mining would begin directly west at Phase 2 and proceed north to Phase 3. Phase 1 will be graded and planted to match the existing land contours and reclaimed back to an agricultural use. Phase 2 and 3 will be restored to ponds. Nevertheless, the current topography of the site would be altered. Based on existing conditions, the applicant would continue reclamation activities concurrently by hydroseeding open excavated slopes, berms and stockpiled materials to cover exposed slope surfaces and reduce the potential for erosion hazards. The final site reclamation plan is designed to reclaim agricultural farmland, restore the natural ecosystem and biodiversity while enhancing the visual quality to blend in with the existing landscape and surrounding area.

While the proposed mining processing area, setbacks, and existing and proposed topographic screening surrounding the project site would serve to substantially screen and buffer negative visual impacts on site, the proposed access road to the Shasta Ranch project area would be visible from certain public vantage points to the north and west portions of the property. Over time mining operations will also progress north, near the open space areas of the property. From the entrance of the property at the intersection of Balls Ferry Road and the proposed access road both sides of the roadway is heavily screened by a large Eucalyptus grove. Views of the haul trucks from from the access road will be visible. However, the truck route is directed south to the processing area, away from the northern property boundary where views are most likely to occur.

The proposed access road is located approximately 1,500 feet (1/4-mile) from the residential neighborhood to the north. As the distance increases the visual impact would be reduced. The views from mining and excavation operations, movement of heavy equipment, and the processing area would remain largely screened by levees, berms, vegetation and waterways to the east, south and west perimeters of the site. In addition, hydroseed and vegetation that is planted within the buffer area on site would continue to grow in height over time, which would further screen views to the south and southwest. As with all viewpoints to the south, over time, mining operations will progress west and north away from sensitive receptors near the Phase 1 and Phase 2 locations. Considering the existing visual features and relative distance from the north property line the visual impact would be minimal.

Mining work and reclamation of the excavated area would be conducted in compliance with the conditions of the use permit and the reclamation plan. Adherence to standards set forth in the Shasta County General Plan and SMARA, i.e. setbacks, screening and revegetation, and minimizing the total amount of site disturbance onsite prior to final reclamation would minimize visual impacts throughout the active mining operations. Note that visual impacts for the Shasta Ranch Quarry were analyzed in the Initial Study and found it to be potentially significant. However, compliance with these conditions and requirements would reduce the adverse impacts of quarrying on the landscape, mainly by requiring revegetation of the reclaimed area. In result the impacts, are considered ***potentially significant, therefore subject to mitigation*. [PSM]**

Mitigation Measures:

MM 4.10-2 All mining stockpiles, spoils, and recycled material shall be stored at least 200 feet away from natural waterways (i.e. Anderson Creek, and Sacramento River) unless it is fully screened by a berm and/ or vegetation. New structures shall be located at least 200 feet away from existing waterways. No junk, debris, non-operative vehicles, or equipment that is not already existing and/or unrelated to the quarry shall be stored anywhere on the property, unless visually screened from off-site views.

Timing/Implementation: Upon commencement of mining operations.

Enforcement/Monitoring: Shasta County Department of Resource Management - Planning Division, Building Department.

Implementation of mitigation measure MM 4.10.2 would ensure that obstructions of view sheds from residences adjacent to the property would not extend beyond the boundaries of the project site. Impacts after mitigation would be ***less than significant*. [LS]**

Impact 4.10-3 The project would introduce new light and glare sources into the project area. This impact is considered ***potentially significant, therefore subject to mitigation*. [PSM]**

The processing area will have security lights associated with the equipment. No quarrying activities will occur at night. While there is a potential for glare, the nearest residence is 1,000 feet away. Unshielded light pollution could impact the visual resource qualities of the general area, especially night sky resources, and the visual quality of scenic views of from the Sacramento River. The potential glare could also be a distraction to nearby residents, reducing the aesthetic quality and scenic views within the surrounding area. Attention to direction and placement of equipment and security

lighting can ensure there is minimal or no light spillage onto adjacent properties or the night sky. These impacts are ***potentially significant, therefore subject to mitigation***. **[PSM]**

Mitigation Measures:

MM 4.10-3 All lighting on the site shall meet the Illuminating Engineering Society of North America (IESNA) requirements for reduction/illuminations of light trespass as set forth in Recommended Practice Manual: Lighting for Exterior Environments (RP-33-99). The location of lighting shall be shown on building/ site plans for review and approval by the Planning Division.

Timing/Implementation: The location of lighting shall be approved prior to issuance of a building permit for the first phase of construction.

Enforcement/Monitoring: Shasta County Department of Resource Management, Planning Division.

Implementation of mitigation measure MM 4.10-3 would ensure that illumination and glare would not extend beyond the boundaries of the project site, nor would they be emitted in significant amounts into the sky. Impacts after mitigation would be ***less than significant***. **[LS]**

4.10.6 CUMULATIVE IMPACTS AND MITIGATION

Impact 4.10-4 The project could have adverse cumulative effects on aesthetics and visual resources in the area. This impact is considered ***less than significant***. **[LS]**

Mitigation measures 4.10.2 and 4.10.3 for the project would reduce the negative effects on views in the area. If vegetative screening is used, the project would reduce the potential to visually impact those views the Sacramento River and adjacent residential areas, giving the view sheds a more natural appearance. Most of the surrounding area is agricultural and rural residential land uses. Thus, development in the vicinity of the project site would be limited, and impacts on the local view shed would be minimal. Cumulative impacts, therefore, are ***less than significant***. **[LS]**

REFERENCES

Shasta County General Plan Design Review, pg 7.6.

Shasta County General Plan, Open Space 6.9.

State of California Wildlife Conservation Board. January 3, 2006.

http: www.wcb.ca.gov/Pages/OakWoodlandsActNew.htm p.1-4

EIP Associates. Screencheck Shasta Ranch Project Mining and Reclamation Plan. March 2005.

Pacific Municipal Consultants. Eastside Aggregates Project EIR. Shasta County. August 2000.

ENDNOTES

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[1] Redding Resource Management Plan, 1991, p 3-64.

[2] Illuminating Engineering Society of North America (IESNA)

[3] Excerpts from the Wild and Scenic Rivers Act. Public Resources Code, Division 5, Chap. 1.4, ection 5093.53 (b,c). Dec. 28, 2005

This section of the EIR includes an assessment of significance for identified community services and an evaluation of potential impacts to community services that could result from implementation of the Shasta Ranch Mining and Reclamation project. Community services include: fire protection, emergency medical services, law enforcement, schools, parks and recreation, and other general governmental services.

This section also describes the utility and service systems that the project will rely upon and identifies the potential impacts to these systems as a result of the proposed project. This evaluation also includes appropriate mitigation measures, when feasible, to each of the above-mentioned public services and utilities.

4.11.1 ENVIRONMENTAL SETTING

FIRE PROTECTION AND EMERGENCY MEDICAL SERVICES

Fire protection services for the proposed project area will be provided by the Shasta County Fire District (SCFD), based in the Redding and Cottonwood Fire Protection District (CFPD) located in Cottonwood. Shasta County Fire District (SCFD) contracts with the California Department of Forestry and Fire Protection (CDF) to manage and oversee the operation of the SCFD. Both the SCFD/CDF and CFPD maintain automatic and mutual aid agreements with adjacent fire districts.

SHASTA COUNTY FIRE DISTRICT – STATION 43

Station 43 is the closest SCFD station to the project area. It is located at 6103 Airport Road in Redding. During the fire season (June1 through October 31), Station 43 is staffed by one Fire Captain, two Fire Apparatus Engineers and five firefighters daily. Assigned personnel staff and maintain two state funded fire engines, one county funded fire engine and one state funded bulldozer unit. During the non-fire season, the station is typically staffed daily by one Fire Captain, one Fire Apparatus Engineer and four firefighters. Assigned personnel staff and maintain two county funded fire engines. During the non-fire season the station also has approximately 7-10 volunteer firefighters that provide additional staffing.

In 2004, Station 43 responded to 1,646 incidents: 118 structure fires, 266 traffic collisions, 14 fire menace standbys, 38 public assists, 263 wildland fires, 708 medical aids, 82 smoke checks, 46 false alarm, 64 vehicle fires, and 47 miscellaneous. According to Doug Wenham, Battalion Chief of CDF/Shasta County Fire Department, the estimated response time to the project area is 15 minutes. Additionally, according to Jim Diehl, Shasta County Fire Marshal and Battalion Chief with CDF/Shasta County Fire Department, the project will have “no significant impact to the Shasta County Fire Department or the California Department of Forestry and Fire Protection.”

COTTONWOOD FIRE PROTECTION DISTRICT

The Cottonwood Fire Protection District (CFPD) station is located at 3271 Brush Street in Cottonwood. The CFPD station is manned by three staff firefighters (one Chief, one Fire Captain and one Lieutenant), plus twelve volunteers. Within the crew there are 5 Fire Apparatus engineers, 15 firefighters, 3 EMTs and 5 First Responders. The District has the following emergency response vehicles at its disposal: two water tenders, one Type I engine, three Type II engines, one Type II/III engine and one utility vehicle. In 2004, CFPD personnel responded to 822 incidents: 55 structure fires, 95 traffic collisions, 10 fire menace standbys, 39 public assists, 48 wildland fires, 480 medical aids, 54 smoke checks, 24 false alarms, 16 vehicle fires, and one miscellaneous. Randy Armstrong, the Cottonwood Fire Protection District Chief, has stated that response to the proposed project site would be approximately 7 minutes.

LAW ENFORCEMENT

Police protection services for the Project Area will be provided by the Shasta County Sheriffs Department. The Sheriff's department is a "full service" community oriented agency that employs 250 sworn officers. Based on the estimated 2000 census population of 163,256 the county has a current ratio of 1.5 sworn officers per one thousand residents. The average calls per day during winter month's range between 153-165 and twice as many in the summer.[1]

The Sheriffs Department operates a south county station from 2490 Radio Lane in Redding where 3 to 4 sworn officers are on duty daily.[2] They also operate one satellite substation in Anderson near the Anderson Outlet Mall staffing one beat officer 24 hours a day. This satellite station is located approximately three miles from the project site.

In emergencies, additional personnel are available through the full resources of the Sheriff's Department and mutual aid agreements with the California Highway Patrol and Anderson Police Department. Response times for an emergency average two to five minutes travel time depending on the location. Calls are dispatched through SHASCOM, the 911 emergency dispatch center for the City of Redding, City of Anderson, and Shasta County, in addition to the City of Shasta Lake.

EMERGENCY MEDICAL SERVICES

Located in the City of Redding are two major medical centers that offer a comprehensive range of inpatient and outpatient medical services. Shasta Regional Medical Center located at 1100 Butte Street has 165-beds and specializes in cardiac care and laser surgery. They have a 24-hour air helicopter ambulance program. Mercy Medical Center located at 2175 Rosaline Avenue, has 264-beds with programs specializing in cancer and cardiac disease treatment. In addition to helicopter ambulance service, they also have two airplanes. Both of these facilities provide emergency medical services and serve Northern California and may extend services to Oregon, Nevada and the Pacific.

In addition to the medical centers, three other specialty facilities exist in the City of Redding, which are available to city residents. Patients Hospital is an inpatient and outpatient acute hospital with 10 suites that does not provide emergency medical services but performs elective surgeries. The Redding Specialty Hospital is a medical facility providing psychiatric, chemical dependency and acute physical rehabilitation programs. The Veterans Medical Center, the only such facility north of Sacramento, provides care and treatment for acute medical and chronic problems, medical examinations, and a full range of diagnostic services.

SCHOOLS

There is a range of public and private educational programs in the Anderson-Cottonwood area. The proposed project is located less than 3 miles from the nearest elementary school and 4.6 miles from the nearest high school. There are three school districts that exist within the Anderson-Cottonwood area: Cascade Elementary School District, Anderson Union High School District, and the Cottonwood Union Elementary School District. The Cascade Union Elementary School consists of four schools: Anderson Heights Elementary, Meadow Valley Elementary, Verde Vale Elementary and Anderson Middle School with a total enrollment in 2003-2004 of 1,542 students. The Anderson Union High School District (9-12) is comprised of five schools and has a total enrollment of 2,264. The Cottonwood Union Elementary School District includes two schools with a total enrollment of 1,232.

There are two charter schools located within the Anderson area. Acorn to Oaks Charter (K-8) is located at 21132 Ronald Street, Anderson and the Anderson New Technology Charter (9-12) is located at 2098 North Street, Anderson. Private education is available at Mercy High School (9-12) and Sacred Heart Elementary Schools (K-8 plus preschool), Community Christian Schools (Preschool, day school, kindergarten campus and 1-8) and a Seventh Day Adventist School (1-8). (See **Table 4.11-1**)

TABLE 4.11-1

PUBLIC AND PRIVATE SCHOOLS SYSTEM, SHASTA COUNTY

Public Schools	Enrollment
Cascade Elementary School District: (K-8)	
Anderson Heights Elementary School 1530 Spruce Street, Anderson	287
Meadow Valley Elementary 2770 Balls Ferry Road, Anderson	450
Verde Vale Elementary 19415 Jacqueline Street, Anderson	258
Anderson Middle School 1648 West Ferry Street, Anderson	547
TOTAL	**1,542**
Anderson Union High School District (9-12):	
Anderson Union High School 1471 Ferry Street, Anderson	873
North Valley High School 20083 Olinda Road, Anderson	112
West Valley High School 3805 Happy Valley Road, Cottonwood	1,120
Oakview High School (Independent Study grades 9-12) 20111 Olinda Road, Anderson	141
Anderson Community Day School (Alternative Education Grades 9-10) 5250 West Anderson Drive, Anderson	18
Total	**2,264**
Cottonwood Union Elementary School District	
East Cottonwood Elementary School 3424 Brush Street, Cottonwood	678
West Cottonwood Junior High 20512 West First Street, Cottonwood	554
Total	**1,232**

Source: Shasta County Office of Education. January 2006.

PARKS AND RECREATION

Shasta County does have a recreational need throughout the county. Currently, the existing schools and service organizations accommodate recreational facilities within rural areas. Privately-owned and operated recreational facilities and open space resources such as resorts, campgrounds, recreational vehicle parks, boat and boating equipment facilities, geologic tours, hunting and fishing guides, and clubs provided by commercial enterprises provide recreational activities throughout the county.

The existing County parks and recreational facilities that are recognized include the following:

- Balls Ferry Fishing Access
- Battle Creek Fishing Access
- French Gulch Park
- Hat Creek Park
- Lake Britton Fishing Access (PG&E)
- Lake McCumber (PG&E)
- Pit River (PG&E)

The project area currently provides a large area of open space and river access within its current agricultural land use designation. The project site is not being developed for residential use in such a way that would permanently alter the site and limit its ability to sustain recreational characteristics or require additional parks and recreational needs elsewhere. According to the Reclamation Plan the project area will be restored to provide open space, wildlife habitat, and continue agricultural farming practices. River access may be maintained if the property owner chooses to enter into an agreement or grant access for recreational purposes. This would potentially avoid any threats of trespassing and/ or destruction of private property.

UTILITIES

WATER

Shasta County is located at the headwaters of the State's largest watershed, the Sacramento River Basin.[4] The primary use of water is for agricultural, industrial, urban and recreational needs. The main source of water supply for Shasta County comes from either groundwater or surface waters. The two major groundwater basins are known as the Redding and Fall River Valley basins. The storage capacity of the 510-square-mile Redding Basin is estimated to contain 5.5 million-acre-feet of groundwater and the 120-square-mile Fall River Valley Basin is estimated to contain one million-acre-feet of groundwater storage.[5] The total storage capacity of these two basins combined is equivalent to the Shasta Lake's 4.5 million-acre-feet of maximum storage capacity. However, most of the water supply is generated from surface flows.

The two forms of mechanized water delivery systems used in the county are community water and on-site systems. The proposed project has an on-site water system that includes several existing private wells. The project will not be connecting to a community water system. Water applications include approximately 50,000 gallons per day for washing and screening aggregate material and dust suppression generated by heavy equipment and vehicle transport operations. These measures will reduce offsite dust from being emitted during on site operational periods.

WASTEWATER

The Shasta County General Plan discusses the various wastewater treatment methods and service systems that are used throughout the county. Wastewater may be treated and returned to the natural environment using one of several technical methods with

either community or individual on-site disposal systems. [6] There will be no expansion of the treatment facility needed to accommodate wastewater from the proposed project. The project does not require an on-site disposal system to accommodate the waste disposal. Wastewater generated from the property will be limited to portable restrooms, and gravel washing processes approved by the Regional Water Quality Control Board, Army Corp of Engineers and the Shasta County Environmental Health Department to avoid any violation of water quality control standards. The applicant will provide sewage disposal services through a local service provider to accommodate all onsite waste disposal generated from restrooms.

SOLID WASTE SERVICE

Solid waste generated by the project will be disposed of at Shasta County's Richard W. Curry/West Central Sanitary Landfill. West Central Landfill is a class III landfill owned by Shasta County and operated by the City of Redding under contract. A franchise carrier known as, Waste Management/ Anderson Cottonwood Disposal, will pick up and transport the solid waste to the disposal site. The landfill accepts non-hazardous waste from residential, commercial, industrial and agricultural sources. According to the 2003 Environmental Impact Report for the Operation of the Richard W. Curry West Central Landfill (EIR), approximately 450 tons/day of solid waste were forecasted for the site in 2005.

The California Integrated Waste Management Act of 1989 mandated a decrease in solid waste going to California landfills through a concerted effort on the part of the state and local municipalities to divert as much of the waste stream as feasible through reduction, recycling and composting programs. It also required that counties and cities develop and maintain an Integrated Waste Management Plan (IWMP). One of the key goals of the Shasta County IWMP is to assure maintenance of at least a 15-year landfill capacity for solid wastes generated within the County.

The Richard W. Curry/West Central Sanitary Landfill is projected to reach capacity by the year 2018. As the closure of the West Central Landfill will likely arrive sooner than the fifteen years established by the Shasta County IWMP, Shasta County plans call for permitting a new landfill site within the next five years. In addition, it enforces state minimum standards for solid waste transportation and disposal. In addition, the Shasta County General Plan (1998) provides for new solid waste facilities to be conditionally permitted in all areas of the County as the need occurs. Currently the Environmental Health Department has the responsibility of permitting and/or inspecting 43 active, inactive, and closed transfer stations and disposal sites.

ELECTRICITY

The majority of Pacific Gas & Electric's (PG&E) energy comes from hydro plants located in Northern California and the Pacific Northwest. PG&E) will be the electrical service provider for the proposed project. PG&E has indicated that service to the Shasta Ranch project would be served by existing facilities adjacent to the property line. There is also

an existing PG&E easement on the property that includes three 230kv transmission lines and two 12kv distribution lines.[3] The 12kv distribution line borders the property boundary. The infrastructure for electrical service would connect directly into the existing distribution line adjacent to the property.

PG&E will provide the demand for 2500 amp service to supply three-phase power. The projects total horsepower required for all motors will be approximately 1382 HP with the largest motor being 300 HP. If the power demand exceeds the existing infrastructure and capacity, upgrades may be installed to accommodate the demand and reduce adverse impacts from occurring based on the amount of power needed to support the project.

Telephone Services

Currently, the site has no existing telecommunication infrastructure or services. The proposed project does not require a local landline service provider to support the project. The property owner has indicated that a wireless communications system (cellular phones) will be the primary telecommunications system on site utilizing existing communication towers.

4.11.2 REGULATORY FRAMEWORK

FIRE PROTECTION AND MEDICAL EMERGENCY SERVICES

Federal

The U.S. Forest Service Is responsible for wildland fire control on Forest Service administered lands. The USFS also protects 200,000 acres of private lands adjacent to or within US Forest Service boundaries through an agreement with the California Department of Forestry.

State

California Department of Forestry and Fire Protection is responsible for wildland fire control outside of Forest Service or city boundaries.

California Highway Patrol provides safety, service, and security to the citizens of California throughout the following management efforts:

- Enforcement of the California Vehicle Code, education and engineering to reduce loss of life and property damage resulting from traffic collisions.
- Maximize assistance in education and to public agencies when appropriate.
- Protect public and state assets.

Shasta County General Plan

The *Shasta County General Plan* contains the following objectives and policies concerning fire protection and emergency medical services that pertain to the project:

Objective

FS-1. Protect development from wildland and non-wildland fires by requiring development to incorporate design measures responsive to the risk from this hazard and by encouraging development in moderate fire hazard areas.

FS-2. Protection of life and property from crime by encouraging the incorporation of defensible space design techniques in the physical design of new development.

Policies

FS-a. All land divisions and developments shall be required to conform to County Fire Safety Standards.

FS-e. Development in areas requiring additional levels of police and fire services shall participate in offsetting costs for the additional services.

FS-f. The Sheriff and Shasta county Fire Agency should annually review standard conditions to apply to all projects relating to police and fire services including assessments for new services and recommend appropriate changes to the Planning Commission.

SCHOOLS

Objective

PF-7 Development of a land use pattern, which can be adequately served with community facilities such as schools, libraries, and community recreation.

Policy

PF-g Shasta County should enter into cooperative planning arrangement with the County Superintendent of Schools for the exchange of data, the preparation of coordinated student enrollment projections, and the development of facility plans responsive to the growth of the County.

PARKS

Objective

OSR-1 Protection of the open space and recreation resources of Shasta County for the use and enjoyment by County residents both now and in the future.

OSR-2 Provision of public access to open space and recreation resources consistent with the need to protect these resources and the rights of private property owners.

Policy

OSR-b Parks and recreation systems planning, acquisition, development, and operation should be coordinated among City, County, State, and Federal governments, as well as schools and special districts, and should take advantage of opportunities for linkages between publicly-owned parks and publicly-owned open space lands.

WATER

Federal

In 1972, the Clean Water Act (CWA) was adopted to protect the waters of the nation. The Environmental Protection Agency (EPA) and corresponding state agencies regulate public wastewater systems to ensure compliance with the CWA. To implement the CWA regulatory standards, the National Pollutant Discharge Elimination System (NPDES) Permit Program was instituted.

The CWA requires that all point sources discharging pollutants into waters of the United States must obtain a NPDES permit. By point sources, EPA means discrete conveyances such as pipes or man-made ditches. Although individual households do not need permits, facilities must obtain permits if their discharges go directly to surface waters.

State

California Department of Water Resources (DWR)

The California Department of Water Resources (DWR) is responsible for the preparation of the California Water Plan and the management of State's surface water and groundwater resources. DWR also oversees the California Water Project and the regulation and protection of dams, other DWR functions include: assisting local agencies in preparation of their Urban Water Management Plans (UWMPs) and reviewing the plans to ensure compliance with the Urban Water Management Act.

State Water Resources Control Board (SWRCB)

The State Water Resources Control Board (SWRCB) was established in 1967 to administer state water rights and water quality functions. The SWRCB and its nine Regional Water Quality Control Boards administer water rights and enforce pollution control standards throughout the state. The SWRCB is responsible for granting water rights through appropriation process following public hearings and appropriate environmental review by applicants and responsible agencies. In granting water rights permits, the SWRCB must consider all beneficial uses, including water for downstream human and environmental needs. In addition to granting water rights, the SWRCB also issues water

quality related certification to developers of water projects under Section 401 of the Federal Clean Water Act.

Central Valley Regional Water Quality Control Board (CVRWQCB)

Shasta County is located within the Central Valley Regional Water Quality Control Board's (CVRWQCB) jurisdiction. CVRWQB covers the Central Valley and extends north of Redding to the California border to south of Fresno covering most of Kern County. CVRWQB regulates the discharge of waste to surface waters as well as storm drains, ground surface, and groundwater.

All municipalities within the Central Valley Region that discharge wastewater to surface waters are currently regulated by NPDES permits issued by the RWQCB and implemented by the CVRWQCB. NPDES are issued to regulate the discharge of municipal wastewater or industrial process, cleaning or cooling, wastewaters, commercial wastewater, treated groundwater from cleanup projects, or other wastes to surface waters only. If the waste discharge consists only of non-process storm water, it may be regulated under the NPDES Stormwater program.

The discharge of waste to the ground surface or to groundwater is regulated under the Non-Chapter 15 Permitting, Surveillance, and Enforcement Program. All NPDES permits issued by the Regional Water Board include self-monitoring programs. These programs require the permittee to collect pertinent water quality data. This data is then compiled into reports and filed with the RWQCB for evaluation of compliance with the terms of the permit. In addition, RWQCB conducts periodic inspections of each permitted discharge to monitor permit compliance.

The Regional Water Board may take enforcement action in response to significant or chronic permit violations under the authority of the Federal Clean Water Act and Amendments, and the Porter-Cologne Water Quality Control Act (California Water Code). Enforcement action can range from Notices of Violation issued by Board staff, to Cleanup and Abatement Orders or Administrative Civil Liability Complaints issued by the Regional Water Board Executive Officer, to Cease and Desist Orders, Administrative Civil Liability Orders, including civil monetary penalties, or Referrals to the State Attorney General's Office by the Regional Water Board.

Shasta County General Plan

The *Shasta County General Plan* contains the following objectives and policies concerning water and wastewater that pertain to the project:

Objective

PF-1 Development of:

a) A countywide mechanism for managing the water resources of Shasta county while ensuring that local community desires regarding water service

are respected. Countywide water supply options should be shared on a countywide basis, and adequate supplies and quality of water should be available to serve development projected for the planning period.

b) Regional mechanisms for each planning area for managing the water resources of Shasta County while ensuring that local community desires regarding water service are respected. Water supply options should be shared within each planning area, particularly in the SCR area. Adequate supplies and quality of water should be available to serve development projected for the planning period.

PF-2 Encouragement of water conservation in all new development through the use of measures, which result in the more efficient use of water.

PF-3 Achievement of an improved understanding of the groundwater resources of Shasta County.

Policy

PF-a The County shall take appropriate actions for achieving objective PF-1. Every opportunity for inter-jurisdictional and interagency cooperation in other areas shall be encouraged to this end.

WASTEWATER TREATMENT SERVICES

Shasta County General Plan

Objective

PF-5 Achievement of an improved understanding of the opportunities and constraints governing the use of on-site wastewater treatment systems, both conventional and alternative, in Shasta County.

Policies

PF-c Shasta County shall permit experimentation with "alternative" wastewater treatment technologies on a limited and carefully controlled basis, including advance provision establishing what public or private entity will be responsible in the event of failure, to determine which systems are feasible.

SOLID WASTE SERVICES

State

To minimize the amount of solid waste that must be disposed of by transformation and land disposal, the State Legislature passed the California Integrated Waste Management Act of 1989 (AB 939), effective January 1990. According to AB 939, all

cities and counties are required to divert 50 percent of all solid waste from landfill facilities by January 1, 2000. Solid waste plans are required to explain how each city's AB 939 plan will be integrated with the City plan. They must promote (in order of priority); source reduction, recycling and composting, and environmentally safe transformation and land disposal.

Shasta County General Plan

The *Shasta County General Plan* contains the following objectives and policies concerning solid waste that pertain to the project:

Objective

PF-6 Develop the Shasta County solid waste program in accordance with the adopted management plans.

Policies

PF-d Shasta County shall take actions required to implement plans for the management of its solid waste stream.

PF-l Public uses and public utilities whose site-specific locations often cannot be identified in advance by the General Plan may be permitted throughout the Count to serve the public need. Appropriate zoning on site-specific locations will be determined in response to the identified need as it occurs. Solid waste disposal facilities shall be conditionally permitted to ensure that the site is compatible with adjacent land uses. Surrounding land uses, to the extent feasible, shall be regulated to avoid incompatibility with the solid waste disposal facilities.

ELECTRICITY AND TELEPHONE

State

The California Public Utilities Commission (PUC) regulates privately owned telecommunications, electric, natural gas, water, railroad, rail transit, and passenger transportation companies. We are responsible for ensuring that customers have safe, reliable utility service at reasonable rates, protecting against fraud, and promoting the health of California's economy.[7]

Shasta County General Plan

Objective

PF-7 Development of land use pattern, which can be adequately served with community facilities.

Policies

PF-I- Public uses and public utilities whose site-specific locations often cannot be identified in advance by the General Plan may be permitted throughout the Count to serve the public need. Appropriate zoning on site-specific locations will be determined in response to the identified need as it occurs. Solid waste disposal facilities shall be conditionally permitted to ensure that the site is compatible with adjacent land uses. Surrounding land uses, to the extent feasible, shall be regulated to avoid incompatibility with the solid waste disposal facilities.

4.11.3. SIGNIFICANCE CRITERIA

The project may have significant impacts on public services if it does any of the following:

Results in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:

- Fire protection
- Police protection
- Schools
- Parks
- Other public facilities
- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.
- Requires or results in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Requires new or expanded entitlements to water supplies.
- Results in a determination by the wastewater treatment provider, which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments.
- Is served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs.

- Does not comply with Federal, State and local statutes and regulations related to solid waste.

Methodology

The existing capacity and related information for all public services was generated predominantly from the existing Shasta County General Plan and consultation with personnel from various public agencies by phone, email or letters.

4.11.4 IMPACT ANALYSIS AND MITIGATION

FIRE PROTECTION, EMERGENCY SERVICES, LAW ENFORCEMENT

Impact 4.11.1 The project will not substantially increase the demand for fire protection, emergency services, and law enforcement and exceed the current level of services maintained. This impact is **considered *less than significant*. [LS]**

The project is located within the Shasta County Fire District's Redding and Cottonwood Fire District. The SCFD does provide emergency services as well and has adequate staffing levels to maintain the area and any emergency services that may occur at the project site. According to the Cottonwood Fire Chief, the station is currently hiring one additional firefighter to accommodate current demands and the proposed project will not independently affect existing staffing and resource levels. Both fire departments maintain mutual aid agreement with local and state agencies. In the event additional resources are needed the California Department of Forestry and Protection is available for assistance. This impact is considered ***less than significant***. **[LS]**

Shasta County Sheriffs Department has adequate law enforcement staffing within the area. Additional resources are available and may be dispatched if the emergency exceeds current staffing levels. The project will not exceed the current staffing levels and will not interfere with existing response times. This impact is ***less than significant*. [LS]**

Mitigation Measures

None required.

SCHOOLS

Impact 4.11.2 The project will not increase the number of school aged children and attendance to the Anderson and Cottonwood School Districts. This impact is considered ***less than significant*. [LS]**

The project is a non-residential development that does not include more than nine employees. The project implementation has the potential to result in the addition of less than ten families and increase school attendance in the Anderson and Cottonwood School Districts by less than eleven students. Based on the minimal number of

employees (nine or less) the project would not create a need for additional school capacity resulting in a ***less than significant*. [LS]**

Mitigation Measures:

None required.

WATER SERVICE

Impact 4.11.3 The project will not result in an increase demand for water. This impact is considered ***less than significant*. [LS]**

The proposed mining operations and dust abatement operations will create an increase in the demand for water. The project will use approximately 50,000 gallons of water per day, which will be supplied by an existing water supply of wells onsite. See Section 4.9 Hydrology and Water Quality, regarding hydrological and water quality related impacts and a discussion on groundwater resources. As noted in Section 4.9, there is adequate groundwater to meet the needs of the project. This impact is considered ***less than significant*. [LS]**

Mitigation Measures:

None required.

WASTEWATER TREATMENT FACILITIES

Impact 4.11.4 The project would generate additional demands for wastewater treatment services and disposal that would exceed the current wastewater treatment systems capacity. This impact is **considered *less than significant*. [LS]**

The project site does not include any wastewater treatment services that would exceed the current wastewater treatment facilities capacity. There will be no on-site sewage disposal system or infrastructure constructed to connect to an existing wastewater treatment facility. With the exception of portable restrooms that will be maintained by a local service provider the project will be recycling all wastewater on-site in accordance with federal and state regulatory requirements. This impact is considered **less than significant. [LS]**

Mitigation Measure

None required.

SOLID WASTE

Impact 4.11.5 The project will not generate a significant increase in solid waste and/or the need for disposal services. This impact is considered ***less than significant*. [LS]**

Solid waste from the project will be taken to Shasta County's Richard W. Curry/West Central Sanitary Landfill. The project is anticipated to generate minimal waste. The applicant estimates less than one ton per year of office waste (paper, cups, etc.) As previously stated, approximately 450 tons/day of solid waste were forecasted for 2005 at the Richard W. Curry West Central Landfill. The landfill is projected to reach capacity by the year 2018. According to county staff permitting a new landfill site is projected within the next five years. In addition, the Shasta County General Plan (1998) provides for new solid waste facilities to be conditionally permitted in all areas of the County as the need occurs. Because of the very low volume of waste associated with the project, it will not create a need to increase the landfill capacity, therefore the project will result in a ***less than significant impact.* [LS]**

Mitigation Measures:

None required.

ELECTRICITY AND TELEPHONE

Impact 4.11.6 The project would retain services and increase the demand for electricity and telephone services. This impact is considered ***less than significant*. [LS]**

Pacific Gas & Electric Company currently maintains easements for two existing transmission lines and distribution lines that cross the property. PG&E has indicated that they can provide power to the site. New services would be directly tied into the existing distribution lines near the project site. There would not be a substantial impact to the existing service providers in the area. Landline phone services will not be required on site. The applicant has stated all telecommunications will remain wireless. This would have no impact on the local service providers within the area. Therefore the project will result in a ***less than significant impact.* [LS]**

Mitigation Measures:

None required.

CUMULATIVE IMPACTS

None.

REFERENCES

Shasta County General Plan. Public Facilities. Section 7.5. Revised October 1998.

Shasta County Water Agency. 1998. *Coordinated AB3030 Groundwater Management Plan for the Redding Groundwater Basin.* Prepared for the Redding Area Water Council. November 1998.

Shasta County Office of Education. January 11, 2006.
http://www.shastacoe.org/schools/districts/cottonwood.asp

California Public Utilities Commission, January 13, 2006.
http://www.cpuc.ca.gov/static/aboutcpuc/pucmission.htm

Endnotes

[1] Becky Hayslett, Crimes Analyst. Shasta County Sheriffs Department. Phone conversation on January 12, 2006

[2] Lieutenant Ron Smith, Shasta County Sheriffs Department. Phone conversation on January 11, 2006.

[3] Linda Toney, Land officer. Pacific Gas & Electric Company, Phone Conversation on January 17, 2006.

[4] Shasta County General Plan. Water Resources and Water Quality. Section 6.6.2, p.6.6.01

[5] Shasta County General Plan. Public Facilities. Section 7.5.2, p.7.5.01.

[6] Shasta County General Plan. Public Facilities. Section 7.5, p. 7.5.03.

Jim Diehl, County Fire Marshall. Shasta County Fire Department. January 10, 2006. E-mail correspondence.

Doug Wenham, Battalion Chief. Shasta County Fire Department. December 20, 2005 E-mail correspondence.

Randy Armstrong, Fire Chief. Cottonwood Fire Department. December 20, 2005. E-mail correspondence.

This section discusses the existing conditions at the project site, and the potential public health and environmental issues related to hazards and the use of hazardous materials associated with quarry operations proposed for the Shasta Ranch project area. This section also describes potential wildland fire hazards (See Section 4.11, Public Services and Utilities) and the possibility of West Nile Virus occurring at the project site. Section 4.8, Geology and Soils, provides details on potential seismic and geologic hazards. Section 4.9, Hydrology and Water Quality, contains a discussion of potential flood hazards.

Based on the complexity of this section **Table 4.12.1** provides a brief summary of terms and definitions that may be found throughout this section of the Shasta Ranch Draft EIR.

TABLE 4.12-1
GENERAL TERMS AND DEFINITIONS

Terms	Definition
Adsorbable Organic Halides (AOX)	(Adsorbate) A process that occurs when a liquid or gas, accumulates on the surface of a solid or liquid forming a molecular or atomic film. (Organic Halides) A binary compound, of which one part is a halogen atom and the other part is an element or radical that is less electromagnetic than the halogen.
Aggregate	Material is a combination of sand and gravel found beneath the overburden approximately 15-feet in depth on the project site.
Ambient	Existing surrounding conditions
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)	The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was enacted in 1980 as a response to the public outcry over the problems at hazardous waste disposal sites. CERCLA provided EPA with a vehicle for responding to cleanup of hazardous waste contamination from accidental spills or from abandoned hazardous waste disposal sites.
Congeners	One of many variants or configurations of a common chemical structure.
Dioxins	A popular name for the family of halogenated organic compounds, the most common consisting of polychlorinated dibenzofurans (PCDFs) and polychlorinated dibenzodioxins (PCDDs).
Effluent Material	A wastewater material that may contain lignins from trees, high biological oxygen demand (BOD) and dissolved organic carbon (DOC), along with alcohos, chlorates, and heavy metals.
Furans	An aromatic heterocyclic organic compound, produced when wood, especially pine-wood, is distilled. Furan is a clear, colorless, very volatile and highly flammable liquid with a boiling

TABLE 4.12-1
GENERAL TERMS AND DEFINITIONS

Terms	Definition
	point close to room temperature.
National Pollutant Discharge Elimination System	National Pollutant Discharge Elimination System (NPDES) Permits limit discharges of pollutants into water from point sources.
Non-detect	Instrumentation or methodology that determines a Method Detection Limit (MDL) or practical quantification limit which then statistically results in the absence or presence of a quantitative value below the reporting level determined by the EPA.
Organic Matter	Decayed plant material that is no longer identifiable as the original plant and has been biologically degraded to a humus material or soil organic matter.
Overburden	Consists of a mix of clay, silt, sand and topsoil that is relatively rich in organic material located above the aggregate deposits. Overburden on the Shasta Ranch site can be found between 0-10 feet in depth.
Particulate Matter	Particulate matter (PM) is the term used for a mixture of solid particles and liquid droplets found in the air.
Parts per quadrillion (ppq)	One particle of a given substance for every 999,999,999,999,999 (1 part in 10^{15})other particles. This is roughly equivalent to a drop of ink in a medium-sized lake, or one second every 32,000 milleniia.
Parts per trillion (ppt)	one particle of a given substance for every 999,999,999,999 other particles. This is roughly equivalent to one drop of ink in a canal lock full of water , or one second every 320 centuries. 1 part in 10^{12}
Pentachlorophenol	(C_6HCl_5O) is a synthetic fungicide which is an organochloride. Pentachlorophenol has historically been used as a pesticide and wood preservative.
Pico-curies per liter of air (pCi/l)	(Pico)- *a* prefix *in the* SI system of units denoting the factor 10^{-12}. (Curies)- roughly the activity of 1 gram of the radium isotope ^{226}Ra, a former unit of radioactivity. (liter)-unit of volume.
Polychlorinated dibenzo-furans (PCDF)	A chemical classified as halogenated (hydrogen substituted with one or more halogens such as chlorine) aromatic (containing one or more benzene rings) hydrocarbons. PCDFs differ from PCDDs in that the two benzene rings are connected by one oxygen atom. The resulting center ring has five, not six, sides. There are 135

TABLE 4.12-1
GENERAL TERMS AND DEFINITIONS

Terms	Definition
	possible different positional congeners of PCDF's
Polychlorinated dibenzo-p-dioxins (PCDD)	A chemical compound that consists of two hexagonal benzene rings with carbon atoms at each vertex (dibenzo). The benzene rings are connected by two oxygen atoms creating a third dioxin ring (dibenzodioxin). The oxygen atoms connecting the two benzene rings are located on opposite sides of the dioxin ring (dibenzo-p-dioxin, where p is for para which means opposite). There are 75 possible different positional congeners of PCDDs.
Pre-treatment	Reducing the amount of a pollutant, eliminating a pollutant, or altering the nature of a pollutant in wastewater before it is introduced into publicly owned treatment works (POTW)
Primary sludge	A generic term for solids separated from suspension in a liquid by a variety of processes. When wastewater is added to a settling pond, approximately 50% of the suspended solid matter will settle out in about an hour and a half. This collection of solids is known as raw sludge or primary solids.
Reclamation	A combined process of land treatment that minimize water degradation, air pollution, damage to aquatic or wildlife habitat, flooding, erosion, and other adverse effects from surface mining operations, including adverse surface effects incidental to underground mines, so that mined lands are reclaimed to a usable condition which is readily adaptable for alternate land uses and create no public danger to health and safety.
Secondary sludge	Wastewater that has completed one cycle through the wastewater treatment process. (50 percent removal of solid materials)
Solubility Rate	The amount of a solute that will dissolve in a specific solvent under specified conditions and time.
Topsoil	The material found in the upper most part of the soil, ranging in depths of 7-to 25 cm, ordinarily moved during cultivation activities.
Toxic Equivalency (TEQ)	The reasonable level to which a worker can be exposed without adverse effects based on the known toxicity in humans or animals of a given chemical substance.
Toxic Equivalency Factors (TEF)	A detailed assessment of literature data to facilitate both risk assessment and regulatory control resulting in a toxicity rating.

TABLE 4.12-1
GENERAL TERMS AND DEFINITIONS

Terms	Definition
Volatile Organic Compound (VOC)	Includes a variety of chemicals, such as formaldehyde, benzene, and perchloroethylene, that have relatively low vapor pressures and are emitted as gases from liquid coating materials containing organic solvents.
Volatilization	The process whereby a dissolved sample is vaporised

Source: PMC, 2006.

4.12.1 ENVIRONMENTAL SETTING

HAZARDOUS MATERIALS

The term hazardous substance refers to both hazardous materials and hazardous wastes. A material is defined as hazardous if it appears on a Substances Control list of hazardous materials prepared by a federal, state or local regulatory agency, or if it has characteristics defined as hazardous by such an agency. The California Environmental Protection Agency, Department of Toxic Substances (CAL-EPA, DTSC) defines hazardous waste, as found in the California Health and Safety Code Section 25141(b), as follows:

> "A substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious, irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed" (CCR, Title 22, Section 66260.10).

Hazardous materials include liquids, solids, and gases which, by themselves or when placed in contact with other materials, can result in contamination of soil or water, poisonous vapors, fires, or explosions. An inadvertent release of hazardous materials can enter the environment via air, soil transport, or surface runoff. When improperly stored or disposed, hazardous materials can contaminate soil and groundwater or surface water and pose a general health hazard to the population via poisonous vapors, fumes, or explosions. Hazardous materials are used and created by industry everyday, and are commonly found in household items such as insecticides, waste motor oil, and cleaning fluids.

Public health is potentially at risk whenever hazardous materials are, or will be used. It is necessary to differentiate between the “hazard” of these materials and the acceptability of the “risk” they pose to human health and the environment. A hazard is any situation that has the potential to cause damage to human health and the

environment. The risk to health and public safety is determined by the probability of exposure, in addition to the inherent toxicity of a material. Factors that can influence the health effects of exposure to hazardous materials include: the dose the person is exposed to, the frequency of exposure, the duration of exposure, the exposure pathway (route by which the hazardous material enters a person's body), and the individual's unique biological susceptibility.

The California Department of Toxic Substances Control (DTSC) maintains a list of hazardous waste substance sites, also known as the "Cortese list". The list receives information from the CALSITES database of hazardous waste sites, Leaking Underground Storage Tanks (LUST) database, and the California Integrated Waste Management Board database of sanitary landfill sites with evidence of groundwater contamination. The most current list, from 2004, had no sites located within the project vicinity. The nearest site is over two miles away, the RPM Mini Mart located off Hwy 273 in Anderson. (California Department of Toxic Substances, 2004)

The potential human and ecological health concerns related to hazards and the use of hazardous materials within the proposed project include, but are not limited to: Fire hazards, mosquito control, exposure to dioxin and furan toxins, exposure to toxic air emissions, and exposure to solvents, petroleum products, and underground storage tanks, during both construction and ongoing mining operations.

BACKGROUND AND SITE CONDITIONS

Over the past 40 years most of the project area has been in active agricultural production. Onsite hazards include the high voltage transmission power lines across the northern portion of the property; the return reservoir located near the Sacramento River and several monitoring wells located throughout the site. Other historical onsite hazards include waste disposal activities associated with the Shasta Paper Mill Company, which is further described below. Figure 4.12-1 illustrates some of the historical activities that have occurred throughout the property (Note: **Figure 4.12-1** has been divided into distinct agricultural fields identified by alphabetical designations for operational purposes).

Paper Mill Operations

The Shasta Paper Mill Company ceased operations in 2002 and ceased discharge to the site in 2001 was a bleached kraft pulp and paper mill. Wastewater from pulp and paper mills generally contained adsorbable organic halides (AOX) and volatile organic compounds (VOCs) from the pulping process, and AOX, VOCs, and dioxins from the bleaching processes (EPA 1995). Industrial wastewater from the Shasta Paper Mill was routed to an industrial wastewater treatment plant and combined with a small amount of effluent from the domestic wastewater treatment plant and routed to an industrial wastewater treatment system prior to discharge.

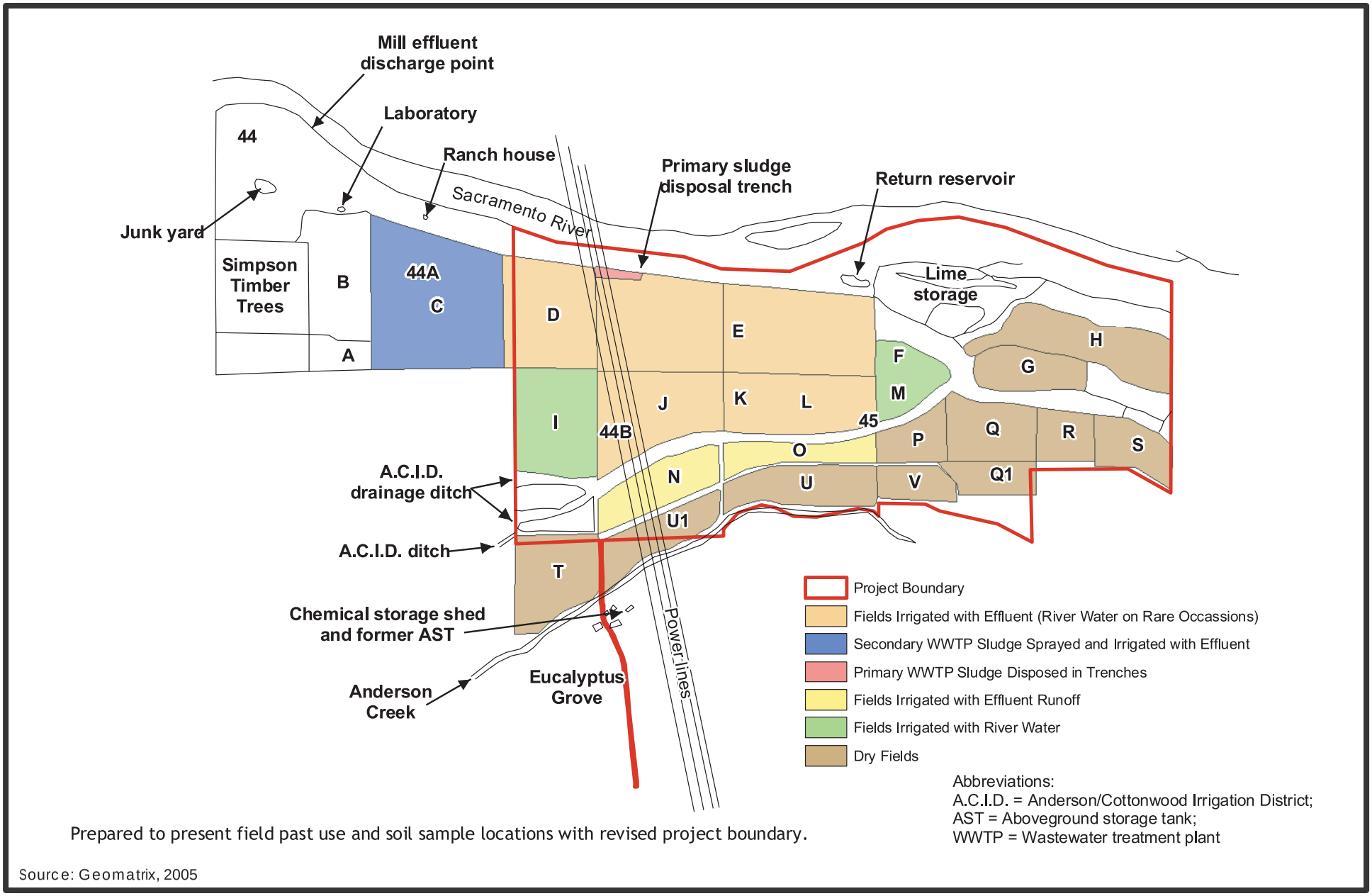

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Figure 4.12-1
Site Plan

PMC

From 1964 to 2002, Kimberly Clarke and subsequent operators of the mill disposed of mill solids and liquid wastes at the site. Primary sludge was disposed in two trenches located in the northeastern portion of the current "E" field while secondary sludge (effluent material) was land applied on the surface of field "C" (See **Figure 4.12-1, Site Plan**). This effluent material was used to irrigate agricultural crops and trees not used for human consumption.

During this time period it is estimated that approximately 15 tons per day of primary treatment sludge was disposed in the two trenches totaling approximately 38,000 tons of sludge. (Vestra, 2006) In 2000, the Shasta Paper Mill routed approximately 11 million gallons per day of treated effluent and domestic wastewater to the Sacramento River and Shasta Ranch property. (Vestra, 2006) As of 2001 a flange was installed on the discharge pipe to prevent river discharge yet discharges of effluent were still permitted to the proposed project site . Some of the waste byproducts derived from pulp and paper mill processes include hazardous materials known as dioxins.

Dioxin and Furan Compounds

Dioxins are defined as a group of synthetic organic chemicals that contain 210 structurally related individual polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs).[1] The formation of dioxins are primarily unintentional by-products of incomplete combustion and various chemical processes. Although forest fires and other natural sources may produce dioxins, these sources are small compared with human industrial activities (EPA 1999).

Dioxins are produced in small quantities during the combustion of fossil fuels, wood fuels, municipal waste, and industrial waste. Bleaching processes used in pulp and paper mill productions also produce dioxins. Dioxins also occur as contaminants during the production of some chlorinated organic chemicals, such as pentachlorophenol (EPA 1999). The potential occurrence of dioxins in soil and groundwater at the project site is related to both airborne deposits of combustion by-products and the disposal of sludge and effluent from the nearby pulp and paper mill. Although concentrations in Phase 3, low levels of dioxin from these sources are ubiquitous in the environment, even in remote areas (CARB 1986).

In general, PCDDs and PCDFs are primarily associated with particulate and organic matter in soil, sediment, and water because of their attraction for organic molecules over water they have a low water solubility rate. Once PCDDs and PCDFs are bound to soil they exhibit little potential for leaching or volatilization. (EPA, 2003) Evidence indicates that PCDDs and PCDFs, particularly the tetra- and higher chlorinated congeners,[2] are extremely stable compounds under most environmental conditions.

The term dioxin includes one of the most toxic dioxin compounds; 2,3,7,8-tetrachlorodibenzo-p-dioxin or 2,3,7,8-TCDD. There are seven congeners of PCDDs and 10 congeners of PCDFs, which are similar in chemical structure but can vary significantly in level of toxicity. To estimate the overall toxicity of the seventeen 2,3,7,8 substituted PCDDs and PCDFs, toxic equivalency factors (TEFs) have been designed to compare the toxicity of the dioxin congeners. Given these factors, the toxicity of a mixture of

congeners can be expressed in terms of its toxic equivalence or TEQ, which is the amount of 2,3,7,8-TCDD it would take to equal the combined toxic effect of the dioxin congeners in the mixture. (EPA 2003b)

The development of the TEF methodology is a continual process since it originated in 1980; meaning as more research is completed and our knowledge increases, the methodology is refined. The most recent expert panel to re-evaluate and assign TEF values to dioxin-like congeners was the World Health Organization (WHO) panel convened in 1997 (Van den berg 1998). The results of the first WHO determination of TEFs were published in 1994 and were applicable only to humans and mammals. The second, and most recent, determination, in 1997, provided slightly revised TEFs for humans and mammals but also added separate values applicable to fish and birds. (US EPA, 2006) Under the auspices of the World Health Organization (WHO), the dioxin-like PCB congeners have been assigned 2,3,7,8-TCDD Toxicity Equivalency Factors (TEFs), indicating their toxicity relative to 2,37,8-TCDD, which itself has been assigned a TEF of 1.0. For example, a PCB congener with a TEF of 0.01 is considered to be one hundred times less toxic than 2,3,7,8-TCDD.

Currently the 2,3,7,8-TCDD toxic equivalent concentrations of dioxin congeners present in a sample is calculated according to the methodology recommended by the Chlorinated Dioxins Workgroup (CDWG) and the Centers for Disease Control (CDC). The WHO98 TEF values for PCDDs and PCDFs are summarized along with previously used values in **Table 1** of **Appendix 4.12-2**. (CalEPA, 2003).

Regulatory Screening Levels for Soil and Groundwater

In 1987, EPA released the results of a 3-year National Dioxin Study on the extent of dioxin contamination in the United States. Results from the National Dioxin Study provided one of the first indications that bleached kraft paper mills were a possible source of dioxin in the environment. This study shows that bleaching of kraft pulp with elemental chlorine and chlorine derivatives results in the formation of 2,3,7,8-TCDD and 2,3,7,8-TCDF. In 1993, EPA initially proposed best available technology (BAT) and effluent regulations to limit factors important to the formation of dioxins in the pulp and paper manufacturing process. As a result of this strategy, dioxin levels in mill discharge declined significantly. For example, based on improvements at the Shasta Paper Mill, the dioxin fish consumption advisory placed in 1988, was lifted from the Sacramento River in 1994. As part of this strategy, EPA issued final effluent limitation guidelines and pre-treatment standards for pulp and paper mills in 1998. (Vestra, 2006)

Current regulatory screening levels for dioxin, expressed as toxic equivalent concentrations that apply to soil and groundwater at Shasta Ranch are summarized in **Table 4.12-2.** (See **Appendix 4.12-2** for TEQ calculations)

TABLE 4.12-2

REGULATORY SCREENING LEVELS

Standard	TEQ	Type	Source
Soil (ng/kg or ppt)			
Residential PRG[1]	3.9	10^{-6} Human Health Risk-Based Screening Level[3]	EPA 2004a
Industrial PRG[1]	16	10^{-6} Human Health Risk-Based Screening Level[3]	EPA 2004a
Residential EMEG[2]	50	Screening Level[3]	ATSDR 1997
California TTLC[4]	10,000	Standard[5]	CCR, Title 22
Groundwater (pg/l or ppq)			
Tap Water PRG[1]	0.45	10^{-6} Human Health Risk-Based Screening Level[3]	EPA 2004a
Federal MCL[6]	30	Risk and Technology-Based Standard[5]	DHS 2003
California MCL[6]	30	Risk and Technology-Based Standard[5]	DHS 2003
OEHHA PHG[7]	1	10^{-6} Human Health Risk-Based Drinking Water Goal	Cal EPA 2005

[1] *PRG is a Preliminary Remediation Goal published by EPA Region 9 and based on 10^{-6} human health risk.*
[2] *EMEG is an environmental media evaluation guide published by the Agency for Toxic Substances and Disease Registry, US Department of Health and Human Services.*
[3] *Screening Level generally represents a level below which additional evaluation or action is not required.*
[4] *California Total Threshold Limit Concentration for handling material as a hazardous waste.*
[5] *Standard is a level that triggers a regulatory action.*
[6] *MCL is the Maximum Contaminant Level for drinking water.*
[7] *OEHHA PHG is Public Health Goal established by California Environmental Protection Agency Office of Environmental Health Hazard Assessment. The proposed OEHHA PHG is for 2,3,7,8-TCDD only.*

Preliminary remediation goals (PRGs) established by EPA Region 9 combine current human health toxicity values with standard exposure factors to estimate contaminant concentrations in soil and groundwater that are considered to be protective of human exposures (including sensitive groups) over a lifetime. (Vestra, 2006) The EPA Region 9 updates these goals on a regular basis.

As the human health-based PRGs criteria are the most stringent regulatory levels listed in **Table 4.12-2**, it is important to note that concentrations above the PRG and ATHSP do not always require action or indicate a health risk, but imply further evaluation is necessary. Further evaluation may include: 1) additional sampling, 2) recognition of ambient levels in the environment, or 3) a reassessment of the assumptions contained in the screening-level estimates (e.g. appropriateness of route-to-route extrapolations, appropriateness of using chronic toxicity values to evaluate childhood exposures, appropriateness of generic exposure factors for a specific site etc.). (Vestra, 2006) Commonly, this reassessment leads to action levels that are higher than the screening level values. For example, it is common for ambient concentrations of dioxins from

combustion and other non-specific sources to exceed the PRG. In such cases, ambient or higher concentrations may be allowed (EPA 1998a).

Paper mill and Shasta Ranch Regulatory Actions

The discharge of sludge and effluent material from the Shasta Paper Mill Company was regulated by the National Pollution Discharge Elimination System (NPDES) Permit No. CA0004065, originally adopted in 1973 (Water Quality Order No. 73-172) and Monitoring and Reporting Program (MRP) No. 50-00-082. In June of 1981, Shasta Ranch was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability System (CERCLIS). EPA conducted a preliminary assessment of the Shasta Ranch property on September 1, 1982.

In response to the results of the National Dioxin Study conducted in 1986, dioxin analyses were added to the NPDES monitoring requirements in 1987. (Vestra, 2006) The early analyses only quantified 2,3,7,8-TCDD and 2,3,7,8-TCDF. Other chlorine containing dioxin congeners, and the calculation of toxic equivalent concentrations, were added to the NPDES permit in 1991. At this time the MRP was modified to include monitoring of effluent from two discharge points and groundwater monitoring for 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) and 2,3,7,8- tetrachlorodibenzo-furan (2,3,7,8-TCDF). On August 6, 1990 EPA conducted a detailed site inspection and a site prioritization was completed September 9, 1990.

After EPA's review of the preliminary assessment and site inspection reports, EPA determined additional information was required to evaluate the site for inclusion on the National Priority List (NPL or Superfund List). The EPA's expanded site inspection was complete in September 1996, which included six sludge samples from the Shasta Ranch property and seven sediment samples from the Sacramento River for dioxin analyses. Based on the findings, EPA concluded:

- Concentrations of site-related hazardous substances detected in sediment samples collected downstream from the site are comparable to background concentrations.

- No site-related hazardous substances were detected in groundwater samples collected from on site drinking water wells.

- The site is completely fenced, except along the Sacramento River, and there are no schools or day care centers on, or within 200 feet of the site.

EPA's final determination states Shasta Ranch did not qualify for further remedial site assessment under CERCLA. EPA's only follow up recommendation was that the discharger continues groundwater monitoring at selected wells throughout the ranch site for dioxin contaminants.

Dioxin TEQ results from the six sludge samples collected by EPA in 1996 ranged between 0 ppt and 225 ppt. These sludge trenches are not located in areas proposed for

aggregate extraction and these results are not indicative of the results obtained across the remainder of the property. See **Appendix 4.9-2** for EPA results.

Dioxin Levels in Soil and Groundwater

Soil

Geomatrix collected 11 on site soil samples for dioxin analyses in 2004. The samples were collected from the clayey silt layer in areas that received mill sludge and/or effluent. The samples were collected from the overburden layer approximately 6-inches below ground surface (Geomatrix 2005a). The sample locations are shown on **Figure 4.12-2**.

Dioxin TEQ results from the Geomatrix investigation are presented in **Appendix 4.9-2**. The results are compared to current regulatory levels shown in **Table 4.12-2**. The results indicate dioxin levels are less than the ATSDR residential EMEG of 50 ppt, and 9 out of 11 results are less than EPA Industrial PRG of 16 ppt. It is also important to note that the 95 percent upper confidence level concentration is less than the EPA industrial PRG of 16 ppt. The 95 percent upper confidence level concentration is typically used as the exposure point concentration when conducting a baseline risk assessment.

The Geomatrix soil sampling program focused on collecting shallow soil samples from fields that received mill sludge and/or effluent. Because these samples were collected from overburden that will not be processed as part of the proposed aggregate project and because the proposed project will not extract aggregate from these areas for approximately 20 years, Vestra collected a total of 10 additional soil samples for dioxin analyses from areas proposed for aggregate extraction. Three samples were collected from the Phase 1 area, three samples were collected from the Phase 2 area, and four samples were collected from the Phase 3 area. In general, individual samples were collected from the clayey silt overburden material approximately 18-inches below ground surface, from the sandy gravel just below the clayey silt, and from the sandy gravel approximately five feet below the clayey silt. Only one sample was collected from Test Pit Phase 3A because shallow water was encountered, The Vestra sample locations are shown along with the Geomatrix sample location on **Figure 4.12-2**.

The Vestra results are presented in **Appendix 4.9-2,** and the results are compared to current regulatory levels in **Table 4.12-2.** In areas where effluent was applied, the highest dioxin concentration in the underlying aggregate was 0.034 ppt. Areas where effluent was not applied, the highest dioxin concentration in the underlying aggregate was 0.008 ppt. These levels are considerably below the EPA residential PRG of 3.9 ppt.

Groundwater

Geomatrix Inc. submitted a groundwater monitoring and reporting program to the RWQCB in January 2005 (Geomatrix 2005b). In part, the program included collecting quarterly groundwater samples for dioxin analyses from seven on site monitoring wells on a quarterly basis for 1 year. The monitoring well locations are shown on **Figure 4.12-3**.

As outlined in the approved monitoring program, quarterly groundwater samples were collected from the seven on site monitoring wells during 2005. (See **Appendix 4.9-2**) The groundwater results from the most recent quarter and from the last four quarters are compared to the current regulatory levels for drinking water in **Table 4.12-3**. As shown, the maximum TEQ result of 0.0261 parts per quadrillion (ppq) observed during the 4th quarter 2005 is less than the current regulatory levels. Only one TEQ result collected during 2005 exceeded the EPA tap water PRG of 0.45 ppq. A TEQ of 0.62 ppq was observed in Monitoring Well MW-62 during the third quarter. The TEQ results in this well during the other three quarters (0 ppq, 0.0006 ppq, and 0.0003 ppq) were substantially less than the EPA tap water PRG.

TABLE 4.12-3

REGULATORY SCREENING LEVEL COMPARISON

SOIL AND GROUNDWATER TEQ RESULTS

Parameter	GEOMATRIX Soil Samples [1] (ng/kg or ppt)	VESTRA Soil Samples [2] (ng/kg or ppt)	2005 Groundwater Samples [3] (pg/l or ppq)	4th Quarter 2005 Groundwater Samples [3] (pg/l or ppq)
Number Samples	11	10	29	7
Minimum Conc.	0.80	0.0024	0	0
Maximum Conc.	18.45	0.4235	0.6236	0.0261
Average Conc.	7.31	0.0900	0.0409	0.0063
95 % UCL Conc.	11.08	0.1897	0.0854	0.0141
EPA Residential PRG	3.9	3.9	---	---
EPA Industrial PRG	16	16	---	---
Residential EMEG	50	50	---	---
EPA Tap Water PRG	---	---	0.45	0.45
Federal/State MCL	---	---	30	30
Summary	All levels are below the ATSDR residential EMEG, 95% upper confidence level is below EPA industrial PRG.	All levels are below regulatory levels, including the EPA residential PRG.	All levels are below the drinking water MCL, 95% upper confidence level is below the EPA tap water PRG.	All levels are below regulatory levels.

Notes:

[1] *Shallow soil samples were collected in 2004 from approximately 6 inches in depth from areas that received mill effluent. Sampling objective was to evaluate impact of mill effluent on shallow soils.*

[2] *Deeper soil samples were collected in 2006 from a minimum depth of 12 inches from areas proposed for aggregate extraction. Sampling objective was to determine concentrations in deeper soils and material to be processed.*

[3] *Groundwater samples were collected for four quarters during 2005. Sampling objective was to quantify levels in shallow groundwater in the vicinity of fields that received mill effluent.*

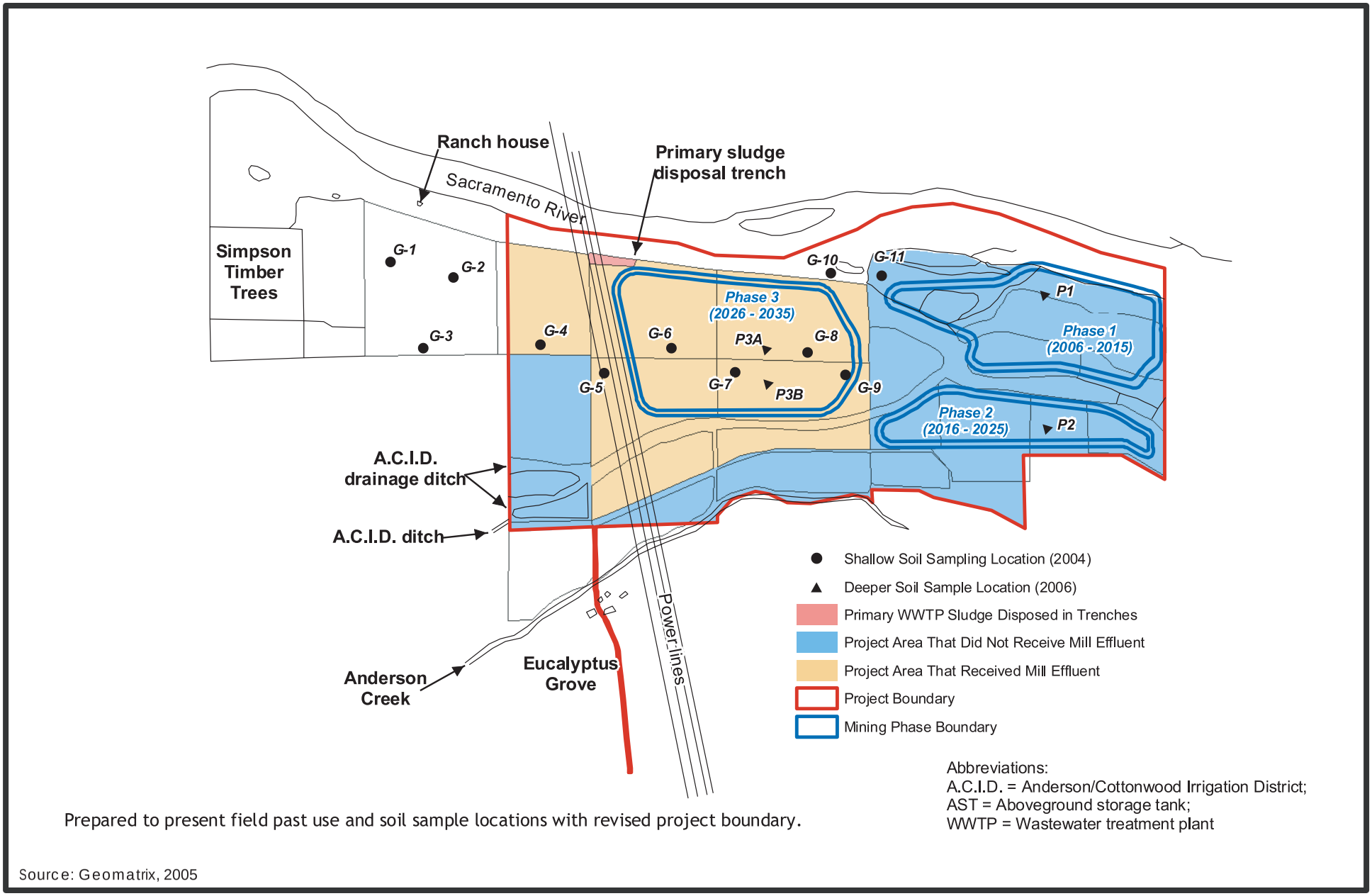

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Figure 4.12-2
Soil Sample Locations

PMC

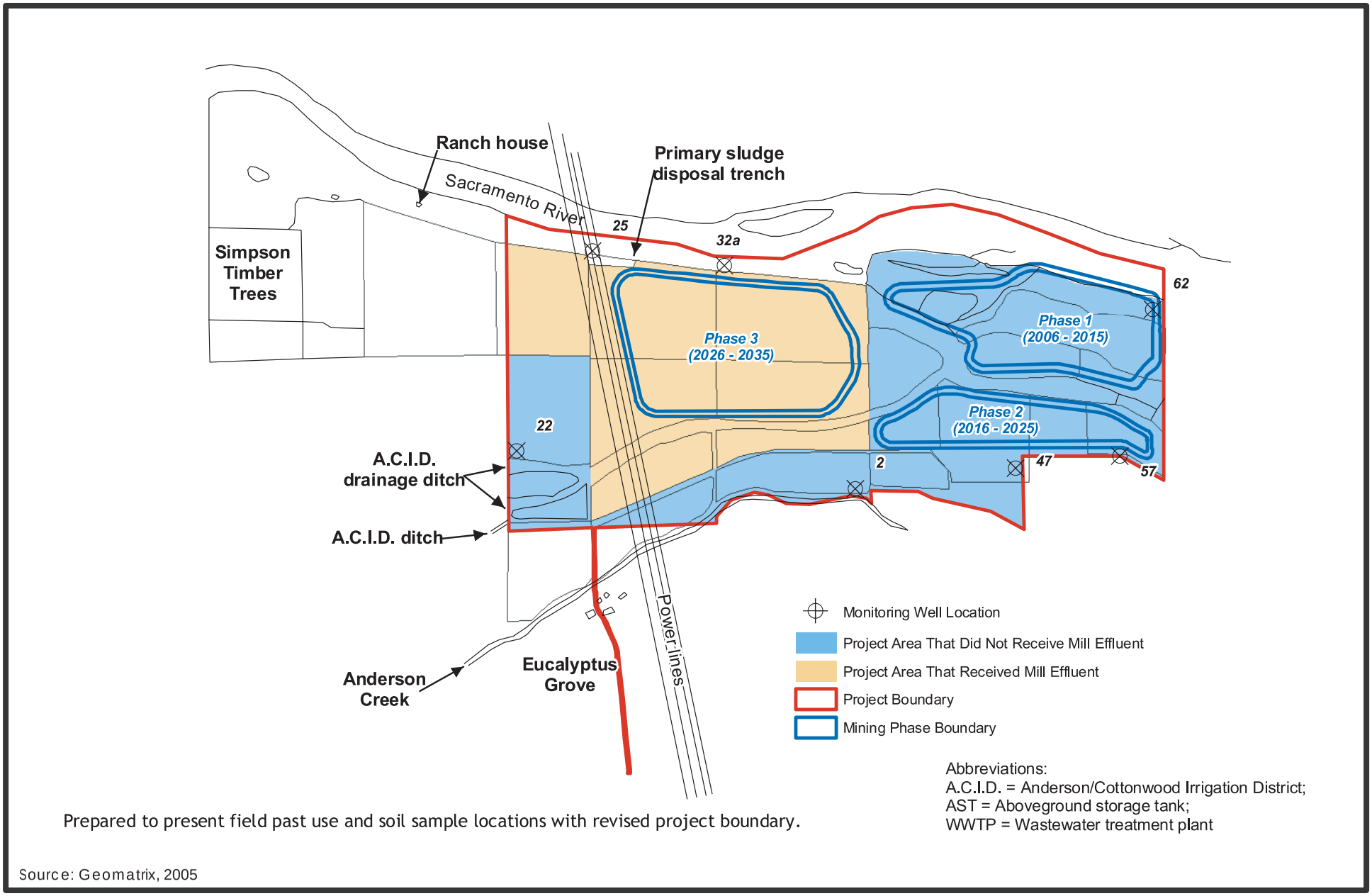

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Figure 4.12-3
Well Monitoring Locations

PMC

Dioxin Emissions in Air

An air toxics evaluation was conducted to estimate the potential non-cancer and cancer health risks associated with exposure to dioxins and furans that may become airborne during future quarry activities in Phase 3 of the proposed project. The mining activities will result in the movement of soil at the property, which will generate dust. According to the existing technical data there are low concentrations of dioxin and furans present in the Shasta Ranch soil. The Office of Environmental Health Hazard Assessment (OEHHA) guidelines for estimating potential exposure to chemical emissions were used to assess the potential human exposure to airborne chemicals from a variety of exposure pathways. This evaluation consists of the following components: data evaluation, toxicity assessment, exposure assessment, and risk characterization. (Geomatrix 2006)

Toxicity, Exposure and Risk Assessment

The theoretical carcinogenic risk assuming the potential residential exposure to dioxin and furans in dust generated by mining and reclamation activities is 0.00000005 $\mu g/m^3$. See **Table 4.12-4** for the total risk assessment. The total risk value, 0.00000005 $\mu g/m^3$ is less than the standard 0.000001 $\mu g/m^3$.

TABLE 4.12.4

SUMMARY OF PREDICTED RISK RESIDENTIAL SCENARIO-

HIGH END EXPOSURES

Chemical	2,3,7,8-TCDD TEQ
Predicted Concentration ($\mu g/m^3$)	.000000077
Inhalation Risk	.0000000079
Ingestion Risk	.000000023
Dermal Contact Risk	.000000021
Ingestion of Produce	N/A
Total Risk	**.00000005**

Source: Geomatrix, 2006.

The hazard index assuming potential residential exposure to dioxin and furans in dust generated by mining and reclamation activities is 0.0003 $\mu g/m^3$. (See **Table 4.12-5**) This level is less than 1 $\mu g/m^3$, the level typically requiring emission controls by California air districts. The hazard index for inhalation exposures is 0.000019 $\mu g/m^3$ and for non-inhalation exposures is 0.00025 $\mu g/m^3$. (See **Appendix 4.12-4**) Consistent with the OEHHA guidelines, hazard indexes are presented by target organ potentially affected by exposure to dioxin and furans.

TABLE 4.12.5

SUMMARY OF PREDICTED CHRONIC HAZARD INDEXES

RESIDENTIAL SCENARIO

Chemicals	Summary Predicted Chronic Hazard Index	Target Organ					
		Alimentary	Developmental	Endocrine	Hematopoietic	Reproductive	Respiratory
2,3,7,8-TCDD TEQ	.0003	.0003	.0003	.0003	.0003	.0003	.0003

Notes: Includes both inhalation and non-inhalation exposures.
Source: Geomatrix, 2006 Shasta Ranch Emissions of Dioxins/ Furans in Soil.

HAZARDOUS MATERIAL SITE DATABASES

The regulation of hazardous material management has resulted in the development of databases that identify regulated facilities. The project site is listed on the following local, state, and federal hazardous materials databases:

- U.S. Environmental Protection Agency- Comprehensive Environmental Response, Compensation, and Liability System- No Further Remedial Action Planned (CERCLIS-NFRAP)- listing of sites reported to the US EPA for potential hazardous waste that have been removed from CERCLIS. Typically through initial investigation, no contamination found, or contamination was not serious enough to require Federal Superfund action or NPL consideration.

- Referred- (REF) listings of Unconfirmed Properties Referred to Another Agency- Regional Water Quality Control Board.

There is only one identified Superfund (CERCLA) site identified within Shasta County and it is not located within the project vicinity. The only site listed within a 1/2 -mile radius of the project site is the previous Simpson Paper Mill and Shasta Ranch area. The proposed project area is not listed as a potential Superfund site by the U.S. EPA. The project area has been designated as a CERCLIS-NFRAP based on further investigations and testing provided to the Regional Water Quality Control Board that determined the site does not warrant further remediation or clean up.

RADON POTENTIAL

Radon isotope-22 is a colorless, odorless, tasteless radioactive gas that is a natural decay product of uranium. Uranium and radon are present in varying amounts in rocks and soil, and radon is present in background concentrations in the atmosphere. Current evidence indicates that increased lung cancer risk is directly related to radon-decay

products. The EPA has recommended an "action" level for indoor radon concentrations at or exceeding 4 pico-curies per liter of air (pCi/l). California ranks as the third lowest for percentage of homes exceeding 4 pCi/l. The U.S. EPA uses three zone designations in order to reflect the average short-term radon measurement that can be expected in a building without the implementation of radon control methods. The radon zone designation of the highest priority is Zone 1. According to the EPA Map of Radon Zones, Shasta County is in Zone 3.

Specific indoor radon information can only be obtained through a sampling and testing program. However, based on the soil composition and topography of the project site and the lack of existing on-site structures, the potential for radon concentrations exceeding 4 pCi/l is anticipated to be very low. According to the Shasta County Air Quality Management District (phone conversation, 2005), radon is not known to be a hazard in the Redding area.

ABOVEGROUND AND UNDERGROUND STORAGE TANKS

The proposed mining project includes 10,000-gallons of fuel in an above ground fuel tank. At this time there is only one aboveground storage tank pad that has been identified near the project site west of the Anderson Creek drainage. There is a chance of discovering unknown underground storage tanks (UST's) during site excavation and reclamation activities. The Environmental Health Division (EHD) of the Shasta County Department of Resource Management keeps records and monitors the installation, removal, and leakage of underground storage tanks. According to the State Water Resources Control Boards Geotracker website, there are no publicly recorded UST's associated with the subject property; therefore, the probability of encountering UST's is considered low. However, in the event the UST's are encountered during excavation activities, the EHD must be notified and removal of UST's must comply with EHD regulations.

OTHER HAZARDOUS MATERIALS

Along with the use of diesel fuel and waste oil, other hazardous material will be used on the site for maintenance purposes. Most of these materials are used in the operation of heavy construction equipment (i.e., excavators, tractors, loaders, etc.) maintained on the project site and stationary equipment (i.e., crusher, washer, screener, etc.) located at the processing area. These materials include motor oil, gear oil, gear grease, hydraulic oil, and ethylene glycol (antifreeze). Antifreeze and lubricants will be stored in a fuel and oil containment shed onsite. In accordance with the Shasta County Environmental Health Department, facilities where hazardous materials are stored in amounts equal to or in excess of 55 gallons of liquid, 200 cubic yards of compressed gas, or 500 pounds of a solid are required to prepare and implement a Business Plan for Hazardous Materials Response.

FIRE HAZARDS

The Shasta Ranch project is located in an area at risk for wildland fires. The California Department of Forestry (CDF) has created a fire hazard severity classification system for

California's wildlands that is based on three factors: fuel loading, climate, and topography. Based on the Shasta County General Plan the unincorporated areas of the County are designated as "unclassified", "moderate", "high" or "very high" fire hazard severity zones. The project site is located within an "Unclassified" zone. Considering the relatively flat topography and cultivated farmland adjacent to two waterways the potential is unlikely. However, the greatest potential for a wildfire to occur on site would exist in the fallow open space areas or along the river corridors where there is an abundance of natural vegetation.

The primary fire protection services for the Shasta Ranch project site are the Shasta County Fire District (SCFD) based out of Redding and the Cottonwood Fire Protection District (CFPD) located in Cottonwood. Station 43 is the nearest SCFD station to the project area located at 6103 Airport Road in Redding. The estimated response time is approximately 15 minutes (Diehl, 2005). The Cottonwood Fire Protection District station is located at 3271 Brush Street in Cottonwood and the estimated response time is 7 minutes (Armstrong, 2005). In the event of a wildfire, the CFPD and SCFD would both respond and any additional wildland fire support would be provided by the California Department of Forestry and Fire Protection (CDFFP).

MOSQUITO ABATEMENT

The Shasta Ranch proposed reclamation activities for Phase 2 and 3 includes the creation of two ponds. Ponds are typically large bodies of water that serve many uses from aquatic habitat, storm water detention basins, aesthetic value and breeding grounds for insects, pests, and vectors. Mosquitoes in particular are "vectors" that carry disease to humans and animals. Mosquito populations can increase rapidly, especially during warm summer months. Any source of standing water, big or small, can produce mosquitoes. The West Nile virus, (WNV) a mosquito-borne disease, has become increasingly widespread in California since it first appeared in 2002.

The California Health and Safety Code provides authority for mosquito abatement districts to provide advice and control mosquito production on private and public lands and to assess the landowner for the cost of that control. The control districts also have the authority to hold hearings and assess civil penalties to abate nuisance and potential health threats to the general public (California Health and Safety Code, § 2270-2294). The Shasta Mosquito and Vector Control District (Control District) and the Vector Biology and Control Branch of the California Department of Health Services are responsible for the management and enforcement of the mosquito prevention program for the Shasta Ranch project site.

4.12.2 REGULATORY FRAMEWORK

HAZARDOUS MATERIALS MANAGEMENT

There are several local, State, and Federal laws and regulations that control the use, storage, and disposal of hazardous materials including the management of soil and groundwater contamination. The U.S. Environmental Protection Agency (U.S.EPA) is the Federal agency that governs hazardous materials and waste regulations. State

regulatory agencies include the California Environmental Protection Agency (Cal EPA), Department of Toxic Substances and Control, Central Valley Regional Water Quality Control Board (CVRWQCB), and the California Air Resources Board (CARB) and other agencies. The Shasta County Air Quality Management District has jurisdiction over the Shasta County area, which is located in the Northern Sacramento Valley Air Basin. The local regulatory agencies include the Shasta County Health Services and Emergency Services.

U.S. Environmental Protection Agency (EPA) is the Federal agency responsible for the implementation and enforcement of Federal laws and regulations governing hazardous materials. The legislation includes the Resource Conservation and Recovery Act of 1986 (RCRA), which creates a framework for the management of hazardous wastes. The Superfund Amendment and Reauthorization Act of 1986 (SARA), Title III, the Comprehensive Environmental Response, Compensation, and Liability act of 1980 (CERCLA) and the Clean Air Act of 1990. SARA, codified in 40 Code of Federal Regulations (CFR) Section 68.110 et seq., requires states to implement a comprehensive system to inform local agencies and the public when a significant quantity of such materials are stored or handled at a facility. The U.S. EPA is actively involved in the oversight and process for site investigations and remediation projects. The U.S. EPA has also established restrictions and treatment standards for the disposal of hazardous materials.

California Department of Toxic Substances Control (DTSC) coordinates with the U.S. EPA to ensure implementation and enforcement of applicable laws and regulations pertaining to hazardous materials and waste disposal methods. Under the California legislation, the Hazardous Waste Control Act and Hazardous Substance Account Act can be found under Title 22 of the California Code of Regulations (CCR). The DTSC generally enforces the role as the lead agency for all soil and groundwater clean up projects, and states the clean up standards deemed appropriate for subsurface contamination. These standards are generally equal to or more restrictive than the

Regional Water Quality Control Board, (RWQCB) **Central Valley** (CV Region) is authorized under the Porter-Cologne Water Quality Act of 1969 to implement water quality protection laws. Implementation measures include issuance of National Pollution Discharge Elimination System (NPDES) permits. The RWQCB's primary function is to provide oversight in areas where groundwater and surface water quality may be threatened. In the event there is a threat the RWQCB has the authority to require further investigations and remedial actions.

California Air Resource Board (CARB) and the **Shasta County Air Quality Management District** (SCAQMD) are located within the Sacramento Valley Air Basin. Both agencies have a shared responsibility to enforce regulatory standards to achieve and maintain the State and Federal ambient air quality standards within the district. CARB is responsible for the enforcement of the Clean Air Act and the California State Ambient Air Quality standards while SCAQMD regulates the air emissions generated from stationary sources, monitors air quality levels, and evaluates the air quality issues addressed in environmental documents. For more information see Section 4.4, Air Quality.

The primary agencies responsible for the local enforcement of state and federal laws that govern the management of hazardous materials include the **Shasta County Sheriff's Department Office of Emergency Services** and the **Shasta County Department of Resource Management Environmental Health Division (EHD)**. The Shasta County Environmental Health Division is the agency responsible for overseeing the commercial use and storage of hazardous materials in Shasta County. The Environmental Health Division is designated the Certified Unified Program Agency (CUPA), at the local government level pursuant to Title 27 § 15110(a)(2). The Environmental Health Division is certified by the Cal/EPA Secretary to implement the Unified Program specified by Health and Safety Code § 25404(a)(1)(A), within Shasta County. Among its programs are the following:

- Business Plans- Facilities storing or handling hazardous materials of at least 55 gallons, 500 pounds, or 200 cubic feet of gas at standard temperature and pressure.
- California Accident Release Prevention (CalARP) Program
- Underground Tank Program (USTs)
- Above Ground Petroleum Storage Act Requirements for Spill Prevention, Control and Countermeasure (SPCC) Plans
- Hazardous Waste Programs: Generator programs and Onsite Hazardous Waste Treatment Activities
- California Uniform Fire Code (UFC) – Hazardous Materials Management Plan Hazardous Materials Inventories

The Shasta County Environmental Health Division may respond to incidents involving any release or threatened release of hazardous materials. Threats to people, property and the environment are assessed, and then remedial action procedures are conducted under the supervision of Division staff or another agency. As part of this service, the County responds to requests for assistance from the Shasta County Hazardous Materials Response Team in identifying unknown materials

The transportation of hazardous materials is required to meet all applicable laws and regulations governed by the U.S. Department of Transportation. Regulations regarding the safe transport of hazardous materials and hazardous wastes are found in the Shasta County Emergency Response Plan.

SHASTA COUNTY GENERAL PLAN

The County General Plan contains the following objectives and policies concerning hazardous and hazardous materials that pertain to the project:

Fire Safety and Sheriff Protection

Objectives:

FS-1 Protect development from wildland and non-wildland fires by requiring

development to incorporate design measures responsive to the risk from this hazard and by encouraging development to locate in moderate fire hazard areas.

Policies:

FS-b Known fire hazard information should be reported as part of every General Plan amendment, zone change, use permit, variance, building site approval and all other land development applications subject to environmental assessment.

Hazards and Hazardous Materials

Objectives:

HM-1 Protection of life and property from contact with hazardous materials through site design and land use regulation and storage and transportation standards.

HM-2 Protection of life and property in the event of the accidental release of hazardous materials through emergency preparedness planning.

Policies:

HM-a The County shall make every effort to inform applicants for discretionary and nondiscretionary projects, which are located within potential border zone property of known hazardous waste facilities that they must comply with State requirements regarding hazardous waste facilities. A map shall be prepared and maintained which identifies these areas.

HM-b Shasta County shall maintain an emergency preparedness plan for hazardous materials.

HM-c Shasta County shall adopt policies for hazardous materials use, transportation, storage and disposal as required by State laws.

HM-d Shasta County shall adopt policies for the protection of life and property from contact with hazardous materials through site design and land use regulations.

HM-e Any proposal for development of a disposal site for hazardous materials in Shasta County shall be reviewed closely to ensure that no significant environmental impacts will result from the project. Review of such project may include a determination of what type of hazardous materials may be disposed of at the site.

4.12.3 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

The County concludes that the project may have significant impacts on hazards and hazardous materials if any of the following would result from implementation of the proposed project:

- Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emits hazardous emissions or handles hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school;
- Is located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment (The Cortese list is compiled pursuant to Government Code Section 65962.5);
- Exposes people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas.

METHODOLOGY

PMC staff reviewed all pertinent documents for information relative to hazards and hazardous materials. The environmental impact analysis focused on the hazardous materials associated with mining and reclamation activities, soil, groundwater conditions, dioxin emissions from quarry operations, and wildland fires at the project site.

The project site is not located within ¼-mile of an existing or proposed school nor is it within a 2-mile radius of an existing airport. The proposed project would comply with the Shasta County regulations regarding adequate emergency access for emergency evacuation or response.

As part of the environmental review process additional technical studies were required to ensure the exposure of hazardous materials from air, soil, surface water and groundwater would not impact both public and environmental health associated with the proposed mining and reclamation activities. GEOPlus Inc. conducted a peer review of the following documents:

Geomatrix Consultants, Inc.:

- Ground Water Quality Monitoring and Reporting Program reports
- Letter stating the Soil Sampling results;
- Phase 1 Environmental Site Assessment, and
- Groundwater Quality Data from the Regional Water Quality Control Board.

Other documents provided:

- Hydmet Inc., Report for Groundwater Investigations;
- Bechtel Environmental Inc., Expanded Site Inspection;

- Tetra Tech EM Inc., Phase 1 Environmental Site Assessment
- Regional Water Quality Control Board, Cleanup and Abatement Order; and
- Kleinfelder Inc., Geotechnical Investigation Report
- Vestra Resources Inc., Soil and Groundwater Dioxin Evaluation
- Geomatrix Inc., Emissions of Dioxins/Furans in Phase 3 soils.

Vestra Resources provided technical support in response to the potential dioxin and furan exposure levels relevant to soil, groundwater contamination, and dioxin emissions generated from quarry operations on the Shasta Ranch project site.

PROJECT IMPACTS AND MITIGATION MEASURES

Impact 4.12.1 Hazardous materials transported, stored and/or used onsite during proposed mining and reclamation activities (i.e., petroleum products, lubricants, solvents) could potentially be spilled or released into the atmosphere through improper storage and/ or handling. This impact is considered ***potentially significant, therefore less than significant***. **[PSM]**

The proposed project will involve the use of substances and/ or petroleum products that contain hazardous substances. Hazardous materials that would be transported, stored and/or and used on the project site include diesel fuel, lubricants, and solvents. The maximum amount of fluids stored onsite includes 10,000 gallons of fuel in an above ground storage tank and approximately five 55-gallon drums of lubricants and transmission oil. Based on the quantity of hazardous materials that would be used or stored on site, the project would be subject to the provisions of the Aboveground Petroleum Storage Act.

Storage of diesel fuel is considered a potential fire hazard. The fuel tank and fueling station will be located in an area that is removed from vegetation and flammable structures. All fuel operations and placement will be in accordance with the California Uniform Fire Codes and County safety requirements. Thus, the potential risk for ignition is low.

Vehicles and onsite equipment associated with the project would be maintained to prevent any possible leaks. This includes routine maintenance and fueling operations. A 900-square foot covered maintenance area will be constructed to include a durable impermeable surface, such as a concrete pad to functionally work as a catch basin for any spilled fuel, oil, antifreeze or other motor vehicle fluids. This pad will be reviewed by the RWQCB to ensure the design, drainage and sump meet regulatory compliance standards prior to construction. Potential health risks from diesel and/or other oil, grease, or solvents leaking into groundwater aquifers or to surface water sources will be mitigated under the compliance requirements of the General Industrial Storm Water Permit and Storm Water Pollution Prevention Plan (SWPPP) regulated by the RWQCB. Implementation of appropriate best management practices (BMP's) is required under the National Pollution Discharge Elimination System (NPDES) and Hazardous Material Business Plan (HMBP) permits for mining and reclamation activities. The Business Plan for the Shasta Ranch Quarry will include an Emergency Response Plan and Notification Procedures with an approved Spill Prevention, Control and Counter Measure Plan

(SPCCMP). Upon compliance with Federal, State, and local laws and regulatory permits and plans the potential impacts would be reduced to ***less than significant*. [LS]**

Mitigation Measures:

See Air Quality **MM 4.4.1(a)** and **MM 4.4.2(a).**

MM 4.12.1 A designated parking area shall be paved for vehicles and equipment not in use.

Timing Implementation: *Prior to initiating quarry operations.*

Enforcement/Monitoring: *Shasta County Resource Management, Planning Division*

Implementation of the following mitigation measures: **MM 4.4.1(a), MM 4.4.2(a), and 4.12.1** would reduce the potential impacts to less than significant.

Impact 4.12.2 The potential transport of polychlorinated dibenzo-p-dioxin (2,3,7,8-TCDD) and polychlorinated dibenzo-furan (2,3,7,8-TCDF) in groundwater during construction and mining operations could result in the contamination of neighboring private drinking water wells. This impact is considered ***potentially significant, therefore subject to mitigation*. [PSM]**

As required by EPA, the RWQCB and Geomatrix Consultants established a Groundwater Monitoring Reporting Program (GMRP). This program included extensive groundwater and soil testing that determined the toxicity levels present for Polychlorinated dibenzo-p-dioxin (2,3,7,8-TCDD) and polychlorinated dibenzo-furan (2,3,7,8-TCDF). Based on the review and evaluation dioxins are less likely to become water-soluble when organic material is present.

The natural groundwater contours on the project site move in a downward gradient from northwest to southeast. The GMRP collected groundwater samples from seven monitoring wells between August 8, 1989 and September 7, 2005. (See **Figure 4.12-3,** Groundwater Monitoring Well Locations) The TEQ concentration levels for 2,3,7,8-TCDD and 2,3,7,8-TCDF range between 0.072 pg/L and 8.7 pg/L. These concentrations are below the U.S. EPA and Cal EPA drinking water standard MCL 30 picograms per liter (pg/L) for 2,3,7,8-TCDD. (Geomatrix*, 2005*)

Groundwater results from the four quarters were compared to current regulatory levels for drinking water in **Table 4.12-3**. As shown, the maximum TEQ result of 0.0261 parts per quadrillion (ppq) observed during the 2005 fourth quarter is less than the current regulatory levels. Only one TEQ result collected during the 2005 third quarter exceeded the EPA tap water PRG of 0.45 ppq. A TEQ of 0.62 ppq was observed in Monitoring Well MW-62 during the third quarter. The TEQ results in this well during the other three quarters (0 ppq, 0.0006 ppq, and 0.0003 ppq) were less than the EPA tap water PRG (0.45 ppq). The TEQ 0.62 ppq is also below the Cal EPA OEHHA public health goal (1.0 ppq) for

Human Health Risk based Drinking Water. See **Table 4.12-3** for a description of screening levels. Therefore, with the exception of MW-62 exceeding the EPA tap water PRG 0.45 ppq during monitoring in Phase 3, 95 percent of the upper confidence for 2,3,7,8-TCDD and 2,3,7,8-TCDF levels were below the Cal EPA drinking water MCL standard and EPA tap water PRG.

The mining and reclamation activities would not distribute 2,3,7,8-TCDD and 2,3,7,8-TCDF contaminated soils from Phase 3 to groundwater on or off site. As noted in **Section 3.0, Project Description** all overburden material from Phase 3 will be stockpiled and contained on site. The Phase 3 mining pit will be reclaimed as a pond. According to the RWQCB the Phase 3 overburden may be applied as demonstrated in the reclamation plan for bank stabilization and the creation of shoreline surfaces. This material will also be utilized in the construction of levees.

In response to EPA's recommendations to monitor discharges and groundwater for dioxins and the RWQCB's CAO a substantial amount of evidence and technical studies has concluded the dioxin levels present are not a threat to the existing and adjacent drinking water wells. Since there are no neighboring drinking water wells between the project site and the eastern boundary (Sacramento River) the potential interception is not likely to occur. As we know dioxins already occur naturally under present ambient conditions and non-detect levels of dioxin were found in the onsite drinking water wells. However, the potential impact for contamination to occur to nearby drinking water as a result of mining and reclamation activities could be ***potentially significant, therefore subject to mitigation.*** **[PSM]**

Mitigation Measures:

MM 4.12.2 The Phase 3 overburden material may not be used as fill material for the Phase 2 reclamation activities below existing groundwater levels.

Timing/Implementation: *During Phase 2 site reclamation activities.*

Enforcement/Monitoring: *Regional Water Quality Control Board and Shasta County Resource Management Department, Planning Division.*

Implementation of the above mitigation measure would reduce the impacts to ***less than significant*****. [LS]**

Impact 4.12.3 Hazardous materials polychlorinated dibenzo-p-dioxin 2,3,7,8-TCDD and polychlorinated dibenzo-furan 2,3,7,8-TCDF, may become airborne during mining and reclamation activities that could potentially result in an adverse impact to both public and environmental health within the vicinity of the mining and reclamation activities. This impact is considered ***potentially significant, therefore subject to mitigation*****. [PSM]**

The project would contribute airborne contaminants to the local area during construction and mining operations. According to the California Air Resources Board dioxin contaminants are present under ambient conditions due to natural and human caused activities. Much of the dioxins that were initially present from previous paper mill operations are below the current EPA health risk levels.

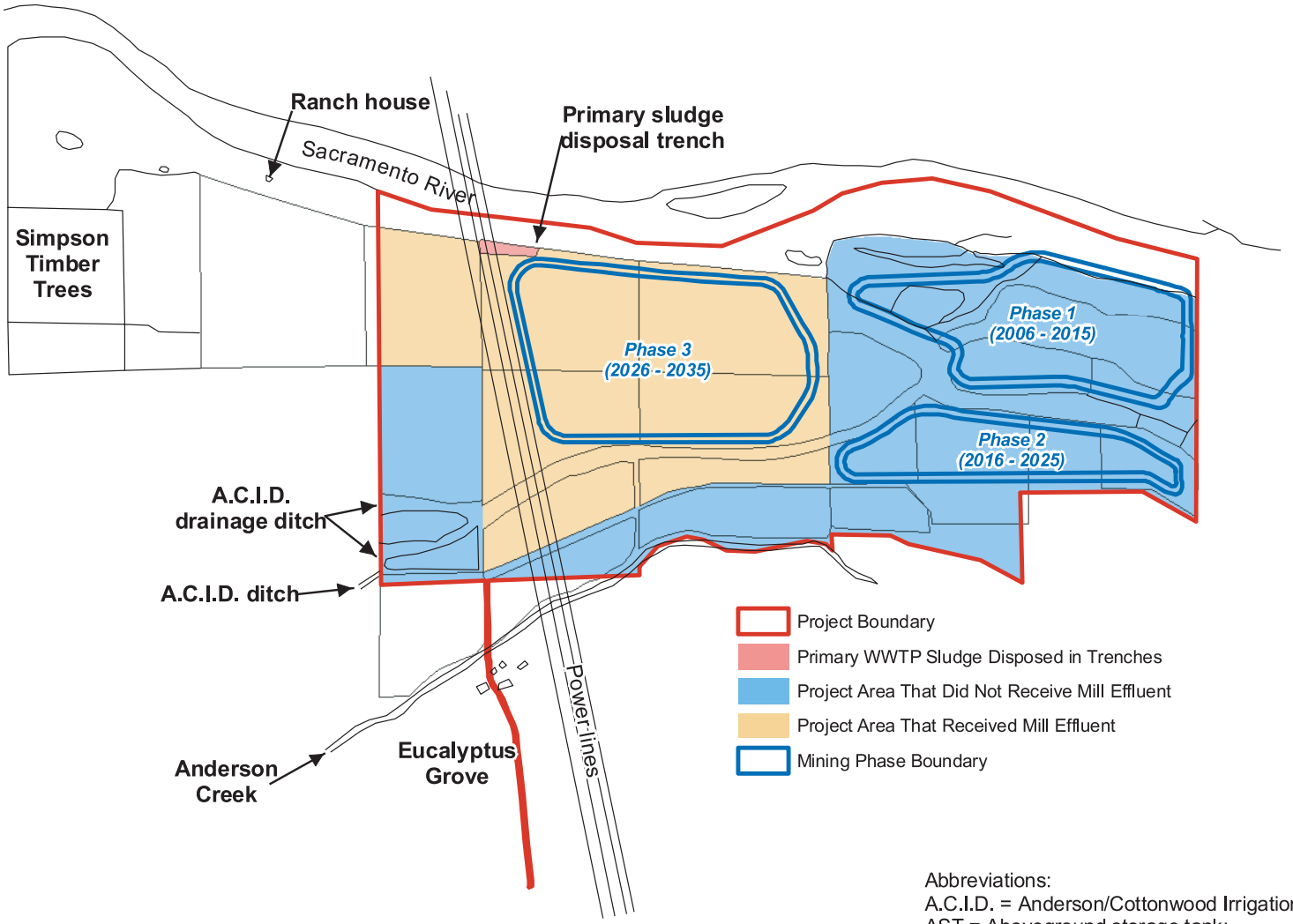
The Shasta Ranch property, particularly Phase 3, has been in active agricultural production for approximately 40 years. Although it is difficult to quantify the amount of dioxin material that has been dispersed from existing agricultural practices (i.e., grading, tilling, scraping, and harvest operations) the amount of dust generated would imply the transport of dioxins occurred prior to the proposed project as an existing condition. In general, farming practices are not required to provide dust abatement.

The potential for polychlorinated dibenzo-p-dioxin 2,3,7,8-TCDD and polychlorinated dibenzo-furan 2,3,7,8-TCDF contaminants to become airborne is likely to occur during the grading and excavation operations. In areas where effluent was applied, (Phase 3) the highest dioxin concentration in the underlying aggregate was 0.034 ppt. In areas where effluent was not applied, (Phase 1 and 2) the highest dioxin concentration in the underlying aggregate was 0.008 ppt. These levels are well below the EPA residential PRG of 3.9 ppt, and the average near-surface background concentrations of 4.1 ppt observed in urban areas (Vestra Resources, 2006). Background dioxin concentrations are generally higher near the surface because the primary source of background dioxin is the airborne deposition from combustion sources (EPA 1999).

According to the 2004 soil samples provided by Geomatrix (**Appendix 4.8-2**) all levels were below the ATSDR residential EMEG (50 ng/kg or ppt) and 95% of the upper confidence level was below the EPA Industrial PRG (16 ng/kg or ppt) level. These soil samples were taken from the upper 6-inches of the soil profile and all samples collected were located in the Phase 3 area. The 2006 soil samples indicate Phase 1 and 2 areas containing 2,3,7,8-TCDD and 2,3,7,8-TCDF were below the EPA residential PRG (3.9 ng/kg or ppt). The maximum TEQ result in samples collected from the Phase 3 overburden was 18.5 ppt. This level exceeds the EPA Industrial PRG of 16 ppt, but remains less than the ATSDR residential EMEG of 50 ppt. Unlike the 2004 soil samples the 2006 samples were taken at depths greater than 6-inches and included the proposed Phase 1 and 2 mining areas.

The soil results provided by Geomatrix (**Appendix 4.8-2**) and Vestra Resources (**Appendix 4.12-2**) indicate Phase 1 and 2 mining areas do not contain dioxin contaminants that exceed the EPA Residential Preliminary Remediation Goal (PRG) for protection of human health under a residential scenario. This also concludes the potential for adverse impacts to occur within the first 20 years of the project during Phase 1 and 2 mining and processing operations is not considered a significant public or environmental threat. See **Figure 4.12-4**, Aggregate Extraction Areas and Effluent Fields. Phase 3 overburden however, is not suitable for aggregate production and will be stockpiled and contained on site for restoration activities even though the Phase 3 dioxin levels below the soil substrate and overburden layer significantly depreciate to non-detect levels less than the EPA residential PRG. (3.9 ppt) (See **Table 4.12-2**).

The variation in results is highly dependent upon the sample depth and location of the site. Dioxin levels greatly depreciate with the increase in depth from the soil surface and also have little potential for leaching once bound to soil particles. (See **Figure 6** of **Appendix 4.12-2**) This would explain why the 2004 TEQ results are increasingly higher than the 2006 TEQ results as shown in **Table 4.12-2**.



Abbreviations:
A.C.I.D. = Anderson/Cottonwood Irrigation District;
AST = Aboveground storage tank;
WWTP = Wastewater treatment plant

Prepared to present field past use and soil sample locations with revised project boundary.

Source: Geomatrix, 2005

T:\Shasta Ranch Mining\Figures\AI Files

0 750 1,500
Scale in Feet

N

Figure 4.12-4
Aggregate Extraction Areas and Effluent Fields

PMC

To provide a health risk assessment of the potential carcinogens related to dioxin emissions a summary report was completed by Geomatrix to determine the potential health risks associated with the exposure to airborne concentrations of dioxin and furan emissions beyond the property boundary during mining and reclamation activities on the proposed Shasta Ranch project site. This analysis included a complete data evaluation, toxicity assessment, exposure assessment, and risk characterization analysis. The toxicity assessment focused on health impacts for oral, dermal and inhalation toxicity levels using the OEHHA guidelines. These toxicity levels considered both carcinogenic and non-carcinogenic effects of 2,3,7,8-tetrachlorodibenxo-p-dioxin (2,3,7,8-TCDD).

The approach in estimating the potential chronic health risks was assumed using residential exposure levels for dioxins found in dust generated by quarry operations. Based on the risk characterization report, the 24-hour average concentration of particulates found in air and the maximum concentration of dioxins and furans in soil, have a theoretical carcinogenic risk factor of .0000000077 $\mu g/m^3$**.** This level of risk is well below the OEHHA/ARB approved risk assessment health value (.00001 $\mu g/m^3$) requiring emission controls. The combined hazard index levels for inhalation and non-inhalation exposure levels total .0003, which is less than 1, the level typically requiring emission controls by the California Air districts.

The predicted carcinogenic risk and hazard index estimates stated above are conservative because they are based on the maximum predicted 24-hour PM^{-10} concentration and on the maximum dioxin concentration in soil to be disturbed by the proposed project. In summary, dioxin concentrations observed in onsite soils would not result in carcinogenic or non-cancer risk in excess of current regulatory standards. As stated in **Section 3.0, Project Description** the onsite haul roads will be paved to reduce dust emission and potential airborne contaminants from being dispersed offsite.

The proposed mining project is required to provide a fugitive dust control plan for both short-term construction and long-term mining operations. (See **Section 4.4, Air Quality**) As there was no mill effluent material spread on Phases 1 and 2 the potential for airborne dioxins is not a significant public or environmental health concern during the first 10 to 20 years of the project. Upon compliance with all regulatory requirements and permits this impact is considered ***potentially significant, therefore subject to mitigation*****. [LS]**

Mitigation Measures:

See **MM 4.4.1(a)** and **MM 4.4.2(a)** in Section 4.4 Air Quality, **MM 4.5-3(a)** in Section 4.5 Biological Resources, **MM 4.8.2 (a-e)** in Section 4.8 Geology, Soils and Minerals, and **MM 4.9.3** in Section 4.9 Hydrology and Water Quality.

MM 4.12.3(a) Trenches constructed around the stockpiles containing Phase 3 soils/ overburden shall have a minimum setback distance of 30 feet from the trench toe of slope to the Phase 3 excavated slope to ensure the trenches remain undisturbed. This 30-foot setback area does not prohibit the use of a haul road.

Timing/ Implementation: *Prior to grading and excavation activities for Phase 3 operations.*

Enforcement/Monitoring: *Shasta County Resource Management Department, Environmental Health Division.*

MM 4.12.3(b) Bright colored fencing shall be placed in the setback area between the trenches and Phase 3 mining pit.

Timing/Implementation: *Prior to grading and excavation activities for Phase 3 operations.*

Enforcement/Monitoring: *Shasta County Resource Management Department, Environmental Health Division.*

Compliance with local and state regulations as well as implementation of **MM 4.4.1(a) and 4.4.2(a) in Section 4.4 Air Quality, MM 4.5-3(a), Section 4.5 Biological Resources, MM 4.8.2a-e, Section 4.8 Geology, Soils and Minerals, MM 4.9.3, Section 4.9 Hydrology and Water Quality and MM 4.12.3(a-b)** above would reduce the potential impacts of polychlorinated dibenzo-p-dioxin 2,3,7,8-TCDD and polychlorinated dibenzo-furan 2,3,7,8-TCDF contamination to a ***less than significant impact.*** **[LS]**

Impact 4.12.4 The project may increase the potential for mosquitoes and the West Nile virus to adversely impact public residents in the area. This impact is considered ***potentially significant, therefore subject to mitigation*****. [PSM]**

The Shasta Mosquito and Vector Control District applies best management practices that focus on the suppression of mosquito populations by monitoring biological threshold levels for disease transmission and/or nuisance tolerance levels. As the project will create ponds the objective is to manage mosquito populations by incorporating appropriate design features (e.g., eliminating small coves or shallow pooling along shorelines, slope banks at a ratio that would not sustain the growth of emergent vegetation) and maintenance procedures (e.g., a maintenance program for weed and erosion control along inner slopes) that minimize habitat for mosquito breeding (Department of Health Services 1983).

In evaluating the location of the project site, adjacent to the Sacramento River and the Anderson Creek drainage, the area already has an existing mosquito population. The proposed reclamation ponds and settling basins would create areas of suitable habitat for mosquitoes but the would be more likely to occur in the settling basins and along floor area of the excavated pits where there is a large surface area to volume ratio for sustainable breeding. Therefore, ponding of water within the basins during construction activities could create significant mosquito habitat resulting in a **potentially significant impact that is subject to mitigation**.

<u>Mitigation Measure:</u>

MM 4.12.4 The applicant shall consult with the Shasta Mosquito and Vector Control District in designing and developing the settling basins. Any recommendations made by the Control District shall be incorporated into the basin designs. At minimum, the shorelines of the banks shall be graded out to the maximum extent practical to minimize potential breeding grounds. Banks and slopes shall be constructed to inhibit the growth of emergent vegetation while maintaining slope stability. The Control District design guidelines and mosquito prevention measures shall also be incorporated into the project's continual maintenance program.

Timing/Implementation: Prior to granting of occupancy permit.

Enforcement/Monitoring: Shasta County Department of Mosquito and Vector Control District.

With the implementation of mitigation measure **MM 4.12.4**, this impact is reduced to ***less than significant***. **[LS]**

Impact 4.12.5 The project would be located in an "Unclassified" wildland fire hazard area. This impact is considered ***potentially significant, therefore subject to mitigation*. [PSM]**

As described in the Project Setting, the project would be located in an "unclassified" fire hazard area, as identified in the Shasta County General Plan. The main influences and fire hazards include power lines, fuels and hazardous materials used during maintenance of stationary and mobile equipment. The stationary structures and mobile equipment would be located in open space areas surrounded by riparian vegetation, clusters of oak woodlands, and existing waterways. As we understand wildland fire hazards are dependent upon several factors including fuel types, fuel moisture, fuel size, weather and topography. As the adjacent fire hazard area is designated "high fire danger" the potential hazards could exist within the unclassified area which concludes the impacts remain **potentially significant and subject to mitigation. [PSM]**

Mitigation Measure:

MM 4.12.5 The project applicant shall comply with the standard requirements and recommendations of the Shasta County Fire Department, as described in the letter from the County Fire Warden, dated April 25, 2005 (See **Appendix 3.0-2**) These standards and requirements shall be incorporated into the condition of approval for the use permit, and include the following:

- The access road shall be in accordance with Section 6.12 of the Fire Safety Standards.

- Bridges and culverts shall be designed and constructed in accordance with the Fire Safety Standards and shall be capable of supporting 40,000-pound vehicle load.

- The applicant shall properly dispose of any vegetation cleared for this project. Disposal shall be in accordance with Air Quality management Regulation and Site or local Fire Department Burning Permit Regulations.

- Storage, use, and dispensing of flammable/combustible liquids shall be in accordance with the adopted edition of the California Fire Code. Plans shall be submitted for review and approval prior to construction, storage, or use.

- Any welding and storage of cylinders shall be in accordance with the adopted edition of the California Fire Code.

- Accumulations of waste paper, weeds, combustible waste material, waste petroleum products, tires, or rubbish of any type shall be prohibited.

- Rags, cloth, or paper towels saturated with oil, solvent, or petroleum products shall be kept in a metal can with a tight fitting cover.

- In accordance with Public Resources Code 4291 (a) the applicant shall provide "Defensible Space" by removing all flammable vegetation from around all buildings for a minimum of 100 feet or to the property line, whichever is closer.

- All mobile and stationary equipment with non-turbocharged internal combustion engines shall be equipped with a property functioning, approved spark arrestor.

- Each vehicle shall be equipped with a portable fire extinguisher.

Timing/Implementation: Prior to approval of the conditional use permit.

Enforcement/Monitoring: Shasta County Fire Department, Department of Resource Management

Implementation of Mitigation Measure **MM 4.12.5** would reduce the impact to ***less than significant.*** **[LS]**

Cumulative Impacts and Mitigation Measures

Impact 4.12.6 Hazardous material usage in the vicinity would mainly be limited to the project site. This impact is considered ***less than significant impact.*** **[LS]**

Most of the land surrounding the project site is agricultural farmland, open space and rural residential. General agricultural practices related to crop production include the application of pesticides and herbicides for sustainable crop yields. The proposed project would not generate any more additional hazardous materials than the existing site conditions. It is not expected that there will be more development in the area that would use a significant amount of hazardous materials. Conformance with standard regulatory requirements along with recommended mitigation would reduce project related impacts to less than significant. Therefore, cumulative impacts are ***less than significant***. **[LS]**

Impact 4.12-7 The project may result in adverse cumulative impacts to both public health and safety from the hazardous materials and/or hazardous waste management activities onsite. This impact would be ***less than significant.*** **[LS]**

The cumulative hazardous materials and hazardous waste generated on the project site will be required to adhere to all local, state, and federal laws and regulations. Compliance with these requirements would avoid any adverse cumulative impacts related to the potential hazardous materials or hazardous wastes associated with the mining and reclamation activities. This impact would be ***less than significant.*** **[LS]**

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Endnotes

[1] Dioxin/furans are a mixture of 210 structurally related individual polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) The most toxic congeners have chlorine atoms in the 2,3,7,8 positions. The toxicity of as dioxin/furan mixture is represented by the sum of the toxicity of these congeners relative to the most toxic congener, 2,3,7,8-tetrachorodibenzo-p-dioxin (2,3,7,8-TCDD).

[2] Congener refers to one of many variants or configurations of a common chemical structure. For example, polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) occur in 210 different forms, or congeners.

ACRONYMS

Acronyms/Abbreviations	Definition
ACOE	Army Corps of Engineers
AOX	Adsorbable organic halides
AQMD	Air Quality Management District
ARA	Aggregate Resource Area
ARB	California Air Resources Board
ATSDR	Agency for Toxic Substances and Disease Registry
BAMM	Best Available Mitigation Measures
Cal ARP	California Accident Release Prevention
CALTRANS	California Department of Transportation
CARB	California Air Resources Board
CDC	Centers for Disease Control
CDF	California Department of Forestry and Protection
CDMG	California Department of Mines and Geology
CEQA	California Environmental Quality Act
CDWG	Chlorinated Dioxins Work Group
CVRWQB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
DTSC	Department of Toxic Substances Control
EHD	Environmental Health Department
EIR	Environmental impact report
EMEG	Environmental Media Evaluation Guide

EPA	Environmental Protection Agency
FDCP	Fugitive dust control plan
g/m3	Micrograms per cubic meter
GMRP	Groundwater Monitoring Reporting Program
HAP	Hazardous air pollutants
I-5	Interstate 5
IWMP	Integrated Waste Management Plan
kV	Kilovolt
LOP	Limited operating period
LS	Less than significant
M	Magnitude
MCL	Maximum contaminant level
MDD	Maximum daily demand
MEI	Maximally exposed individual
mg/m^3	Milligrams per cubic meter
µgm/m3	micrograms/cubic meter
mgd	Million gallons per day
MLCS	Mineral Land Classification Study
MMP	Mitigation Monitoring Program
MRP	Monitoring and Reporting Program
MSL	Mean sea level
NAAQS	National ambient air quality standards
NESHAP	National emissions standards for hazardous air pollutants
NPDES	National Pollutant Discharge Elimination System
NSVAB	Northern Sacramento Valley Air Basin
OEHHA	California Office of Environmental and Health Hazard Assessment
PCC	Portland cement concrete grade alluvial sand and gravel
PCDD	Polychlorinated dibenzo-p-dioxins
PCDF	Polychlorinated dibenzofurans
PPM	Parts per million
PRG	Preliminary remediation goals

PSM	Potentially significant subject to mitigation.
REHS	Registered Environmental Health Specialist
ROG	Reactive organic gases
RWQCB	Regional Water Quality Control Board
SCFD	Shasta County Fire Department
SCPD	Shasta County Planning Division
SMARA	California Surface Mining and Reclamation Act
SMM	Standard mitigation measures
SPCC	Spill Prevention, Control and Counter measure
SU	Significant and unavoidable
SWPPP	Storm Water Pollution Prevention Water Plan
TAC	Toxic air contaminants
TEF	Toxic equivalency factor
TEQ	Toxic equivalents
UBC	Uniform Building Code
UFC	Uniform Fire Code
USACE	U.S. Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	U.S. Fish and Wildlife Services
USGS	U.S. Geographic Society
UST	Underground tank program
UTM	Universal Transverse Mercator
VMT	Vehicle miles traveled
VOC	Volatile organic compounds
Vpd	Vehicles per day
WDR	Waste discharge requirements
WWTP	Wastewater treatment plant

5.1 INTRODUCTION

GENERAL CEQA REQUIREMENTS

The purpose of the alternative analysis in an Environmental Impact Report (EIR) is to describe a range of reasonable alternatives to the project that could feasibly attain most of the basic objectives of the project, and to evaluate the comparative merits of the alternatives [CEQA Guidelines, Section 15126.6(a)]

Additionally, Section 15126.6 (a,b) of the CEQA Guidelines requires consideration of alternatives that could reduce or eliminate any significant adverse environmental effects of the proposed project, including alternatives that may be more costly or could otherwise impede the project's objectives. The range of alternatives considered must include those that offer substantial environmental advantages over the proposed project and may be feasibly accomplished in a successful manner considering economic, environmental, social, technological and legal factors. The purposes of this process are to provide decision makers and the public with a discussion of viable development options, and to document that other options were considered within the application process.

5.2 PROJECT ALTERNATIVES

For purposes of this analysis, the impacts identified in the EIR requiring mitigation are used to help formulate alternatives to the proposed project. If no mitigation was required for a given impact, then that factor was not used in determining an alternative. Those impacts resulting in a significant and unavoidable finding were given the highest priority when formulating alternatives to the project.

Alternatives to the proposed project were evaluated as:

a) Alternative 1- No Project- leaves the site in its current use.

b) Alternative 2- Alternative Sites- including other potential sites for a similar quarry; and

c) Alternative 3- Restricted Hours of Operation- Operational alternatives designed to reduce or eliminate impacts identified in the EIR.

Discussion of these alternatives focuses on substantial changes in project impacts anticipated with each alternative as they are compared to the project. Environmental impacts associated with each of these alternatives are compared with impacts resulting from the project. At the conclusion of this section, an "environmentally superior" alternative is identified.

5.3 ALTERNATIVE 1- NO PROJECT

PRINCIPAL CHARACTERISTICS

The property is currently zoned Agriculture-Cropland (A-C) and Agriculture-Cropland combined with the Interim Mineral Resource designation (A-C/ IMR) by Shasta County but has been used for agricultural purposes for more than 30 plus years. Under the no project alternative, the property would continue to be farmed. It is likely given the pressure for residential development and the views this property has of the Sacramento River, that the site might eventually be developed with a residential subdivision. The current zoning does not allow for this potential and a zone change and subsequent environmental analysis would be needed to create a residential subdivision. It is also possible that under the no project alternative another different quarry project could be proposed and considered by the county consistent with the existing zoning. Since the current zoning allows for agriculture and for the proposed quarry, the no action alternative would result in the property not having an approved quarry and reclamation plan. This would result in fewer air quality and transportation impacts. Overall, the no project alternative would result in no change to the project area from its current condition and result in environmental impacts considered ***less than the proposed project***.

COMPARATIVE IMPACTS

Land Use. The No Project alternative would have no negative impacts nor alter the existing land use in the vicinity. However the land use designation could be subject to change to accommodate future growth demands within Shasta County.

Traffic and Circulation. The No Project alternative would have no negative impacts on the traffic and circulation in the vicinity. Without the proposed project Balls Ferry Road would not be improved to meet County design standards. Also, the acceleration and deceleration lanes at the project entrance would not be constructed. These improvements would benefit both existing traffic and project-related traffic. However, however the loss of the lane improvements may be compensated for by not generating an increase in truck traffic associated with the project.

Air Quality. The No Project alternative would result in no change to air quality from current conditions. The county is designated as a non-attainment area for the state standards for PM10. The proposed project site will continue to generate PM10 through existing agricultural practices.

Biological Resources. The No Project alternative would result in no change to existing impacts on biological resources in the vicinity. The project site would continue in agricultural use.

Cultural Resources. The No Project alternative would result in no change to any unknown cultural resources in the vicinity. The project site would continue in agricultural use.

Noise. The No Project alternative would result in no change to existing noise levels in the vicinity. The continued agricultural use does generate noise, however this is an existing condition.

Geology and Soils. Since there would be no equipment or new structures constructed on site under the No Project alternative, there would be less risk of structures and employees subject to potential seismic and other geologic hazards.

Hydrology and Water Quality. The No Project alternative would result in no change to the existing water usage and water quality in the vicinity. The potential flood hazards associated with the existing onsite conditions would remain unchanged.

Aesthetics. The *No Project alternative would not alter any existing visual resources, nor would it construct any structures or place equipment onsite that could be considered visually unappealing.*

Public Services. The No Project alternative would result in no change to public services in the vicinity.

Hazards and Hazardous Materials. The no project alternative would result in no change to the use of *hazardous or potentially hazardous materials. The continued agricultural use may use hazardous or potentially hazardous materials, however this is an existing condition. The fire hazard would be slightly greater than with the proposed project as there is a potential for wild land fire associated with agricultural crops that is not present with a quarry.*

The current zoning allows for agricultural, residential and mining uses. Under the No Project Alternative, the site will continue to be designated as an Aggregate Resource Area (ARA) by the Division of Mines and Geology and in the Shasta County General Plan. This designations allows for future mining to occur as ARA's are lands that have compatible uses with non-urbanized or very low residential density and lands used for agriculture, grazing or open space. However, this potential occurrence is speculative, and potential impacts cannot be reasonably described without more specific information.

5.4 ALTERNATIVES CONSIDERED BUT REJECTED AS INFEASIBLE

OFF-SITE ALTERNATIVES

PMC worked with County Staff to identify locations along the Sacramento River that could yield similar aggregate product (alluvial sand and gravel) to that of the proposed project. The area between Shasta Dam and the county line has gradually built up over the past several years so that the Sacramento River is nearly lined with residential homes. The area upstream of the proposed project site all the way to the Shasta Dam is densely populated with very little accessibility. Downstream of the project site is the end of the Shasta County line and limited access. Regardless, there are few opportunities to establish a quarry along the Sacramento riverbank.

Alternative sites were evaluated as potential locations for mineral extraction, crushing, washing, and screening operations using the Aggregate Resource Areas (ARA) map identified in the Shasta County Mineral Classifications Study of 1997. There are few locations within Shasta County that contain alluvial sand and gravel (PCC-Grade Aggregate) and there were no locations found to have the same compatible land use designation or meet the project objectives as the proposed project site. Further, the impacts associated with the proposed project including air quality, traffic and noise, would be similar regardless of the site. Sites more distant from major travelways might have less of an impact on surrounding residential uses, but would increase impacts associated with traffic and air quality. Since there were no other sites identified as having the same material and meeting the project objectives, an off-site alternative was not considered.

RESTRICTED HOURS OF OPERATION

Because of the noise impacts associated with the proposed project, the EIR team considered restricting hours of operation. Mitigation measure 4.3.2(a) effectively requires that the facility restrict offsite haul truck trips between the hours of 7a.m. and 9a.m. during school days to avoid conflict with school buses. Further restricting hours was considered to determine if the noise impact would be substantially reduced. This was considered as an alternative because the CNEL noise measurement factors for increased noise sensitivity change depending on the hour of measurement. Based on the analysis, the resulting reduction in noise was negligible. Further, a reduction in hours of operation might result in greater traffic impacts associated with truck traffic as the same amount of material would need to be moved during fewer operating hours. Other than as mitigated in Section 4.7 Noise, further reduction in operating hours was not considered further.

USE OF CONVEYOR BELTS TO TRANSPORT MATERIAL ON SITE

Initially, the EIR team believed that use of conveyors to transport material from the excavator to the processing site would reduce air quality impacts associated with the trucks currently intended for this duty. Review of the distances involved, and the type of material, suggests that this alternative would be infeasible. To be effective, the material must be in a small area for placement onto one end of the conveyor. The excavator in each of the phases will move constantly during the day. This would require the use of a loader or truck to move the material from the excavator to the conveyor belt. Noise associated with the conveyor belts would be similar to those of the haul trucks. This alternative was rejected as infeasible.

5.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

As required by CEQA, the environmentally superior alternative is identified. The No Project alternative is determined to have the fewest impacts on the physical environment. While the No Project alternative would not generate additional

environmental impacts, this alternative does not meet any of the objectives of the proposed project. Under CEQA Guidelines Section 15126.6 (e)(2), if the environmentally superior alternative is the no-project alternative, then another environmentally superior alternative must be identified. As mitigated in this EIR, the proposed project is the environmentally superior alternative.

6.1 CUMULATIVE IMPACTS

As stated in CEQA Guidelines Section 15130(a), an environmental impact report must discuss cumulative impacts when the incremental effect of a project is cumulatively considerable. CEQA Guidelines Section 15355 defines cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (CEQA Guidelines Section 15065[c]). Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (CEQA Guidelines Section 15355[b]).

Section 15130(b) of the CEQA Guidelines identifies the following three elements as necessary for an adequate cumulative impact analysis:

1. Either:

    a) A list of past, present and probable future projects producing related or cumulative impacts, including if necessary those projects outside the control of the agency (list approach); or

    b) A summary of projections contained in an adopted General Plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area-wide conditions contributing to the cumulative impact (plan approach).

2. A summary of expected environmental effects to be produced by those projects, with specific reference to additional information stating where that information is available.

3. A reasonable analysis of the cumulative impacts of the relevant projects. An EIR shall examine reasonable and feasible options for mitigating or avoiding the contribution of a proposed project to any significant cumulative effects.

The CEQA Guidelines require the use of only one method of cumulative analysis - the list approach or the plan approach. For this EIR, the list approach was utilized.

IMPACTS ANALYSIS

Land Use

Impact 4.2.6 Implementation of the proposed project would result in changes to the existing agricultural and open space patterns. In relation to the existing

Shasta County General Plan land uses the cumulative impacts are considered **less than significant. [LS]**

Although some of the mineral extraction areas are located in areas recognized as Prime Agriculture the proposed project is consistent with the General Plan Land Use designation under approval of a Conditional Use permit and Reclamation Plan. While the implementation of the project would result in the removal of 268 acres of open space and agricultural farmland, the reclamation plan would ensure the property is restored to its pre-existing uses. The reclamation plan includes agricultural uses and restoration of disturbed areas throughout the project site. Cumulatively the site would result in the total site preservation of 947 acres of combined open space and agriculture.

As identified in the NRCS Mapping and Monitoring Program (MMP), Phase 1 of the proposed project area is not considered Prime Agricultural land. Yet, Phase 1 will be reclaimed to agricultural farmland upon site reclamation activities. The soils that will be used to reclaim this area will come from Phase 2 and 3, of which both are listed as Prime Agriculture. Although the proposed reclamation plan shows Phase 2 and 3 areas being reclaimed as ponds, these soils will be relocated to Phase 1 and incorporated into the remaining onsite reclamation activities. In essence compensating a portion of the net loss of Prime Agricultural land from Phase 2 and 3 will be attained in Phase 1.

In order to further preserve natural resources, the General Plan, Conditional Use Permit and Reclamation Plan would establish specific project development standards, slope development standards, and oak tree preservation standards for all development within the project area. Although the natural setting of the area would be altered as a result of the proposed project the cumulative impacts to existing land uses are considered **less than significant. [LS]**

Traffic and Circulation

Impact 4.3.5 The project may cause a cumulative increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system or the project may exceed a level of service standard established by the county (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, congestion at intersections or the level of service). This impact is considered ***less than significant.*** **[LS].**

As shown in **Table 4.3-13**, all study roadway sections will operate at acceptable levels of service under both cumulative and cumulative plus project conditions.

Intersections

Impact 4.3.6 The project may cumulatively cause an intersection that operates acceptably (LOS A, B, or C) to degrade to an unacceptable LOS (D, E,

or F) due to the additional traffic from the project. Or if an intersection is already predicted to operate at an unacceptable LOS under cumulative conditions without the project, the project may cause an increase of 5 or more seconds of control delay due to the addition of project traffic. This impact is considered ***less than significant*** **[LS].**

All ten study intersections within the project study area are expected to operate at unacceptable levels of service under both the Cumulative No Project and the Cumulative Plus Project scenarios. (See **Table 4.3-14**) As nine of the ten study intersections function acceptably under the baseline plus project conditions, it is the background growth of the area, and not the project-related traffic that results in the unacceptable levels of service at the study intersections.

Table 4.3-14 illustrates changes in delay at each intersection except that if the delay is already over 120 seconds the methodology cannot accurately depict the delay directly attributable to the project. As noted in **Table 4.3-11**, with the exception of the Bowman Road/Interstate 5 intersection the amount of delay attributable to the project is well below the 5-second threshold for significance. The project's impact on the Bowman Road/Interstate 5 intersection is discussed in Impact 4.3.2 and mitigation measures 4.3.2a and 4.3.2b address potential cumulative impacts associated with the proposed project.

The Shasta County Regional Transportation Agency (RTPA) is the responsible agency for transportation planning for the Shasta County region, including the three cities and the unincorporated area. The RTPA is studying the existing and proposed roadway network as part of a transportation impact mitigation fee analysis, the improvements included in the draft report do not include the study intersections. There is no county, city or other agency fee in place that has identified these improvements and established a fee for all of these intersections. As noted in **Tables 4.3-10 and 4.3-13**, the impact of this project on nearly all of the intersections is less than significant. The City of Anderson has requested that the project pay its pro-rata share of improvements at Riverside and Interstate 5, however the project-related traffic is negligible at this intersection. From a cumulative impact perspective, while the project will contribute to the further reduction in service at intersections already predicted to operate at an unacceptable level of service, the amount of delay attributable directly to project related traffic at the study intersections is less than significant. Therefore, this impact is considered ***less than significant***.

Interchanges

Impact 4.3.7 The project traffic may cause a freeway ramp that is operating at an acceptable level (LOS A, B, or C) to deteriorate to an unacceptable level (LOS D, E, or F) under cumulative plus project conditions. Or project traffic may increase traffic at a freeway ramp predicted to operate at an unacceptable level of service during cumulative plus project conditions, by adding 10 or more passenger car equivalents

(PCE's). This impact is considered ***potentially significant, therefore subject to mitigation*. [PSM]**

Implementation of the proposed project will result in the addition of 10 PCE's (or approximately three heavy vehicles) to the southbound off-ramp of the I-5/Deschutes Road interchange, which is currently operating at an unacceptable LOS D during the AM Peak Hour under Baseline Plus Project conditions and is predicted to operate at an unacceptable "LOS D" during the AM Peak Hour under Cumulative conditions. This impact is discussed under **Impact 4.3.3**, with a mitigation measure **MM 4.3.1** that requires participation in the zone of benefit for the Deschutes Road/Interstate 5 roundabouts contemplated by the City of Anderson. Upon completion, the roundabouts are designed to ensure an adequate level of service under cumulative plus project conditions. Once the City of Anderson completes improvements at this intersection, this impact will be ***less than significant*. [LS]**

Air Quality

Impact 4.4-11 The proposed project could contribute, on a cumulative basis, to increased emissions of ozone precursors and particulate matter, thereby exacerbating the existing exceedance of state ambient air quality standards for ozone and respirable particulate matter. This impact is considered ***significant and unavoidable*. [SU]**

The proposed project would cause increases in regional criteria pollutants and precursors (ROG, NO_x, and PM_{10}) during construction and operation of the project (Impacts 4.4-1 and 4.4-2). Short-term emissions would result from construction activities, construction employee trips to and from the site, and operation of heavy machinery during grading. Long-term increases in emissions would be primarily attributable to the operation of onsite off-road equipment. Mitigation has been incorporated to address these impacts; however, they would remain significant and unavoidable. These are regional impacts, and could combine with impacts of projects within the region to produce a significant and unavoidable cumulative impact.

One alternative considered to offset emission impacts was to purchase emission credits through an emission credit program approved by the Shasta County Air District. These credits are limited as they are not owned by the County but privately owned and contingent upon various factors including the number of credits available and costs per emission credit. Without knowing how many emission credits are available it is not known if there are enough credits for sale to meet the air quality emission thresholds. In addition costs vary upon the type of emission credit purchased. Since the number of credits are unknown and owned privately, participation in the program might not reduce impacts, therefore this impact would remain significant and unavoidable.

The proposed project, in conjunction with other cumulative projects, would contribute to and exacerbate current non-attainment of state ambient air quality standards within the NSVAB. Project-generated emissions, together with emissions from existing and

reasonably foreseeable future development, would cumulatively contribute to existing and projected exceedances of state ambient air quality standards for ozone (O_3) and particulate matter (PM_{10}) within Shasta County. This cumulative impact is considered ***significant and unavoidable***. **[SU]**

Impact 4.4-12 The proposed project and cumulative projects could combine to increase emission levels of mobile and fugitive source particulate matter at nearby sensitive receptors that would exceed applicable standards. This impact is considered ***significant and unavoidable*. [SU]**

Localized emissions of crystalline silica would be considered less than significant, with mitigation incorporated (Impact 4.4-9). In addition, potential exposure to airborne asbestos fibers (Impact 4.4-8) and odors from onsite equipment exhaust (Impact 4.4-10) would not be anticipated to result in significant impact to nearby receptors. Because these less than significant impacts are localized impacts and because there are no other related projects in the immediate project area that would contribute to these localized concentrations, on a cumulative basis, the projects cumulative contribution to localized concentrations of these pollutants would be considered ***less than significant***.

As discussed in Impact 4.4-3, predicted mobile-source CO concentrations at primarily affected intersections, under future cumulative conditions, would not exceed applicable ambient air quality standards. In addition, Shasta County is currently designated attainment of federal and state ambient air quality standards for CO. As a result, the project's cumulative contribution to localized concentrations of CO would be considered ***less than significant***.

Predicted localized PM_{10} concentrations from fugitive emission sources could exceed the state ambient air quality standards at some nearby residences (Impact 4.4-4), resulting in increased health risks to occupants of these dwellings. In addition, the accumulation of dust on the leaves of nearby agricultural plants and orchards could result in decreased crop yields and decreased rates of plant photosynthesis (Impact 4.4-5). Mitigation incorporated into the project would reduce the severity of these impacts, but the project's contribution, on a cumulative basis, would remain significant. The project's cumulative contribution to localized concentrations of PM_{10} would be considered ***significant and unavoidable***.

According to air dispersion modeling conducted for the proposed project, airborne concentrations of diesel exhaust particulate matter generated by onsite activities (Impact 4.4-6) and by offsite haul trucks (Impact 4.4-7) would result in increased cancer risk to nearby sensitive receptors at levels that would exceed applicable standards. Project-generated emissions could combine with emissions from other nearby stationary and area sources, such as truck traffic on I-5, to produce a cumulative impact that is ***significant and unavoidable***. **[SU]**

Biological

No cumulative impacts are identified.

Cultural Resources

No cumulative impacts are identified.

Noise

Impact 4.7.7 The proposed project would result in a noticeable increase in traffic noise levels that could potentially exceed the County's noise standard of 60 dBA CNEL/Ldn at some receptors located along area haul routes. The project's contribution to future cumulative traffic noise levels would be considered ***significant and unavoidable*. [SU]**

As discussed above, ambient noise levels in the project vicinity are primarily affected by vehicle traffic on area roadways. Predicted future cumulative traffic noise levels, with and without implementation of the proposed project, were calculated using the FHWA roadway noise prediction model, based on predicted traffic volumes obtained from the traffic analysis. The project's contribution to future cumulative noise levels was evaluated by comparing predicted traffic noise levels with and without implementation of the proposed project. Predicted "cumulative" and "cumulative-plus-project" traffic noise levels along primarily affected roadways are summarized in **Table 4.7-10**.

As indicated in **Table 4.7-10**, implementation of the proposed project would result in increased traffic noise levels ranging from approximately 2 to 3 dBA along portions of Balls Ferry Road. Noticeable increase (i.e., 3 dBA, or greater) in future cumulative traffic noise levels were predicted to occur along Balls Ferry Road, between Panorama Point to Fourth Street. Predicted increases in traffic noise levels along Balls Ferry Road, between Panorama Point and Fourth Street, would also result in traffic noise levels that could potentially exceed the County's noise standard of 60 dBA CNEL/L_{dn} at receptors located within approximately 67 feet of the roadway centerline. Noise-sensitive receptors located along this roadway segment consist primarily of residential dwellings, the nearest of which are located within approximately 60 feet of the roadway centerline. Because implementation of the proposed project is not anticipated to result in increased traffic volumes along Kimberly Road or Balls Ferry Road, between Deschutes and Shelly Lane, receptors located along these roadway segments are not anticipated to experience noticeable increases in future cumulative traffic noise levels.

Because the proposed project would result in a noticeable increase in traffic noise levels that could potentially exceed the County's noise standard of 60 dBA CNEL/L_{dn} at receptors located along area haul routes, the project's contribution to future cumulative traffic noise levels would be considered ***potentially significant subject to mitigation*. [PSM]**

TABLE 4.7-10

PREDICTED TRAFFIC NOISE LEVELS

FUTURE CUMULATIVE AND CUMULATIVE-PLUS-PROJECT CONDITIONS

Roadway Segment	CNEL/L_{dn} 50 Feet From Near Travel Lane Centerline (dBA)		
	Cumulative	Cumulative-Plus-Project	Net Difference
Balls Ferry Road, Deschutes Rd to Kimberly Rd	60.88	63.17	+2.3
Balls Ferry Road, Kimberly Rd to Panorama Point	58.37	61.18	+2.8
Balls Ferry Road, Panorama Point to Fourth St	57.78	61.20	+3.4
Balls Ferry Road, Deschutes Rd to Shelly Lane	65.70	65.70	No Change
Deschutes Road, SR-273 to Locust Rd	70.57	70.76	+0.2
Kimberly Road, Balls Ferry Rd to Locust Rd	56.23	56.23	No Change
SR-273, South to Deschutes Rd	70.62	70.81	+0.2

Note: Predicted traffic noise levels are based on data obtained from the traffic analysis prepared for this project and do not take into account shielding due to intervening terrain or structures.

Source: AMBIENT Air Quality & Noise Consulting 2006

Mitigation Measures

Apply mitigation measures MM 4.7-6 and MM 4.7-2(b)

Implementation of MM 4.7-2(b) would limit operational hours for the proposed project to between the less noise-sensitive daytime hours of 7 a.m. to 7 p.m. However, noticeable increases in traffic noise levels along adversely affected roadway segments would still be anticipated to occur. No additional feasible mitigation measures have been identified that would reduce this impact to less-than-significant levels. Additional mitigation measures considered for implementation included construction of sound walls and sound proofing of homes located along the adversely affected haul routes. However, because construction of sound walls along these roadway segments would interfere with access to adjacent parcels, this measure was considered infeasible. Soundproofing of residential dwellings located along adversely affected roadways would help to reduce interior noise levels, but would not be effective in reducing exterior noise levels at outdoor activity areas to within acceptable levels. Interior noise levels along the travel route are not expected to be significant as a result of the proposed project. The incremental increase in exterior noise levels as a result of the proposed project is considered ***significant and unavoidable*. [SU]**

Geology, Soils, and Minerals

No cumulative impacts are identified.

Hydrology and Water Quality

Elements of this project have the potential for adversely impacting hydrology and water quality. However, proper implementation of mitigation measures MM 4.6.2, MM 4.6.3, and MM 4.6.6 will effectively provide mitigation against their individual and cumulative impacts. As such, the cumulative impacts of this project on hydrology and water quality are considered to be ***less than significant.***

Aesthetics

Impact 4.10-4 The project could have adverse cumulative effects on aesthetics and visual resources in the area. This impact is considered ***less than significant*. [LS]**

Mitigation measures 4.10.2 and 4.10.3 would reduce the negative effects on views in the area. If vegetative screening is used, the project would reduce the potential to visually impact those views the Sacramento River and adjacent residential areas, giving the view sheds a more natural appearance. Most of the surrounding area is agricultural and rural residential land uses. Thus, development in the vicinity of the project site would be limited, and impacts on the local view shed would be minimal. Cumulative impacts to aesthetics are considered ***less than significant***. **[LS]**

Public Services

No cumulative impacts are identified.

Hazards and Hazardous Materials

Impact 4.12.6 Hazardous material usage in the vicinity would mainly be limited to the project site. This impact is considered ***less than significant impact*. [LS]**

Most of the land surrounding the project site is agricultural farmland, open space and rural residential. General agricultural practices related to crop production include the application of pesticides and herbicides for sustainable crop yields. The proposed project would not generate any more additional hazardous materials than the existing site conditions. It is not expected that there will be more development in the area that would use a significant amount of hazardous materials. Conformance with standard regulatory requirements along with recommended mitigation would reduce project related impacts to less than significant. Therefore, cumulative impacts are ***less than significant***. **[LS]**

Impact 4.12-7 The project may result in adverse cumulative impacts to both public health and safety from the hazardous materials and/or hazardous waste management activities onsite. This impact would be ***less than significant.*** **[LS]**

The cumulative hazardous materials and hazardous waste generated on the project site will be required to adhere to all local, state, and federal laws and regulations. Compliance with these requirements would avoid any adverse cumulative impacts related to the potential hazardous materials or hazardous wastes associated with the mining and reclamation activities. This impact would be ***less than significant*****. [LS]**

6.2 GROWTH-INDUCING IMPACTS

Public Resources Code Section 21100(a)(5) requires that the growth-inducing impacts of a project be addressed in the environmental impact report. A project may be growth-inducing if it directly or indirectly fosters economic or population growth or the construction of additional housing, removes obstacles to growth, taxes community service facilities, or encourages or facilitates other activities that cause significant environmental effects. It must not be assumed that growth in any area is necessarily beneficial, detrimental or of little significance to the environment (CEQA Guidelines Section 15126.2[d]). A recommended approach to evaluating growth-inducing impacts involves the following steps:

1) Estimate amount, location and time frame of growth to occur as a result of the project.

2) Apply impact assessment methodology (either quantitatively or qualitatively).

The project proposes the establishment of industrial activities. Industrial activities are typically associated with economic growth, and the perception to stimulate population growth within an area. However, the project does not require a large number of employees that would generally be required for other industrial operations such as a lumber mill or paper mill. The small number of employees would likely be from the resident population in the area and not require employees from outside of the area as the project applicant already has similar projects within the local vicinity. Thus, the project would have minimal growth-inducing impacts on the area.

As an aggregate quarry, the product will be used to facilitate other development within Shasta County and the region as a whole. The material from the quarry will be used for asphalt mix used to pave streets and highways, and for driveways and other construction projects. The quarry itself is dependant upon the alluvial material that exists at this site. Due to surrounding residential development, is very unlikely that this project will encourage the establishment of additional quarries in the vicinity. This impact is considered **less than significant. [LS]**

6.3 SIGNIFICANT AND UNAVOIDABLE ENVIRONMENTAL EFFECTS

Public Resources Code Section 21100(b)(2)(A) requires an environmental impact report to include a detailed statement setting forth any significant effects on the environment that cannot be avoided if a project is implemented. CEQA Guidelines Section 15126.2(b) states that such impacts include those that can be mitigated but not reduced to a less than significant level. Where there are impacts that cannot be alleviated without imposing an alternative design, their implications and the reasons why the project is being proposed, notwithstanding their effect, should be described. Significant and unavoidable impacts were identified in the environmental analysis of the project. These significant and unavoidable impacts relate to traffic and circulation, air quality and noise.

Land Use

Impact 4.2.1 The proposed project would result in a conversion of agricultural land to non-agricultural land uses, and would convert prime farmland, farmland of statewide importance, and unique farmland on the project site. This impact is considered a ***significant and unavoidable impact.*** **[SU]**

Traffic and Circulation

Impact 4.3.7 The project traffic may cause a freeway ramp that is operating at an acceptable level (LOS A, B, or C) to deteriorate to an unacceptable level (LOS D, E, or F) under cumulative plus project conditions. Or project traffic may increase traffic at a freeway ramp predicted to operate at an unacceptable level of service during cumulative plus project conditions, by adding 10 or more passenger car equivalents (PCE's). This impact is considered ***significant and unavoidable*****. [SU]**

Air Quality

Impact 4.4-4 Implementation of the proposed project could result in increased PM_{10} concentrations at nearby sensitive receptors that would exceed state or federal standards. This impact is considered ***significant and unavoidable.*** **[SU]**

Impact 4.4-6 Predicted airborne concentrations of diesel exhaust particulate matter would result in predicted cancer risks that would exceed applicable standards. This impact is considered ***significant and unavoidable.*** **[SU]**

Impact 4.4-7 Implementation of the proposed project would result in increased haul truck traffic along area roadways that could exceed applicable cancer-risk thresholds at nearby sensitive receptors. This impact is considered ***significant and unavoidable*** **[SU].**

Impact 4.4-11 The proposed project could contribute, on a cumulative basis, to increased emissions of ozone precursors and particulate matter, thereby exacerbating the existing exceedance of state ambient air quality standards for ozone and respirable particulate matter. This impact is considered ***significant and unavoidable*. [SU]**

Impact 4.4-12 The proposed project and cumulative projects could combine to increase emission levels of mobile and fugitive source particulate matter at nearby sensitive receptors that would exceed applicable standards. This impact is considered ***significant and unavoidable*. [SU]**

Noise

Impact 4.7.3 During temperature inversions and windy conditions, predicted onsite operational noise levels would result in noticeable increases in ambient noise levels at nearby receptors that will exceed County noise standards. As a result, this impact is ***significant and unavoidable*. [SU]**

Impact 4.7.4 The project will result in a noticeable increase in traffic noise levels that exceed the County's noise standard of 60dBA L_{dn}/CNEL at receptors located along proposed haul routes. As a result, this impact would be considered ***potentially significant, subject to mitigation*. [PSM].**

Impact 4.7.7 The proposed project would result in a noticeable increase in traffic noise levels that could potentially exceed the County's noise standard of 60 dBA CNEL/Ldn at some receptors located along area haul routes. The project's contribution to future cumulative traffic noise levels would be considered ***significant and unavoidable*. [SU]**

Most of the above impacts as a function of small cumulative increases in ambient conditions that are attributed to the project, and which cannot be mitigated to less than significant levels. Some of the significant and unavoidable impacts are a function of jurisdictional boundaries wherein the County cannot guarantee the improvements discussed in the impact section will be constructed as the County has no jurisdiction over the improvement. In these instances, even if the proposed project pays their fee, the County cannot be certain that the improvement will be constructed. Impacts at these intersections are minor, but measurable, resulting in a significant and unavoidable determination. The incremental increase in noise is a reflection of additional traffic along area roadways.

The only project alternative that would avoid the identified impacts is the no project alternative. Section 5.0, Project Alternatives of this EIR identifies the proposed project, as mitigated in this EIR, as the environmentally superior alternative.

6.4 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

Public Resources Code Section 21100(b)(2)(B) requires an environmental impact report to include a detailed statement setting forth any significant effects on the environment that would be irreversible if a project is implemented. Guidance on the discussion of significant irreversible environmental changes is available in CEQA Guidelines Section 15126.2(c).

This project will result in the significant an irreversible conversion of approximately 120 acres from prime agricultural land to pond and open space. This impact is discussed in Section 4.2 of this EIR. The reclamation plan for the project will return the remainder of the 85 acres site to agricultural uses, similar to those practiced today. Closure and reclamation of the quarry will eliminate all of the other impacts discussed in this EIR.

7.1 PREPARERS OF THE EIR

This Draft Environmental Impact Report (EIR) was prepared for Shasta County by Pacific Municipal Consultants. Staff members who contributed to the preparation of the Draft EIR are identified below:

- Mark Teague, Project Manager
- Merle Anderson, Senior Planner
- Dori Blackburn, Associate Planner
- Tuliyani Potts, Assistant Planner
- Richard Tinsman, Assistant Planner
- Michelle Carlson, Assistant Planner
- Cassie Hansen, Planning Technician

The following subconcultants involved in the preparation of the Draft EIR include the following:

Air Quality

- Kurt Legleiter, Meterologist, Ambient Air Quality & Noise Consulting.

Noise

- Kurt Legleiter, Noise Consultant, Ambient Air Quality & Noise Consulting.

Traffic and Circulation

- Jason Pack, Senior Transportation Engineer Fehr & Peers Transportation Consultants
- Brad Lane, Senior Planner, Fehr & Peers Transportation Consultants

Hydrology and Water Resources

- Jim Nelson, Principal Hydrologist, Stormwater Consulting Inc.
- William R. Bergmann, Principal Hydrogeologist, GEOPlus Inc.

Biology

- Wirt Lanning, Biologist, North State Resources
- Ginger Bolen, Wildlife Biologist, North State Resource

Cultural

- Peter Jensen, Archeologist, Jensen and Associates.

Hazards and Hazardous Materials

- Ann Holbrow, Senior Toxicologist, Geomatrix Inc.
- John Andrews, Vestra Resources Inc.

7.2 EIR INFORMATION CONSULTANTS

INDIVIDUALS CONSULTED

The following persons and organizations were consulted during the preparation of this EIR:

SHASTA COUNTY

- Bill Walker, Senior Planner, Shasta County Resource Management Department Planning Division
- Rick Barnum, Assistant Planning Director, Shasta County Resource Management Department Planning Division
- Al Cathy, Traffic Engineer, Shasta County Department of Public Works
- Dan Little, Traffic Engineer, Shasta County Department of Public Works
- Ross Bell, Director, Air Quality Management District
- James Smith, R.E.H.S. Manager, Shasta County Department of Resource Management, Environmental Health Division

Caltrans

- Marcelino Gonzales, District Manager
- Scott White, Traffic Engineer

City of Anderson

- John Stokes, Planning Director

City of Red Bluff

- Charlie Mullen, Planning Director

Regional Transportation Planning Agency

- Dan Little, Traffic Engineer

Sharrah, Dunlap, Sawyer

- Frank Sawyer, Civil Engineer

Pacific Gas and Electric (PG&E)

- Ken Bolser, Planning
- Tom Wess, Planning

Shasta County Sheriffs Department

- Ron Smith, Lieutenant, Shasta County Sheriff
- Becky Hayslett, Crimes Analyst

Shasta County Fire Department

- Jim Diehl, County Fire Marshall
- Doug Wenham, Battalion Chief

Cottonwood Fire Department

- Randy Armstrong, Fire Chief

Natural Resources Conservation Service

- Bo Hands, Range Management Specialist

Hydmet Engineering

- Jack Humphrey, Hydrologist

California Department of Fish and Game

Regional Water Quality Control Board

U.S. Army Corps of Engineers

Department of Conservation, Office of Mine Reclamation

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9.0 LIST OF ACRONYMS AND ABBREVIATIONS

The following acronyms and abbreviations have been used throughout the Shasta Ranch Mining and Reclamation Plan Environmental Impact Report. These have been defined at their first mention in each captions/sections.

TABLE 9.0-1

ACRONYMS AND ABBREVIATIONS CONTAINED WITHIN EIR

Acronyms/Abbreviations	Definition
AAM	Annual Arithmetic Mean
ACID	Anderson Cottonwood Irrigation District
ACOE	Army Corps of Engineers
ADT	Average daily traffic
AMD	Acid mine drainage
AOX	Adsorbable organic halides
APCD	Air Pollution Control District
APN	Assessor's Parcel Numbers
AQAP	Air Quality Attainment Plan
AQMD	Air Quality Management District
ARA	Aggregate Resource Area
ARB	California Air Resources Board
AWSC	All-Way Stop-Controlled intersection
BACT	Best Available Mitigation Measures
BAMM	Best Available Mitigation Measures
BVWD	Bella Vista Water District
CAA	California Clean Air Act
CAAQS	California ambient air quality standards
CalARP	California Accident Release Prevention
CCAA	California Clean Air Act

9.0 ACRONYMS

Acronyms/Abbreviations	Definition
CALTRANS	California Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CDFG	California Department of Fish and Game
CDMG	California Department of Mines and Geology
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CGS	California Geological surveys
CNDDB	California Natural Diversity Database
CNEL	Community noise equivalent level
CNPS	California Native Plant Society
CO	Carbon Monoxide
COR	City of Redding
Corps	Army Corps of Engineers
CRHR	California Register of Historic Resources
CRMP	Coordinated Resource Management and Planning Group
CVRWQB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
DB	Decibel
DbA	A-weighted decibel scale
DBE	Design Basis Earthquake
DEPM	Diesel exhaust particulate matter
DFG	California Department of Fish and Game
DEIR	Draft environmental impact report
DPF	Diesel particulate filters
DOC	Diesel oxidation catalyst

Acronyms/Abbreviations	Definition
DTSC	Department of Toxic Substances Control
DUE	Dwelling unit equivalent
EGR	Exhaust gas recirculation
EIR	Environmental impact report
EMEG	Environmental media evaluation guide
EPA	Environmental Protection Agency
ESA	Federal Endanger Species Act
FDCP	Fugitive dust control plan
FEIR	Final environmental impact report
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
GIS	Geographical Information System
GPS	Global Positioning System
HAP	Hazardous air pollutants
HCS	Hazard communication standard
I-5	Interstate 5
IMR	Interim Mineral Resources
ITE	Institute of Transportation Engineers
IWMP	Integrated Waste Management Plan
kV	Kilovolt
L_{dn}	Day-night average noise level
L_{eq}	Energy-equivalent noise level
LOP	Limited operating period
LS	Less than significant
M	Magnitude
MCL	Maximum contaminant level

Acronyms/Abbreviations	Definition
MDD	Maximum daily demand
MDBM	Mount Diablo Base Meridian
MEI	Maximally exposed individual
MLCS	Mineral Land Classification Study
mgd	Million gallons per day
g/m3	Micrograms per cubic meter
mg/m^3	Milligrams per cubic meter
MMP	Mitigation Monitoring Program
MRB	Mining Resource Buffer
MSHA	Mine Safety and Health Administration
MSL	Mean sea level
NAAQS	National ambient air quality standards
NAHC	Native American Heritage Commission
NESHAP	National emissions standards for hazardous air pollutants
NO_x	Oxides of Nitrogen
NOC	Notice of Completion
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
NSR	North State Resources
NSVAB	Northern Sacramento Valley Air Basin
OEHHA	California Office of Environmental and Health Hazard Assessment
PCC	Portland cement concrete grade alluvial sand and gravel
PCDD	Polychlorinated dibenzo-p-dioxins
PCDF	Polychlorinated dibenzofurans
PCN	Pre-construction Notification
PM_{10}	Particulate matter Ozone
$PM_{2.5}$	Particulate matter 2.5 micrometers
PPM	Parts per million

Acronyms/Abbreviations	Definition
PRG	Preliminary remediation goals
PSM	Potentially significant subject to mitigation.
REHS	Registered Environmental Health Specialist
ROG	Reactive organic gases
ROW	Row of width
RTP	Shasta County Regional Transportation Plan
RTPA	Shasta County Regional Transportation Planning Agency
RWQCB	Regional Water Quality Control Board
SCFD	Shasta County Fire Department
SCPD	Shasta County Planning Division
SCR	Selective catalytic reduction
SCWA	Shasta County Water Agency
SEL	Sound exposure level
SHPO	State Historic Preservation Office
SMARA	California Surface Mining and Reclamation Act
SMM	Standard mitigation measures
SSRNA	South Side Revitalization Area Transportation Improvement Study
SIP	State Implementation Plan
SPCC	Spill Prevention, Control and Countermeasure
SU	Significant and unavoidable
SWPPP	Storm Water Pollution Prevention Water Plan
TAC	Toxic air contaminants
TCAPCD	Tehama County Air Pollution Control District
TEQ	Toxic equivalents
TRAX	Tehama Rural Area Express
TSM	Transportation System Management
TWSC	Two-way Stop Controlled intersection
Typ	Tons per year

Acronyms/Abbreviations	Definition
UBC	Uniform Building Code
UPRR	Union Pacific Rail Road
USACE	U.S. Army Corps of Engineers
USFS	United States Forest Service
USFWS	U.S. Fish and Wildlife Services
USGS	U.S. Geographic Society
UST	Underground tank program
UTM	Universal Transverse Mercator
VOC	Volatile organic compounds
Vpd	Vehicles per day
VMT	Vehicle miles traveled
WDR	Waste discharge requirements
WWTP	Wastewater treatment plant

Shasta Ranch Mining and Reclamation Plan

Final Environmental Impact Report
Volume 1 of 2

SCH #2005102134

Prepared for
Shasta County
1855 Placer Street
Redding, CA 96001

Prepared by

PMC
PACIFIC MUNICIPAL CONSULTANTS

508 Chestnut Street
Suite A
Mt. Shasta, CA 96067

March 2007

Shasta Ranch Mining and Reclamation Plan

Final Environmental Impact Report
Volume 2 of 2

SCH #2005102134

Prepared for
Shasta County
1855 Placer Street
Redding, CA 96001

Prepared by

PMC
Pacific Municipal Consultants

508 Chestnut Street
Suite A
Mt. Shasta, CA 96067

March 2007

FINAL
ENVIRONMENTAL IMPACT REPORT

FOR THE

SHASTA RANCH MINING AND RECLAMATION PLAN
(USE PERMIT 05-010 AND RECLAMATION PLAN 05-001)
SCH. NO. 2005102134

Volume 1 of 2

Prepared for:

SHASTA COUNTY
1855 Placer Street
Redding CA 96001

Prepared by:

PMC
508 Chestnut Street, Suite A
Mt. Shasta, California
530.926-4059
Fax: 530.926-4279

March 2007

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Volume 2 of 2

Prepared for:

SHASTA COUNTY
1855 Placer Street
Redding CA 96001

Prepared by:

PMC
508 Chestnut Street, Suite A
Mt. Shasta, California
530.926-4059
Fax: 530.926-4279

March 2007

SECTIONS

CONTAINED WITHIN VOLUME 1 OF 2

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EXHIBITS TO SECTION 2.0: (INCLUDED ON ENCLOSED CD ONLY)

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2: Letter from Vestra Resources, Inc. to James S. Pompy, Office of Mine Reclamation, Department of Conservation. December 15, 2006.

3: Letter from Vestra Resources, Inc. to Bruce Webb, Department of Fish and Game. December 14, 2006.

4: Letter from Vestra Resources, Inc. to Dan Warner, California Regional Water Quality Control Board. December 5, 2006. Report of Waste Discharge (ROWD), Shasta Ranch Aggregate.

5: Department of Water Resources, Letter of Encroachment Permit Application No. 18078. August 2006.

6: Shasta County List of Surface Mining and Reclamation Operations provided by Shasta County Planning staff dated December 16, 2005.

1.0 INTRODUCTION

This Final Environmental Impact Report (FEIR) was prepared in accordance with the California Environmental Quality Act (CEQA), the CEQA Guidelines (Section 15132). Shasta County is the Lead Agency for the environmental review of the Shasta Ranch Mining and Reclamation Plan (Use Permit 05-010 and Reclamation Plan 05-001) project and has the principal responsibility for approving the project. This FEIR assesses the expected environmental impacts resulting from approval of the Shasta Ranch Mining and Reclamation Plan (Use Permit 05-010 and Reclamation Plan 05-001), associated impacts from subsequent development of the project, as well as responds to comments received on the Draft EIR.

1.1 BACKGROUND AND PURPOSE OF THE EIR

OVERVIEW OF CEQA REQUIREMENTS FOR PREPARATION OF AN EIR

The County of Shasta (County), serving as the Lead Agency, has prepared this EIR to provide the public and responsible and trustee agencies with information about the potential environmental effects of the proposed project. As set forth in the provisions of CEQA and implementing regulations, public agencies are charged with the duty to consider the environmental impacts of proposed development and to minimize these impacts where feasible while carrying out an obligation to balance a variety of public objectives, including economic, environmental, and social factors.

CEQA Guidelines Section 15121(a) states that an EIR is an informational document for decision-makers and the general public that analyzes the significant environmental effects of a project, identifies possible ways to minimize significant effects, and describes reasonable alternatives to the project that could reduce or avoid its adverse environmental impacts. Public agencies with discretionary authority are required to consider the information in the EIR, along with any other relevant information, in making decisions on the project.

CEQA requires the preparation of an environmental impact report prior to approving any project, which may have a significant effect on the environment. For the purposes of CEQA, the term "project" refers to the whole of an action, which has the potential for resulting in a direct physical change or a reasonably foreseeable indirect physical change in the environment (CEQA Guidelines Section 15378(a)). With respect to the Shasta Ranch Mining and Reclamation Plan project, the County has determined that the proposed development is a "project" within the definition of CEQA.

BACKGROUND OF ENVIRONMENTAL REVIEW PROCESS OF THE PROJECT

The following is an overview of the environmental review process for the Shasta Ranch Mining and Reclamation Plan (Use Permit 05-010 and Reclamation Plan 05-001) project that have led to the preparation of this FEIR:

Notice of Preparation and Initial Study

In accordance with Section 15082 of the CEQA Guidelines, the County of Shasta prepared a Notice of Preparation (NOP) of an EIR in August 17, 2005. The County of Shasta was identified as the lead agency for the proposed project. This notice was circulated to the public, local, state, and federal agencies and other interested parties to solicit comments on the proposed project. The August 17, 2005 NOP is presented in **Appendix 3.0-1**. Concerns raised in response to the Draft EIR were considered during preparation of the Draft EIR and are presented in **Appendix 3.0-2**.

Draft EIR

The Draft EIR (DEIR) and appendices, which consisted of three volumes, was released for public and agency review on July 14, 2006 with an initial review period that ended on August 31, 2006 (45-day review period). This review period was subsequently extended to September 29, 2006. The DEIR contains a description of the project, description of the environmental setting, identification of project impacts, and mitigation measures for impacts found to be significant, as well as an analysis of project alternatives.

Final EIR

Following the close of the public review period, the County received approximately 512 individual comment letters from agencies, interest groups and the public regarding the Draft EIR. This document responds to the written comments received as required by CEQA. This document also contains minor edits to the Draft EIR, which are included in **Section 3.0** (Revisions to the Draft EIR) and the final mitigation monitoring and reporting program for the project. This document constitutes the FEIR.

Certification of the Final EIR/Project Consideration

Shasta County will review and consider the FEIR. If the County finds that the FEIR is "adequate and complete", the County may certify the FEIR at a public hearing. The rule of adequacy generally holds that the EIR can be certified if: 1) it shows a good faith effort at full disclosure of environmental information; and 2) provides sufficient analysis to allow decisions to be made regarding the project in contemplation of its environmental consequences.

Upon review and consideration of the Final EIR, the County may take action to approve, revise, or reject the project. A decision to approve the project would be accompanied by written findings in accordance with CEQA Guidelines Section 15091 and Section 15093. Public Resources Code Section 21081.6 also requires lead agencies to adopt a reporting and mitigation monitoring and reporting program to describe measures that have been adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment. The final mitigation monitoring and reporting program for the project is provided in this document as Section 4.0.

1.2 TYPE OF DOCUMENT

The CEQA Guidelines identify several types of EIRs, each applicable to different project circumstances. This EIR has been prepared as a Project EIR pursuant to CEQA Guidelines Section 15161. This type of analysis focuses primarily on the changes in the environment that would occur as a result of project implementation, and examines all phases of the project (i.e., planning, construction, and operation). The project-level analysis addresses impacts resulting from the Shasta Ranch Mining and Reclamation Plan project.

1.3 INTENDED USES OF THE EIR

This EIR has been prepared in accordance with the California Environmental Quality Act (CEQA). The EIR is intended to evaluate the environmental impacts of the project to the greatest extent possible and to be used to modify, approve, or deny approval of the proposed project based on the analysis in the EIR. In accordance with CEQA Guidelines Section 15126, this EIR should be used as the primary environmental document to evaluate all subsequent planning and

permitting actions associated with the project. Subsequent actions that may be associated with the project are identified in **Section 3.0** (Project Description) of the Draft EIR.

1.4 ORGANIZATION AND SCOPE OF THE FINAL EIR

This document is organized in the following manner:

SECTION 1.0—INTRODUCTION

Section 1.0 provides an overview of the EIR process to date and what the FEIR is required to contain.

SECTION 2.0—COMMENTS AND RESPONSES TO COMMENTS ON THE DRAFT EIR

Section 2.0 provides a list of commentors, copies of written comments (coded for reference) and the responses to those written comments made on the Draft EIR.

SECTION 3.0— REVISIONS TO THE DRAFT EIR

Section 4.0 consists of the Draft EIR (Volume 1) with revisions that are a result of responses to comments, as well as minor staff edits that do not change the intent or content of the analysis or mitigation measures. Section 4.0 also includes an updated Executive Summary that provides a brief project description and presents a summary table of probable environmental effects edited as a result of comments received on the DEIR and minor staff edits.

SECTION 4.0— FINAL MITIGATION MONITORING AND REPORTING PROGRAM

Section 3.0 consists of the final mitigation monitoring and reporting program for the project.

2.0 Comments and Response to Comments on the Draft EIR

2.1 INTRODUCTION

The Draft EIR (DEIR) for the Shasta Ranch Mining and Reclamation project (SCH# 2005102134) was circulated for a 45-day public review period beginning on July 14, 2006 with an initial review period that ended on August 31, 2006 (45-day review period). This review period was subsequently extended to September 29, 2006. Approximately 512 total comment letters were received in the form of agency letters, form letters, individual letters, and petitions. One hundred fifty six (156) individual comment letters were documented and are included in this Final EIR (FEIR). No new significant environmental impacts or issues, beyond those already covered in the DEIR for the Shasta Ranch Mining and Reclamation Plan (Use Permit 05-010 and Reclamation Plan 05-001) project, were raised during the comment period, and the County of Shasta, acting as lead agency, directed that responses to the DEIR comments be prepared.

2.2 LIST OF COMMENTERS

The following individuals and representatives of organizations and agencies submitted written comments on the DEIR:

Letter	Individual or Signatory	Affiliation	Date
A	Office of Planning and Research	California State Clearinghouse	8/25/06
B	Office of Planning and Research	California State Clearinghouse	8/29/06
C	Office of Planning and Research	California State Clearinghouse	8/29/06
D	James Hayward Sr.	Redding Rancheria Tribe	8/10/06
E	James Hayward Sr.	Redding Rancheria Tribe	8/24/06
F	Dave Singleton	Native American Heritage Commission	8/01/06
G	Jim Smith	Shasta County Environmental Health Division	8/16/06
H	Dave H. Scott	Redding Chamber of Commerce	8/29/06
I	John R. Stokes	City of Anderson	8/31/06
J	Michelle Millette	Department of Transportation	8/25/06
K	Will Kempton	Department of Transportation	2/27/06
L	Marcelino Gonzalez	Department of Transportation	8/24/06
M	Stacey S. Gotham	California Regional Water Quality Control Board, CVR	5/23/06
N	Daniel L. Warner	California Regional Water Quality Control Board, CVR	8/28/06
O	James S. Pompy	Department of Conservation, Office of Mine Reclamation	8/30/2006
P	Dave Singleton	Native American Heritage Commission	8/31/2006
Q	Al Vargas	Department of Water Resources	9/6/2006
R	Office of Planning and Research	California State Clearinghouse	9/15/2006
S	Donald B. Koch	Department of Fish and Game	11/29/2005
T	Donald B. Koch	Department of Fish and Game	5/26/2005
U	Donald B. Koch	Department of Fish and Game	11/26/2006
V	Gerald Brownfield	County of Tehama, Department of Public Works	9/28/2006
1	Multiple commenter's. See comment letter for a list of those individuals who shared the same comment.		
2	Mike Berry	Self	
3	John & Jane Karos	Self	
4	Vicky Harris	Self	8/4/2006

Letter	Individual or Signatory	Affiliation	Date
5	Multiple commenters. See comment letter for a list of those individuals who shared the same comment.		
6	Vicky Harris	Self	8/4/2006
7	Multiple commenters. See comment letter for a list of those individuals who shared the same comment.		
8	Multiple commenters. See comment letter for a list of those individuals who shared the same comment.		
9	Vicky Harris	Self	8/4/2006
10	Multiple commenters. See comment letter for a list of those individuals who shared the same comment.		
11	Vicky Harris	Self	8/4/2006
12	Multiple commenters. See comment letter for a list of those individuals who shared the same comment.		
13	Multiple commenters. See comment letter for a list of those individuals who shared the same comment.		
14	Kiara Anno	Self	
15	Multiple commenters. See comment letter for a list of those individuals who shared the same comment.		
16	Vicky Harris	Self	8/4/2006
17	Multiple commenters. See comment letter for a list of those individuals who shared the same comment.		
18	Multiple commenters. See comment letter for a list of those individuals who shared the same comment.		
19	Vicky Harris	Self	8/4/2006
20	Multiple commenters. See comment letter for a list of those individuals who shared the same comment.		
21	Vicky Harris	Self	8/4/2006
22	Multiple commenters. See comment letter for a list of those individuals who shared the same comment.		
23	Vicky Harris	Self	8/4/2006
24	Multiple commenters. See comment letter for a list of those individuals who shared the same comment.		
25	Vicky Harris	Self	8/4/2006
26	Multiple commenters. See comment letter for a list of those individuals who shared the same comment.		
27	Kiara Anno	Self	
28	Joy Mellow	Resident	8/4/15/06
29	J.D and Juan Higgins	Resident	8/5/2006
30	Margot King	Resident	7/22/2006
31	Chris Wells	Resident	8/28/2006

Letter	Individual or Signatory	Affiliation	Date
32	Stacey Frase	Resident	7/17/2006
33	Vicky Harris	Resident	8/21/2006
34	William and Gloria Pedretti	Resident	8/15/2006
35	Margot King	Resident	7/17/2006
36	William and Pamela Johnson	Resident	8/28/2006
37	Russ Mull	Director Shasta County Department of Resource Management	8/17/2006
38	Jessica Morris	Resident	8/14/2006
39	Phillip and Marcie Sargeant	Resident	8/15/2006
40	Ken and Marcia Behnke	Resident	8/20/2006
41	Ken and Marcia Behnke	Resident	8/21/2006
42	William and Henry Mitchell	Resident	8/30/2006
43	Mike and Patty Marie Wallace	Resident	8/29/2006
44	Joann Moore	Resident	8/21/2006
45	Linda Schreiber and Deon Pollett	Resident	7/19/2006
46	Donna Collier	Resident	8/29/2006
47	Leonard Smith	Resident	7/25/2006
48	Stanley A. Easton	Resident	7/18/2006
49	Albert Wood	Resident	8/25/2006
50	Kathy Grissom	Resident	8/8/2006
51	Sandra DuBose	Resident	8/8/2006
52	Clarence and Shirley Pettis	Resident	8/9/2006
53	Harry and Karen Bither	Resident	8/16/2006
54	William Lenheim	Shasta Trinity Fly Fishers	8/21/2006
55	Charles and Patsy Dunn	Resident	8/21/2006
56	Linda Schreiber and Deon Pollett	Resident	8/28/2006
57	Steve Ricards	Resident	8/22/2006
58	Winifred Maker	Resident	8/10/2006
59	Diana J. Webb	Resident	9/1/2006
60	Gary Sharette	Resident	8/23/2006
61	Mel Breshears	Resident	8/28/2006
62	William and Henry Mitchell	Resident	
63	A.M Terry	Resident	9/1/2006
64	Wayne and Betty McAndrews	Resident	9/4/2006
65	Margot King	Resident	9/4/2006
66	Judy Darting	Resident	9/7/2006
67	Toni Doyle Jepson	Resident	9/10/2006
68	Bob Madgic	Resident, Author	9/12/2006
69	Rose Welsch	Resident	9/13/2006
70	William Bankson	Resident	9/13/2006
71	Leonard Smith	Resident	9/13/2006
72	Kellie Dunham	Resident	9/17/2006
73	Linda and Jim Garner	Resident	9/17/2006
74	Doug and Marilyn Lewallen	Resident	9/19/2006
75	Milton Siefken	Resident	9/21/2006
76	Margaret Siefken	Resident	9/21/2006
77	Elaine Rutkowski	Resident	9/22/2006
78	Elaine Rutkowski	Resident	9/22/2006
79	Elaine Rutkowski	Resident	9/22/2006
80	Elaine Rutkowski	Resident	9/22/2006
81	Elaine Rutkowski	Resident	9/22/2006
82	Ron Largent	Resident	9/23/2006

Letter	Individual or Signatory	Affiliation	Date
83	Michael Hoffman	Resident	9/25/2006
84	Scott Ferris Sr.	Resident	9/26/2006
85	Linda and Jim Garner	Resident	9/27/2006
86	Vicky Harris	Resident	9/27/2006
87	Elaine Rutkowski	Resident	9/22/2006
88	Robert Thomas and Family	Resident	9/27/2006
89	Robert Moore	Resident	9/28/2006
90	Sally Sapp	Resident	9/28/2006
91	Eihnard F. Diaz	Diaz Associates	9/28/2006
92	Debra Early	Resident	9/28/2006
93	Jessica Morris	Resident	9/29/2006
94	Jeffrey L. Carr	Resident	9/29/2006
95	Donna Pratt	Resident	9/29/2006
96	Nancy Unger	Resident	9/29/2006
97	John Merz	Resident	9/29/2006
98	Wendy Johnston	Vestra Resources, Inc.	9/29/2006
99	Bradley Angel	Green Action	9/29/2006
100	Arleigh and Rosemary Olivier	Resident	9/15/2006
101	Robert Brannon	Resident	9/29/2006
102	Joanne Moore	Resident	9/26/2006
103	Patsy Dunn	Resident	9/26/2006
104	Tom Giles and Sandy Giles	Resident	8/24/2006
105	Robert Brannon	Resident	9/29/2006
106	Robert Brannon	Resident	9/29/2006
107	Patsy Dunn	Resident	9/29/2006
108	Beth M. Wood	Resident	9/25/2006
109	Beth M. Wood	Resident	9/25/2006
110	Beth M. Wood	Resident	9/25/2006
111	Patsy Dunn	Resident	9/26/2006
112	Patsy Dunn	Resident	9/26/2006
113	Patsy Dunn	Resident	9/26/2006
114	Arleigh and Rosemary Olivier	Resident	9/26/2006
115	Charles and Betty Bidwell	Resident	9/15/2006
116	Phillip and Marcie Sargeant	Resident	9/28/2006
117	Phillip and Marcie Sargeant	Resident	9/20/2006
118	Phillip and Marcie Sargeant	Resident	9/20/2006
119	Phillip and Marcie Sargeant	Resident	9/20/2006
120	Ellen Barrett	Resident	9/18/2006
121	Ellen Barrett	Resident	9/18/2006
122	William and Hazel Bidwell	Resident	9/28/2006
123	Unknown	Resident	9/28/2006
124	Joanne Moore	Resident	9/28/2006
125	Joanne Moore	Resident	9/28/2006
126	Joanne Moore	Resident	9/28/2006
127	Joanne Moore	Resident	9/28/2006
128	Joanne Moore	Resident	9/28/2006
129	Joanne Moore	Resident	9/28/2006
130	Patsy Dunn	Resident	9/29/2006
131	Patsy Dunn	Resident	9/29/2006
132	Patsy Dunn	Resident	9/29/2006
133	Multiple commenters. See comment letter for a list of those individuals who		

Letter	Individual or Signatory	Affiliation	Date
	shared the same comment.		
134	Multiple commenters. See comment letter for a list of those individuals who shared the same comment.		
135	Multiple commenters. See comment letter for a list of those individuals who shared the same comment.		
136	The Davis Family	Resident	

2.3 COMMENTS AND RESPONSES

2.3.1 REQUIREMENTS FOR RESPONDING TO COMMENTS ON A DRAFT EIR

CEQA Guidelines 15088 requires that lead agencies evaluate all comments on environmental issues received on the DEIR and prepare a written response. The written response must address the significant environmental issue raised and must provide a detailed response, especially when specific comments or suggestions (e.g., additional mitigation measures) are not accepted. In addition, the written response must be a good faith and reasoned analysis. However, lead agencies need only to respond to significant environmental issues associated with the project and do not need to provide all the information requested by commenter's, as long as a good faith effort at full disclosure is made in the EIR (CEQA Guidelines 15204).

CEQA Guidelines 15204 recommends that commenter's provide detailed comments that focus on the sufficiency of the DEIR in identifying and analyzing the possible impacts on the environment and ways in which the significant effects of the project might be avoided or mitigated. CEQA Guidelines 15204 also notes that commenter's should provide an explanation and evidence supporting their comments. Pursuant to CEQA Guidelines 15064, an effect shall not be considered significant in the absence of substantial evidence.

CEQA Guidelines 15088 also recommends that, where a response to comments results in revisions to the DEIR, those revisions be noted as a separate section of the FEIR contained herein as Section 3.0, Revisions to the DEIR.

2.3.2 RESPONSES TO COMMENT LETTERS

Written comments on the DEIR are reproduced on the following pages, along with responses to those comments. To assist in referencing comments and responses, the following coding system is used:

- Public agency comment letters are coded by letters and each issue raised in the comment letter is assigned a number (e.g., Comment Letter A, comment 1: A-1).

- Individual and interest group comment letters are coded by numbers and each issue raised in the comment letter is assigned a number (e.g., Comment Letter 1, comment 1: 1-1).

Where responses to comments include proposed changes to the DEIR text, those changes are included in the response and demarcated with revision marks (underline and italicized for new text and strike out for deleted text). The proposed changes in the DEIR text and minor staff

initiated changes are indicated with revision marks in Section 3.0, Revisions to the DEIR of this FEIR.

Letter 1

Date: 8-27-06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
AUG 29 2006
PLANNING/BUILDING DIVISIONS

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: **1-1**

Traffic: Balls Ferry Road already has congestion and safety issues. Adding loaded gravel trucks every four to seven and one-half minutes and empty trucks returning for further loads would create instant gridlock with existing traffic, which includes stop-and-go service vehicles such as school buses, and mail and garbage trucks. The safety problems would be ugly.

Mary Beatrice Craig
19998 Alexander Ave.
Anderson, Ca. 96007

cc: Shasta County Board of Supervisors

The following table has been provided to identify those individuals who shared the same comment.

Letter	Individual or Signatory	Affiliation	Date
1	Mary Beatrice Craig	Self	8/27/2006
1.1	Kristina Sims	Self	8/4/2006
1.2	Peggy Prescott	Self	8/4/2006
1.3	Tina Reeves	Self	8/4/2006
1.4	Ed & Fran Robinson	Self	
1.5	C.A. Berg	Self	
1.6	Truman Gandolf	Self	
1.7	Kiara Anno	Self	
1.8	Lois Rohlf	Self	
1.9	Charlene Houghton	Self	8/27/2006
1.10	Frank L. Craig	Self	8/27/2006
1.11	Thomas Ruland	Self	
1.12	Linda Finkel	Self	
1.13	Lola Cooksy	Self	
1.14	Patricia Moore	Self	
1.15	William and Henry Mitchell	Self	
1.16	Arleigh and Rosemarie Oliver	Self	9/15/2006
1.17	James and Gail Mellow	Self	
1.18	Tom and Sandy Giles	Self	8/24/2006
1.19	Rosemary Reeves Mashore	Self	8/22/2006
1.20	Bill Mitchell	Self	
1.21	Patricia K. Tiberend	Self	
1.22	Klaus and Pamela Ryser	Self	
1.23	Greg W. Beitel	Self	
1.24	Jane McFarland	Self	
1.25	Rhonda Hansen	Self	8/24/2006
1.26	Tony B.	Self	8/24/2006
1.27	Charles Reynolds	Self	8/24/2006
1.28	Lisa Reynolds	Self	8/24/2006
1.29	Chris Kuiper	Self	8/24/2006
1.30	James Hayward Sr.	Self	8/24/2006
1.31	Joann Moore	Self	9/28/2006
1.32	Elaine Blexhern	Self	

Letter	Individual or Signatory	Affiliation	Date
1.33	S.M. Hagg	Self	

Letter 1

Mary Beatrice Craig, August 27, 2006

Response 1-1: The comment expresses concerns regarding congestion and safety issues related to increased truck traffic along Balls Ferry Road. The EIR examined impacts to traffic concerning roadways and intersections. The level of service analysis in the DEIR (Section 4.3, Transportation and Circulation) found that the roadways in the area have the capacity to accommodate project traffic without a significant impact on level of service. (See DEIR Table 4.3-13.) Concerning intersections in the area, several are expected to have substantial level-of-service limitations in the context of future cumulative impacts in both "without the project" and "plus project" scenarios. (See DEIR Table 4.3-14.) The County has identified a number of future improvement projects (that are not project mitigation measures) that are expected to improve traffic in the area.

The DEIR also includes several mitigation measures to address impacts to intersections under Impact 4.3.2, and mitigation of impacts to Interstate 5 ramps under Impact 4.3.3.

Cumulative Impacts and related mitigation measures are addressed in DEIR Section 4.3.5.

The DEIR and the traffic analysis that is incorporated into it indicates that the project will add to existing and expected future congestion, but it does not conclude that the project will result in gridlock as suggested in the comment, nor does the commenter present any information to support the claim.

The DEIR addresses the safety issues involved with the increase of traffic, especially the amount of new truck traffic related to the project. As identified in DEIR Impact 4.3-1, the project will add truck traffic onto adjacent roadways that lack adequate shoulders and that have narrower travel lanes than would typically be required for new roadways built in Shasta County. The EIR references the opinion that, because these roads lack a shoulder or turn-outs and there is no emergency parking lane or area for pedestrians to walk along the roadway, some of the roadways are potentially unsafe for the mix of traffic. The impact was recognized as potentially significant and therefore subject to mitigation.

Mitigation Measure MM 4.3.1 in the DEIR proposed improvements to the shoulder width of portions of Balls Ferry Road, Locust Road, and Kimberly Road. MM 4.3.1 was proposed to require that these sections of roadways be brought up to current County design standards as specified for road width and shoulders. As mitigated, the impact was expected to be less than significant.

It is conjectural that roads in the project area, in their current condition, are inherently "unsafe", either with current usage or with the proposed addition of project traffic, because they do not meet the preferred standards for such roads. It is recognized that no road is completely safe, and that it is not

always practical to improve a road to a condition where it can be considered absolutely safe. In many cases, improving roads has the result of encouraging drivers to drive faster and, therefore, may decrease the overall safety of the road.

Regarding proposed MM 4.3.1, concern has been expressed that it may not be practical and realistic to improve the road as proposed for reasons beyond the control of the project applicant (e.g., the County may not have adequate easement or row of width (ROW) to improve the roads). If that is the case, the County, if it approves the project, may identify alternative measures for management of its roadways relative to the project.

For example, since one of the safety issues concerning project traffic on narrow rural roads has been concern over the safety of children on school days, questions have been raised as to whether widening the road as proposed would, in fact, be effective in addressing that concern. Concern with the factors of foggy days and poor visibility add to this issue. This would specifically address the safety issues and would be more effective than widening the roadway.

As noted in this FEIR in Section 3.0, Revisions to DEIR, the Alternatives discussion that was in the DEIR (Section 5.0, Project Alternatives) is being revised to reconsider information related to possible restricted hours of operation. It notes that information provided by Randy Palomino, Superintendent of the Anderson Union High School District, suggests that the key period of time in the morning for school buses picking up students is between the hours of 6:30 a.m. to 8:45 a.m. during foggy day schedules. It would appear feasible that the County could condition the project to suspend the dispatching of trucks during that period of time on such days. (when the children are waiting for school buses, and especially on days having extremely poor visibility.)

The DEIR identifies factors that contribute to the overall safety of a public road, but cannot conclude that a road is or will be safe or unsafe. The County maintains and has control over the condition of County roads and considers this roadway to be adequate to handle the existing and project traffic. A developer may or may not be able to improve the roads to bring them up to preferred standards. The County will need to consider the information in the EIR and determine how it and the project proponent can realistically provide appropriate measures to satisfy the County that use of the roads for a particular use (e.g., hauling aggregate material on a regular basis) is acceptably "safe" and consistent with the function of the particular road.

Letter 2

Date:

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Traffic: Balls Ferry Road already has congestion and safety issues. Adding loaded gravel trucks every four to seven and one-half minutes and empty trucks returning for further loads would create instant gridlock with existing traffic which includes stop-and-go service vehicles such as school buses, and mail and garbage trucks. The safety problems would be ugly. **2-1**

I am also concerned that the EIR does not address empty (return) truck trips or damage from increased road debris (rocks) **2-2**

Mike Berry
22505 Adobe RD
Cottonwood CA
96022

cc: Shasta County Board of Supervisors

Letter 2

Mike Berry

Response 2-1: See Response 1-1.

Response 2-2: Empty truck returns are accounted for as inbound truck trips. See Response I-3 relating to CEQA impacts.

Letter 3

Date:

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Traffic: Balls Ferry Road already has congestion and safety issues. Adding loaded gravel trucks every four to seven and one-half minutes and empty trucks returning for further loads would create instant gridlock with existing traffic which includes stop-and-go service vehicles such as school buses, and mail and garbage trucks. The safety problems would be ugly. **3-1**

John & Jane Karos
2668 Tremontold.
Anderson, CA 96007

- Been here, Shasta County all our lives. Stingy Lane & many other streets aren't built for such heavy traffic. These people would not keep them up! **3-2**

cc: Shasta County Board of Supervisors

Letter 3

John and Jane Karos

Response 3-1: See Response 1-1.

Response 3-2: The commenter's concern to street maintenance is noted. Trucks will be using major roadways in the area to access the site and will not be using routes such as Stingy Lane on a regular basis. However, according to the City of Anderson General Plan, Section 3.36, Stingy Lane is identified as a truck route.

Letter 4

Date: 8-4-06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Traffic: Balls Ferry Road already has congestion and safety issues. Adding loaded gravel trucks every four to seven and one-half minutes and empty trucks returning for further loads would create instant gridlock with existing traffic which includes stop-and-go service vehicles such as school buses, and mail and garbage trucks. The safety problems would be ugly. **4-1**

There are also no provisions for these trucks to be covered - allowing dust + gravel to freely fall from these trucks. Kids + farm animals ~~at~~ are all along these routes + portions of these routes are very densely populated. Getting in + out of your driveway would become a nightmare and an accident waiting for a place to happen **4-2** **4-3**

Vicky Harris
5340 Balls Ferry
Anderson
365-5777

cc: Shasta County Board of Supervisors

Letter 4

Vicky Harris, August 4, 2006

Response 4-1: See Response 1-1.

Response 4-2: The commenter states there are no provisions for covering the trucks during gravel transport to and from the project site. The commenter would like to see the truck beds covered to reduce the potential increase of dust and airborne particulate matter along existing roadways and residences near the roadway of. The DEIR Section 4.4, Air Quality, provides mitigation that addresses offsite transport of material. Mitigation Measure MM 4.4-1(a) states, "When materials are transported offsite, all material shall be covered and effectively wetted to limit visible dust emissions, or at least 6 inches of freeboard space from the top of the container shall be maintained."

Response 4-3: See Response 1-1.

Letter 5

Date: 8-27-'06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Length and Scope: The proposed project goes too far into the future and is too far-reaching. If permits are issued, they should limit the project to no more than ten years and deny any use of the proposed "Phase 3" area. There should also be provision for ongoing testing of the grounds in use by an independent laboratory and for publishing of the results of and methods used for this testing. **5-1**

Mary Beatrice Craig
19998 Alexander Ave.
Anderson, Ca. 96007

cc: Shasta County Board of Supervisors

The following table has been provided to identify those individuals who shared the same comment.

Letter	Individual or Signatory	Affiliation	Date
5	Mary Beatrice Craig	Self	8/27/2006
5.01	Peggy Prescott	Self	
5.02	Edward & Frances Robinson	Self	
5.03	C.A. Berg	Self	
5.04	Charlene Houghton	Self	8/27/2006
5.05	Frank L. Craig	Self	8/27/2006
5.06	William and Henry Mitchell	Self	
5.07	Beth M. Wood	Self	9/25/2006
5.08	Arleigh and Rosemarie Oliver	Self	9/15/2006
5.09	Marilee & Ronnie Lee Webb	Self	
5.10	James and Gail Mellow	Self	
5.11	Tom Giles	Self	8/24/2006
5.12	Rosemary Reeves Mashore	Self	8/22/2006
5.13	Bill Mitchell	Self	
5.14	Patricia K. Tiberend	Self	
5.15	Klaus and Pamela Ryser	Self	
5.16	Elaine Blexhern	Self	
5.17	Greg W. Beitel	Self	
5.18	Jane McFarland	Self	
5.19	Tony B.	Self	
5.20	C.S. Reynolds	Self	8/24/2006
5.21	Lisa Reynolds	Self	
5.22	Chris Kuiper	Self	8/24/2006
5.23	S.M. Hagg	Self	
5.24	Rhonda Hansen	Self	8/24/2006

Letter 5

Response 5-1: The commenter states if the project is approved, the use permit should only be granted for 10 years not 30 years. In accordance with the Shasta County Zoning Ordinance, Section 17.88.020, Mining section (F) states, "An operating term shall be required for each mining use permit. This would set a defined length of time during which mining may occur. Any extensions beyond the permit expiration would require further environmental review and discretionary approval. The maximum length of time for which any mining permit may be approved is 30 years." The proposed project scope and length of time requested is consistent with the provisions as set forth above.

The commenter request the use of Phase 3 be denied. It is not stated, but it is presumed that the commenter's concern is related to the dioxin issue. In addition, the comment states there should be a provision for ongoing testing on the grounds completed by an independent laboratory and publish the results. See responses 13-1, 15-1 and 16-2 for more information on dioxin related to Phase 3 and ongoing testing. With the results of tests that have been conducted and mitigation measures as proposed, there are no reasons based on environmental factors to eliminate excavation of the Phase 3 area. See responses M-1 and M-2.

Letter 6

Date: 8-4-06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Length and Scope: The proposed project goes too far into the future and is too far-reaching. If permits are issued, they should limit the project to no more than ten years and deny any use of the proposed "Phase 3" area. There should also be provision for ongoing testing of the grounds in use by an independent laboratory and for publishing of the results of and methods used for this testing. **6-1**

I especially agree with the denial of any use of Site 3 - this is the area Simpson Mill dumped most of their waste water on. Highly contaminated, brackish, black, sometimes with suds - year after year. I rode horses on this land for 25 yrs & saw first hand this dumping of waste onto this site. **6-2**

Vicky Harris
5340 Bald Ferry
Anderson
365-5777

cc: Shasta County Board of Supervisors

Letter 6

Vicky Harris, August 4, 2006

Response 6-1: See Response 5-1.

Response 6-2: The commenter strongly agrees that "Phase 3" should not be included as part of the approved project description based on previous waste disposal and conditions of the site. The DEIR, Section 4.12, Hazards and Hazardous Materials, addresses the history of the site and the characterization of contamination. The analysis concludes that the Phase 3 area can be used with appropriate mitigation. See also responses M-1 and M-2.

Letter 7

Date: 8-4-06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: 7-1

Hours of Operation: I request that a strict schedule be put in writing in any Final EIR or permits, limiting the hours of operation to weekdays only, no earlier than 7:00 a.m., and no later than 5:00 p.m., specifically stating that there will be no weekend hours of operation and no rollover hours to make up for time lost for any reason.

Vicky Harris
5340 Balls Ferry
Anderson
365-5777

cc: Shasta County Board of Supervisors

The following table has been provided to identify those individuals who shared the same comment.

Letter	Individual or Signatory	Affiliation	Date
7	Vicky Harris	Self	8/4/2006
7.01	Mary Beatrice Craig	Self	8/27/2006
7.02	Peggy Prescott	Self	
7.03	Edward & Frances Robinson	Self	
7.04	C.A. Berg	Self	
7.05	Charlene Houghton	Self	8/27/2006
7.06	Frank L. Craig	Self	8/27/2006
7.07	William and Henry Mitchell	Self	
7.08	Patsy Dunn	Self	
7.09	Arleigh and Rosemarie Oliver	Self	9/15/2006
7.10	Marilee & Ronnie Lee Webb	Self	
7.11	James and Gail Mellow	Self	
7.12	Tom Giles	Self	8/24/2006
7.13	Rosemary Reeves Mashore	Self	8/22/2006
7.14	Jane McFarland	Self	
7.15	Bill Mitchell	Self	
7.16	Patricia K. Tiberend	Self	
7.17	Klaus and Pamela Ryser	Self	
7.18	Elaine Blexhern	Self	
7.19	Tony B.	Self	8/24/2006
7.20	Charles Reynolds	Self	
7.21	Lisa Reynolds	Self	
7.22	Chris Kuiper	Self	8/24/2006
7.23	James Hayward Sr.	Self	8/24/2006
7.24	S.M. Hagg	Self	
7.25	Rhonda Hansen	Self	8/24/2006

Letter 7

Response 7-1: The commenter requests limitation of the days and the hours of operation. Commenter does not want operation on weekends. Section 5.0, Alternatives to the Project, Alternative 3-"Restricted Hours of Operation" was reviewed and evaluated. Based on the noise analysis provided by Ambient Consulting, the reduction in noise was found to be negligible. Furthermore, the analysis concluded the reduction in hours could lead to an increase in traffic impacts and volumes (assuming the overall volume of production was the same). According to Section 4.7, Noise, in the DEIR, the proposed "normal" operating conditions are between the hours of 7 a.m. and 5 p.m. which is consistent with the commenter's request. The proposed "maximum" hours of operation, as described in the Project Description (Section 3.0), are between 6 a.m. and 6 p.m. Based on the Shasta County General Plan Noise Element, the maximum hours of operation per day have been reduced from what was originally proposed. However the number of operation days per week has not been modified and remains consistent with the General Plan. The following revisions have been made to the DEIR and are reflected in Section 3.0, Revisions to the DEIR:

Page 4.7-19, the proposed mining and operational period was modified by one hour. This modification is consistent with the County's noise ordinance.

MM 4.7.2(b) Mining and processing operations shall be limited to the hours between *7 a.m. and ~~7~~* ***6*** *p.m.* Monday through Saturday.

As noted in the DEIR, the hours of operation were evaluated including special contracts or special needs such as highway improvements, etc. The County will need to consider hours of operation during review of the conditional use permit for the quarry and determine if there is a prevailing reason to not allow operation on Saturdays as proposed. Reducing the hours of operation could reduce the total noise of the facility but would not reduce the noise by a sufficient amount to eliminate a determination that impacts related to noise standards at the property line will be significant and unavoidable.

Letter 8

Date: 8-27-06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Levees: Tullis, Inc. has proposed, indeed has prematurely begun, to build levees in order to keep the Sacramento River from encroaching onto the property and stranding fish, as well as to stop the project sludge from washing into the river. I do not believe a levee can be built which will be high enough to accomplish this. This proposed levee would also adversely affect property owners during high water times by unnaturally forcing water onto their properties. **8-1**

Mary Beatrice Craig
1999 Alexander Ave.
Anderson, Ca. 96007

cc: Shasta County Board of Supervisors

The following table has been provided to identify those individuals who shared the same comment.

Letter	Individual or Signatory	Affiliation	Date
8	Mary Beatrice Craig	Self	8/27/2006
8.01	Peggy Prescott	Self	
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8.03	C.A. Berg	Self	
8.04	Charlene Houghton	Self	8/27/2006
8.05	Frank L. Craig	Self	8/27/2006
8.06	William and Henry Mitchell	Self	
8.07	Beth M. Wood	Self	9/25/2006
8.08	Arleigh and Rosemarie Oliver	Self	9/15/2006
8.09	James and Gail Mellow	Self	
8.10	Marilee & Ronnie Lee Webb	Self	
8.11	Tom and Sandy Giles	Self	8/24/2006
8.12	Rosemary Reeves Mashore	Self	8/22/2006
8.13	Bill Mitchell	Self	
8.14	Patricia K. Tiberend	Self	
8.15	Klaus and Pamela Ryser	Self	
8.16	Greg W. Beitel	Self	
8.17	Jane McFarland	Self	
8.18	Tony B.	Self	8/24/2006
8.19	Charles Reynolds	Self	8/24/2006
8.20	Lisa Reynolds	Self	
8.21	Chris Kuiper	Self	8/24/2006
8.22	James Hayward Sr.	Self	8/24/2006
8.23	Elaine Blexhern	Self	
8.24	S.M. Hagg	Self	
8.25	Rhonda Hansen	Self	8/24/2006

Letter 8

Response 8-1: The commenter addresses the levees components of the project and questions the engineering for the levees. The potential for related impacts is addressed in the DEIR. (see Impacts 4.9.4 and 4.9.5) The levees will be constructed to accommodate the elevation of the 50-year flood mark. Floods exceeding this magnitude are extremely rare and have less than a 1% chance of occurring in any given year. Due in part to the relatively low velocities that would be present in the elevated floodplain areas adjacent to the project site during a major flood (roughly in the range of 4 to 6 feet per second during a 100-year event, and less during lesser events), hydraulic studies performed by Hydmet, Inc. have indicated that any rise in flood levels caused by the proposed levees will be negligible. Therefore, flooding of surrounding properties is not expected to be aggravated by the proposed levees. In addition, according to Mike Tucker of the National Marine Fisheries Service, the project design elements described for a 50-year flood event would provide adequate protections for listed fish, as long as they are fully implemented and maintained.

Letter 9

Date: 8/4/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

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Levees: Tullis, Inc. has proposed, indeed has prematurely begun, to build levees in order to keep the Sacramento River from encroaching onto the property and stranding fish, as well as to stop the project sludge from washing into the river. I do not believe a levee can be built which will be high enough to accomplish this. This proposed levee would also adversely affect property owners during high water times by unnaturally forcing water onto their properties. 9-1

All up + down the Sacramento River there are + have been problems with levees – they don't work in the long term + who maintains them after the pit closes? – Who monitors them? – Look at the one in Anderson River Park – you will see about 1/3 of that levee missing from about 10 yrs ago when the water was flowing over the tops!! If I lived South of this site – I would be scared to death of this levee project – 9-2

cc: Shasta County Board of Supervisors

Vicky Harris
5340 Bells Ferry
Anderson
365-5777

Letter 9

Vicky Harris, August 4, 2006

Response 9-1: See Response 8-1.

Response 9-2: The commenter appears to be expressing concerns about public safety related to the proposed levees. The levees are proposed primarily to exclude special-status fish species from becoming trapped on the site during high-water events. They will also help to buffer and mitigate noise impacts in some areas. They are not proposed as levees that will protect development (i.e. homes) from flooding. Proper design and maintenance will be required. No significant safety concerns related to the levees have been identified. According to the Shasta Ranch Mining and Reclamation Plan dated April 2005, maintenance of the levees will be required of the existing property owner in perpetuity. Any future transfer of ownership of the property would be conditioned on the owner's legal commitment to maintain the levees.

Letter 10

Date: 8-27-'06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: **10-1**

Noise: The ongoing sounds of dredgers, rock crushers, rumbling trucks, and other big machinery from early morning until quitting time are neither acceptable nor consistent with our **agricultural** setting.

Mary Beatrice Craig
19998 Alexander Ave.
Anderson, Ca. 96007

cc: Shasta County Board of Supervisors

The following table has been provided to identify those individuals who shared the same comment.

Letter	Individual or Signatory	Affiliation	Date
10	Mary Beatrice Craig	Self	8/27/2006
10.01	Kristina Sims	Self	8/4/2006
10.02	Peggy Prescott	Self	
10.03	Ed & Fran Robinson	Self	
10.04	C.A. Berg	Self	
10.05	Lois Rohlf	Self	8/4/2006
10.06	Charlene Houghton	Self	8/27/2006
10.07	Frank L. Craig	Self	8/27/2006
10.08	William and Henry Mitchell	Self	
10.09	Randy Simpson	Self	
10.10	Arleigh and Rosemarie Oliver	Self	9/15/2006
10.11	Marilee & Ronnie Lee Webb	Self	
10.12	James and Gail Mellow	Self	
10.13	Robert Brannon	Self	9/29/2006
10.14	Tom Giles	Self	8/24/2006
10.15	Rosemary Reeves Mashore	Self	8/22/2006
10.16	Jane McFarland	Self	
10.17	Bill Mitchell	Self	
10.18	Patricia K. Tiberend	Self	
10.19	Klaus and Pamela Ryser	Self	
10.20	Elaine Blexhern	Self	
10.21	Greg W. Beitel	Self	
10.22	Tony B.	Self	8/24/2006
10.23	Charles Reynolds	Self	
10.24	Lisa Reynolds	Self	
10.25	Chris Kuiper	Self	8/24/2006
10.26	James Hayward Sr.	Self	8/24/2006
10.27	S.M. Hagg	Self	
10.28	Rhonda Hansen	Self	8/24/2006

Letter 10

Response 10-1: As addressed in DEIR Section 4.7, Noise, operational activities associated with the proposed project would result in increases in ambient noise levels associated with the on-site operation of equipment, as well as increases in vehicle traffic on area roadways. As noted in the DEIR, noise generated by on-site activities would primarily occur in two distinct locations, including the mine processing area and mineral extraction areas. Noise-related impacts associated with on-site and offsite project-related activities are summarized, as follows:

Predicted noise levels associated with on-site processing and excavation activities, as depicted in Table 4.7-6 and 4.7-8 of the DEIR, would result in noticeable increases in ambient noise levels that would exceed the County's noise standards at nearby residences. It is important to note that these predicted maximum daily noise levels would occur on days when activities within the mining areas occur at or near the surface, such as activities involving the use of scrapers to remove overburden prior to mining or for the placement of overburden during the reclamation of mined areas. Noise levels at nearby receptors would decrease as mining increases in depth and moves away from these sources. Typical mining activities involving the use of a scraper would occur at depths of 10 feet, or greater. Under these conditions, the additional shielding of equipment noise levels provided by the pit walls would be anticipated to reduce operational noise levels at nearby receptors to below County noise standards. Nonetheless, because activities occurring at or near the surface would be projected to exceed the County's noise standard, the DEIR concluded that on-site operations would have a significant impact to nearby noise-sensitive land uses.

As noted in the DEIR, the proposed project included several levees and berms that would reduce operational noise levels at offsite receptors. Additional measures, which were considered reasonable and feasible, were also identified and included as mitigation in the DEIR to further reduce potential noise impacts to nearby receptors. These measures included the use of mufflers and engine shrouds on mobile equipment, limitations on operational hours for mining activities, increases in proposed levee heights, construction of new berms, as well as changes in proposed mining operations for Phase 1, that would require mining of Phase 1 to begin at the furthest distance from the primarily affected residential dwellings (i.e., Phase 1D). With implementation of the proposed mitigation measures, predicted noise levels at nearby receptors would be substantially reduced. As noted in the DEIR, mitigated noise levels associated with on-site operational activities, under normal meteorological conditions, would be reduced to below applicable noise standards. However, during temperature inversions and high wind conditions, operational noise levels, as perceived at nearby receptors, may increase by as much as approximately 10 dB. Predicted operational noise levels during temperature inversions and high wind conditions would result in a noticeable increase in ambient noise levels at nearby residences, which would result in a significant and unavoidable impact to

nearby noise-sensitive land uses. The DEIR discloses that noise impacts, in some areas, will be significant and unavoidable. If the County approves the project, the County will need to make findings of overriding considerations related to those impacts.

Letter 11

Date: 8/4/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: **11-1**

Noise: The ongoing sounds of dredgers, rock crushers, rumbling trucks, and other big machinery from early morning until quitting time are neither acceptable nor consistent with our **agricultural** setting.

I moved here 30 yrs ago to have quiet. Now there will be a possibility of 120 truck a day plus back up beepers to listen to - might as well be in downtown L.A. - This is not what this community was designed for. **11-2**

Vicky Harris
5340 Balls Ferry
Anderson

365-5777

cc: Shasta County Board of Supervisors

Letter 11

Vicky Harris, August 4, 2006

Response 11-1: See Response 10-1.

Response 11-2: The commenter expresses concern that the truck traffic an noise that would be generated by the project would not be compatible with "what this community was designed for." As in many areas, residential uses have expanded out into and near agricultural areas and areas that have been designated for resource production (e.g. mineral resource districts). Consequently, land use conflicts occur. The DEIR has proposed numerous mitigation measures for the project, but not all impacts can be mitigated to levels that are less than significant, and which resolve all land use conflicts.

The DEIR includes mitigation measures that would limit the hours of operation of the proposed project. Accordingly, operational activities would be limited to the daytime hours, which would be anticipated to result in a substantial reduction in sleep disruption to occupants of residential dwellings located along the proposed haul route operation will not be allowed on Sundays.

Letter 12

Date: 8/4/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: **12-1**

Fish: This project is dangerously close to the Sacramento River. No amount of levee-building would adequately protect fish, including endangered species of salmon. From the possible seepage of toxic materials or keep them from being trapped should high water come. Also, salmon beds would be in danger of being silted over during gravel processing.

Vicky Harris
5340 Balls Ferry
Anderson
365-5777

cc: Shasta County Board of Supervisors

The following table has been provided to identify those individuals who shared the same comment.

Letter	Individual or Signatory	Affiliation	Date
12	Vicky Harris	Self	8/4/2006
12.01	Mary Beatrice Craig	Self	8/27/2006
12.02	Peggy Prescott	Self	
12.03	Ed & Fran Robinson	Self	
12.04	C.A. Berg	Self	
12.05	Kiara Anno	Self	
12.06	Charlene Houghton	Self	8/27/2006
12.07	Frank L. Craig	Self	8/27/2006
12.08	Mark Speer	Self	
12.09	William and Henry Mitchell	Self	
12.10	Beth M. Wood	Self	9/25/2006
12.11	Marilee & Ronnie Lee Webb	Self	
12.12	James and Gail Mellow	Self	
12.13	Tom and Sandy Giles	Self	8/24/2006
12.14	Rosemary Reeves Mashore	Self	8/22/2006
12.15	Jane McFarland	Self	
12.16	Bill Mitchell	Self	
12.17	Patricia K. Tiberend	Self	
12.18	Klaus and Pamela Ryser	Self	
12.19	Elaine Blexhern	Self	
12.20	Greg W. Beitel	Self	
12.21	Tony B.	Self	8/24/2006
12.22	Charles Reynolds	Self	8/24/2006
12.23	Lisa Reynolds	Self	8/24/2006
12.24	Chris Kuiper	Self	8/24/2006
12.25	James Hayward Sr.	Self	8/24/2006
12.26	Joann Moore	Self	9/28/2006
12.27	S.M. Hagg	Self	
12.28	Rhonda Hansen	Self	8/24/2006

Letter 12

Response 12-1: See Response 8-1. The commenter asserts that proposed levees will not protect fish and that salmon beds could be silted over during the gravel processing, but does not provide documentation to rebut the analysis provided under Impact 4.5-6 in the Draft EIR. Impact 4.5-6 does acknowledge that listed fish could become stranded during extreme flood events that exceed the 50-year flood recurrence level. In response, Mitigation Measures 4.5-6a-c were recommended to provide further protection to fish species (see also Response S-2). Potential effects of toxins on fish are also discussed under Impact 4.5-6 and, based on the information provided in the Soil and Groundwater Dioxin Evaluation (Vestra Resources, 2006), the dioxin levels are below the threshold to cause adverse effects on fish. The potential for salmon beds to be silted over during gravel processing is also evaluated and recognized to be a potentially significant impact. Mitigation measures 4.9-3a-c in the Hydrology and Water Quality section address potential effects related to erosion and sedimentation into adjacent water ways, including the Sacramento River. No new concerns are raised and no change to the DEIR is required.

Letter 13

Date: 8/4/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Well Testing: I request that Shasta Ranch Mining & Reclamation be made responsible for pre-testing (before said proposed project would begin), as well as ongoing testing, of water wells of the properties on Blue Jay, Pheasant, and Lone Tree, from Balls Ferry Road to the proposed project. Said well testing would be specifically for dioxins, furans, and other toxic materials. **13-1**

Vick Harris
5340 Balls Ferry
Anderson
365-5777

cc: Shasta County Board of Supervisors

The following table has been provided to identify those individuals who shared the same comment.

Letter	Individual or Signatory	Affiliation	Date
13	Vicky Harris	Self	8/4/2006
13.01	Mary Beatrice Craig	Self	8/27/2006
13.02	Peggy Prescott	Self	
13.03	Ed & Fran Robinson	Self	
13.04	C.A. Berg	Self	
13.05	Charlene Houghton	Self	8/27/2006
13.06	Frank L. Craig	Self	8/27/2006
13.07	James Stuart	Self	
13.08	William and Henry Mitchell	Self	
13.09	Patsy Dunn	Self	
13.10	Marilee & Ronnie Lee Webb	Self	
13.11	James and Gail Mellow	Self	
13.12	Robert Brannon	Self	9/29/2006
13.13	Rosemary Reeves Mashore	Self	8/22/2006
13.14	Jane McFarland	Self	
13.15	Bill Mitchell	Self	
13.16	Patricia K. Tiberend	Self	
13.17	Klaus and Pamela Ryser	Self	
13.18	Susan Hagg	Self	
13.19	Chris Kuiper	Self	8/24/2006
13.20	Greg W. Beitel	Self	
13.21	Tony B.	Self	8/24/2006
13.22	Charles Reynolds	Self	
13.23	Lisa Reynolds	Self	
13.24	James Hayward Sr.	Self	8/24/2006
13.25	Elaine Blexhern	Self	
13.26	Joann Moore	Self	9/28/2006
13.27	S.M. Hagg	Self	
13.28	Rhonda Hansen	Self	8/24/2006
13.29	Tom Giles	Self	8/24/2006

Letter 13

Response 13-1: Five separate investigations have been implemented since 1996 in areas of the site that were irrigated with treated effluent from the paper mill. The Shasta Aggregate Phase 1 and Phase 2 operating areas never received treated effluent from the paper mill. Phase 3 was the only area to receive treated effluent material.

During the recent groundwater monitoring activities requested by the RWQCB, Shasta Ranch LLC was requested to complete one year of well and surface water sampling on-site. The objective was to collect additional groundwater and surface water data to further evaluate concentrations of dioxins/furans in groundwater and to assess the potential for groundwater containing dioxins/furans to migrate to the Sacramento River. The scope and work plan was developed under the review of the Regional Water Quality Control Board (RWQCB).

Shasta Ranch LLC completed the requested monitoring program in summer 2006 and submitted the conclusion of monitoring to the RWQCB. The RWQCB determined that additional site monitoring of wells and surface water was not warranted. Based on public concern at the site the RWQCB requested the Shasta Ranch LLC conduct sampling of surface water in the open mine areas following excavation. No additional sampling of wells or soils on-site is required or anticipated. In addition, groundwater in the vicinity of the site moves toward and parallel with the Sacramento River (Hydmet 2005). The fields that received treated paper mill effluent for irrigation intended for gravel extraction are located down-gradient from private wells in the vicinity of the site (Phase 3 only). There is no information to indicate that the testing of off-site wells is warranted.

Letter 14

Date:

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Well Testing: I request that Shasta Ranch Mining & Reclamation be made responsible for pre-testing (before said proposed project would begin), as well as ongoing testing, of water wells of the properties on Blue Jay, Pheasant, and Lone Tree, from Balls Ferry Road to the proposed project. Said well testing would be specifically for dioxins, furans, and other toxic materials. **14-1**

Kiara Anna
6894 Lady Smith Ave
Anderson CA 96007.

Fresh water is our need We need to Keep our fresh water supply safe. Generations growing up behind us.

cc: Shasta County Board of Supervisors

Letter 14

Kiara Anno

Response 14-1: See Response 13-1.

Letter 15

Date: 8-27-06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Toxins: There is no question that dioxins and furans were dumped on this property for over 30 years. Digging up and washing gravel at this site would distribute these substances into the air and, via the plume of turbidity created from washing gravel, force these poisons into the aquifer from which a couple of hundred wells draw. Seepage from gravel washing would also end up in the river, creating a further hazard for the fish and those who consume them. **15-1**

Mary Beatrice Craig
19998 Alexander Ave.
Anderson, Ca. 96007

cc: Shasta County Board of Supervisors

The following table has been provided to identify those individuals who shared the same comment.

Letter	Individual or Signatory	Affiliation	Date
15	Mary Beatrice Craig	Self	8/27/2006
15.01	Kristina Sims	Self	8/4/2006
15.02	Peggy Prescott	Self	
15.03	Tina Reeves	Self	8/4/2006
15.04	Ed & Fran Robinson	Self	
15.05	C.A. Berg	Self	
15.06	Truman Gandolf	Self	
15.07	Charlene Houghton	Self	8/27/2006
15.08	Frank L. Craig	Self	8/27/2006
15.09	unknown	Self	
15.10	Terry Hasapis	Self	8/4/2006
15.11	Kiara Anno	Self	
15.12	William and Henry Mitchell	Self	
15.13	Beth M. Wood	Self	9/25/2006
15.14	Arleigh and Rosemarie Oliver	Self	9/15/2006
15.15	Marilee & Ronnie Lee Webb	Self	
15.16	James and Gail Mellow	Self	
15.17	Tom and Sandy Giles	Self	8/27/2006
15.18	Rosemary Reeves Mashore	Self	8/22/2006
15.19	Jane McFarland	Self	
15.20	Bill Mitchell	Self	
15.21	Patricia K. Tiberend	Self	
15.22	Klaus and Pamela Ryser	Self	
15.23	Greg W. Beitel	Self	
15.24	Tony B.	Self	
15.25	Charles Reynolds	Self	8/24/2006
15.26	Chris Kuiper	Self	8/24/2006
15.27	James Hayward Sr.	Self	8/24/2006
15.28	Elaine Blexhern	Self	
15.29	S.M. Hagg	Self	
15.30	Rhonda Hansen	Self	8/24/2006

Letter 15

Response 15-1: Please refer to Responses M-1 and M-2.

The DEIR (Sections 4.5, Biological Resources and 4.9, Hydrology and Water Quality and 4.12, Hazards and Hazardous Materials) address the commenter's concerns. The project will be permitted by and will employ with the requirements of the Water Quality Control Board. The commenter does not raise any issues that have not already been addressed in the DEIR.

Proposed mining areas Phase 1 and Phase 2 did not receive treated effluent from the paper mill. Treated effluent from the paper mill was only applied to the proposed Phase 3 mining area. The issue of the possible release of dioxin compounds due to past use of treated mill effluent for irrigation is only an issue in the proposed Phase 3 mining area. It is not anticipated that Area 3 will be mined until approximately year 25, if at all. There are no domestic wells down gradient of Phase 3. Recent groundwater sampling (Geomatrix 2006) verified that dioxin compounds are not present in groundwater wells that pose an impact to aquatic organisms, human health, or the environment.

The commenter asserts that project activities could release toxins into the river and harm fish, but does not provide documentation to rebut the analysis provided under Impact 4.5-6 in the DEIR. Potential effects of toxins on fish are discussed under Impact 4.5-6 and, based on the information provided in the Soil and Groundwater Dioxin Evaluation (Vestra Resources, 2006), the dioxin levels are below the threshold to cause adverse effects on fish. See Response 13-1.

Letter 16

Date: 8-4-06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Toxins: There is no question that dioxins and furans were dumped on this property for over 30 years. Digging up and washing gravel at this site would distribute these substances into the air and, via the plume of turbidity created from washing gravel, force these poisons into the aquifer from which a couple of hundred wells draw. Seepage from gravel washing would also end up in the river, creating a further hazard for the fish and those who consume them. **16-1**

16-2 I rode horses on this property for 25 yrs. I saw the waste water being pumped to this ranch - Brackish, sometimes black, sometimes with foam. Site 3 is the area that all this waste product was dumped - year after year - There is no provision for clean up prior to operation & no provision for lining the proposed pits to prevent seepage & no provisions for disposal of contaminated by products. Testing of this site was inadequate & not thorough - the EPA even had it listed as a toxic waste site - a permit should not ever be granted unleashing the horrors this site has to offer -

Vicki Harris 365-5777
5240 Bolls Ferry

cc: Shasta County Board of Supervisors

Letter 16

Vicky Harris, August 4, 2006

Response 16-1: See Response 15-1.

Response 16-2: The Shasta Ranch has been the subject of five separate investigations and many years of ongoing monitoring associated with the application of paper mill effluent for irrigation on the site. The comment that "EPA listed the site as a toxic waste site" is not entirely correct. Shasta Ranch was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability System (CERCLIS) on June 1, 1981. This is a screening assessment that was developed in the early years of the environmental movement to assist EPA in identification of discharges and industries that warranted further study and review. A preliminary assessment of the Shasta Ranch was conducted by EPA on September 1, 1982, and a detailed site inspection was conducted on August 6, 1990. A site inspection prioritization was completed on September 9, 1994.

After reviewing the preliminary assessment and site inspection reports, EPA determined additional information was required. An expanded site investigation was completed in September 1996, and included collecting six samples from the sludge disposal trench on the Shasta Ranch property (not included in areas proposed from mining) and seven sediment samples from the Sacramento River. All samples were analyzed for dioxin compounds. Based on the findings, EPA concluded:

- Concentrations of site-related hazardous substances detected in sediment samples collected downstream from the site are comparable to background concentrations.
- No site-related hazardous substances were detected in groundwater samples collected from on-site drinking water wells.
- The site is completely fenced, except along the Sacramento River, and there are no schools or day care centers on, or within 200 feet of the site.

EPA's overall conclusion was the Shasta Ranch did not qualify for further remedial site assessment under CERCLA. EPA's only follow up recommendation was that the discharger continues to monitor on site groundwater for dioxins. This groundwater monitoring has been ongoing for many years. It ceased in 2002 following the mill closure, but was again undertaken by Shasta Ranch LLC in 2005 at the request of the RWQCB. The requested monitoring was completed in the fourth quarter 2006.

There has been no attempt to "cover up" the results of the EPA screening investigation or any results from other investigations. Sites with the potential to impact human health and the environment are categorized and managed by the level of threat and the regulatory agency oversight applied based on the medium (soil, water, air). The terms hazardous waste, hazardous waste release site, Superfund, CERCLA, CERCLIS etc. all have specific regulatory

definitions and associated bodies of law that set standards and protocols for evaluation and remediation of required actions. Because each term is associated with a specific regulation, each has a different meaning and procedural requirements. These are not used interchangeably.

The commenter does not provide any information to support the claim that "testing of this site was inadequate and not thorough."

Letter 17

Date: 8/4/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: 17-1

Cement/Asphalt Plants: I request a provision in any future EIR or permit stating in writing that there will be **no cement or asphalt plant(s), ever** on this proposed project property.

Vicky Harris
5340 Balls Ferry
Anderson
365-5777

cc: Shasta County Board of Supervisors

The following table has been provided to identify those individuals who shared the same comment.

Letter	Individual or Signatory	Affiliation	Date
17	Vicky Harris	Self	8/4/2006
17.01	Mary Beatrice Craig	Self	8/27/2006
17.02	Peggy Prescott	Self	
17.03	Ed & Fran Robinson	Self	
17.04	C.A. Berg	Self	
17.05	Charlene Houghton	Self	8/27/2006
17.06	Frank L. Craig	Self	8/27/2006
17.07	William and Henry Mitchell	Self	
17.08	Patsy Dunn	Self	
17.09	Beth M. Wood	Self	9/25/2006
17.10	Arleigh and Rosemarie Oliver	Self	9/15/2006
17.11	Marilee & Ronnie Lee Webb	Self	
17.12	James and Gail Mellow	Self	
17.13	Robert Brannon	Self	9/29/2006
17.14	Tom Giles	Self	8/24/2006
17.15	Rosemary Reeves Mashore	Self	8/22/2006
17.16	Bill Mitchell	Self	
17.17	Patricia K. Tiberend	Self	
17.18	Klaus and Pamela Ryser	Self	
17.19	Greg W. Beitel	Self	
17.20	Jane McFarland	Self	
17.21	Rhonda Hansen	Self	8/24/2006
17.22	Tony B.	Self	8/24/2006
17.23	Charles Reynolds	Self	8/24/2006
17.24	Lisa Reynolds	Self	8/24/2006
17.25	Chris Kuiper	Self	8/24/2006
17.26	James Hayward Sr.	Self	8/24/2006
17.27	Joann Moore	Self	9/28/2006
17.28	Elaine Blexhern	Self	
17.29	S.M. Hagg	Self	

Letter 17

Response 17-1: The commenter's request to never have a cement/asphalt plant on the site is noted. According to the Shasta County Zoning Ordinance Section 18.88.020, Mining, *the exploration, extraction and processing of minerals, rock, sand, gravel, topsoil or steam for commercial purposes and accessory uses may be allowed, provided a use permit is issued in each case except that asphalt plants and Portland cement concrete plants shall be located only in Industrial (I) and Mineral Resource (MR) districts.* Based on the existing land use designation, an asphalt or *Portland cement concrete* plant is not a permitted use and would not be allowed with a use permit. However, if the properties' land use designation was changed to an Industrial or Mineral Resource district, then an asphalt or Portland cement concrete plant could be allowed.

The current project does not propose a cement or asphalt plant. However, there is no basis in the context if this DEIR to state that the County will "never" consider an application for such uses. If proposed, such applications will be subject to specific environmental analysis and permitting processes.

Letter 18

Date: 8-27-06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Testing: I request testing of the proposed pit grounds by an independent laboratory, in accordance with EPA standards, this testing to be done at different depths varying from two feet to forty feet, and specifically checking for dioxins, furans, and other toxic materials at all levels; said test results and the methods of testing to be made public. **18-1**

Mary Beatrice Craig
19998 Alexander Ave.
Anderson, Ca. 96007

cc: Shasta County Board of Supervisors

The following table has been provided to identify those individuals who shared the same comment.

Letter	Individual or Signatory	Affiliation	Date
18	Mary Beatrice Craig	Self	8/27/2006
18.01	Peggy Prescott	Self	
18.02	Edward & Frances Robinson	Self	
18.03	C.A. Berg	Self	
18.04	Charlene Houghton	Self	8/27/2006
18.05	Frank L. Craig	Self	8/27/2006
18.06	William and Henry Mitchell	Self	
18.07	Beth M. Wood	Self	9/25/2006
18.08	Patsy Dunn	Self	
18.09	Arleigh and Rosemarie Oliver	Self	9/15/2006
18.10	Marilee & Ronnie Lee Webb	Self	
18.11	James and Gail Mellow	Self	
18.12	Robert Brannon	Self	9/29/2006
18.13	Rosemary Reeves Mashore	Self	8/22/2006
18.14	Bill Mitchell	Self	
18.15	Patricia K. Tiberend	Self	
18.16	Klaus and Pamela Ryser	Self	
18.17	Greg W. Beitel	Self	
18.18	Jane McFarland	Self	
18.19	Tony B.	Self	8/24/2006
18.20	Charles Reynolds	Self	8/24/2006
18.21	Lisa Reynolds	Self	8/24/2006
18.22	Chris Kuiper	Self	8/24/2006
18.23	James Hayward Sr.	Self	8/24/2006
18.24	Joann Moore	Self	9/26/2006
18.25	Elaine Blexhern	Self	
18.26	S.M. Hagg	Self	
18.27	Rhonda Hansen	Self	8/24/2006

Letter 18

Response 18-1: The commenter's request is noted. See Response 16-2 and M-2. The site has been extensively tested in accordance with EPA standards. Additional soil samples were conducted at variable depths beyond 6 inches to determine the extent of dioxin and furan concentrations present in the soil profile. (See Appendix 4.12-2, Soil and Groundwater Dioxin Evaluation, Vestra Resources, 2006 of the DEIR.) Based on the analysis and results completed the need for additional testing is no longer warranted by EPA or any other jurisdiction including the Regional Water Quality Control Board. Therefore, the need to conduct additional testing is not necessary, and outside of the CEQA review.

Letter 19

Date: 8-4-06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

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Testing: I request testing of the proposed pit grounds by an independent laboratory, in accordance with EPA standards, this testing to be done at different depths varying from two feet to forty feet, and specifically checking for dioxins, furans, and other toxic materials at all levels; said test results and the methods of testing to be made public. **19-1**

19-2 This, without question, is a must. Years & years of contaminated waste from Simpson Mill was dumped on this site - & the heaviest on Site 3. To test only inches is absurd - Whose to say new soil hasn't been brought in since the mill closed? I rode horses on this ranch for 25 years & saw first hand what was being dumped there - Brackish, sometimes black, sometimes with foam, all contaminated - year after year - And the public needs to know, without doubt, what is there.

cc: Shasta County Board of Supervisors

Vicki Harris
5340 Balls Ferry
Anderson
[illegible]

Letter 19

Vicky Harris, August 4, 2006

Response 19-1: See Responses 13-1, 15-1 and 18-1.

Response 19-2: See Response 16-2.

Letter 20

Date: 8-27-'06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: **20-1**

Land Use: There is no adequate provision for clean-up and productive use of this land after the project is completed.

Mary Beatrice Craig
19998 Alexander Ave.
Anderson, Ca. 96007

cc: Shasta County Board of Supervisors

The following table has been provided to identify those individuals who shared the same comment.

Letter	Individual or Signatory	Affiliation	Date
20	Mary Beatrice Craig	Self	8/27/2006
20.01	Kristina Sims	Self	8/4/2006
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20.05	Truman Gandolf	Self	
20.06	Charlene Houghton	Self	8/27/2006
20.07	Frank L. Craig	Self	8/27/2006
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20.11	Tom and Sandy Giles	Self	8/24/2006
20.12	Rosemary Reeves Mashore	Self	8/22/2006
20.13	Jane McFarland	Self	
20.14	Bill Mitchell	Self	
20.15	Patricia K. Tiberend	Self	
20.16	Klaus and Pamela Ryser	Self	
20.17	S.M. Hagg	Self	
20.18	Chris Kuiper	Self	8/24/2006
20.19	Greg W. Beitel	Self	
20.20	Charles Reynolds	Self	8/24/2006
20.21	Lisa Reynolds	Self	8/24/2006
20.22	James Hayward Sr.	Self	8/24/2006
20.23	Elaine Blexhern	Self	

Letter 20

Response 20-1: As addressed in the DEIR, all mine operators are required by law to comply with the Surface Mining and Reclamation Act (SMARA) of 1975. SMARA was enacted to support production and conservation of California's mineral resources and assure reclamation of mined lands. SMARA is administered by the lead agency (Shasta County). Under SMARA there are specific regulatory definitions and laws that set standards and protocols for the reclamation (clean-up and productive use) of mined lands in order to allow a mine operator to mine. A Draft Mining and Reclamation Plan was included in the DEIR for review. The Plan is being revised to respond to comments. For a complete description of the reclamation plan, see Appendix 3.0-3 of the FEIR for the amended Shasta Ranch Aggregate Mining and Reclamation Plan.

Letter 21

Date: 8/4/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: 21-1

Land Use: There is no adequate provision for clean-up and productive use of this land after the project is completed.

There is also no adequate provision for clean up prior to opening this pit - years + years of waste was dumped there from Simpson Mill - 21-2

Vicky Harris
5340 Bells Ferry
Anderson
365-5777

cc: Shasta County Board of Supervisors

Letter 21

Vicky Harris, August 4, 2006

Response 21-1: See Response 20-1.

Response 21-2: As stated in response 16-2, based on the five separate investigations, EPA's overall conclusion was the Shasta Ranch did not qualify for further remedial site assessment under CERCLA. Groundwater monitoring was undertaken by Shasta Ranch LLC in 2005 at the request of the RWQCB. The requested monitoring was completed in the fourth quarter 2006. In result the RWQCB determined that additional site monitoring of wells and surface water was not warranted concluding any potential site contaminants are below levels of significance. Based on the findings and determinations, a preliminary site clean-up would not be warranted.

Letter 22

Date: 8-27-06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Public Services/Utilities: There are no provisions made for Tullis, Inc. to provide these services for their proposed project outside of the normal grids from which we surrounding property owners draw our utilities, and which utilities are already strained to the maximum during high-use times. 22-1

Mary Beatrice Craig
19998 Alexander Ave.
Anderson, Ca. 96007

cc: Shasta County Board of Supervisors

The following table has been provided to identify those individuals who shared the same comment.

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22.02	Ed & Fran Robinson	Self	
22.03	C.A. Berg	Self	
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22.05	Frank L. Craig	Self	8/27/2006
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22.08	Beth M. Wood	Self	9/25/2006
22.09	Arleigh and Rosemarie Oliver	Self	9/15/2006
22.10	Marilee & Ronnie Lee Webb	Self	
22.11	James and Gail Mellow	Self	
22.12	Tom and Sandy Giles	Self	8/24/2006
22.13	Rosemary Reeves Mashore	Self	8/22/2006
22.14	Bill Mitchell	Self	
22.15	Patricia K. Tiberend	Self	
22.16	Klaus and Pamela Ryser	Self	
22.17	Elaine Blexhern	Self	
22.18	Greg W. Beitel	Self	
22.19	Jane McFarland	Self	
22.20	Rhonda Hansen	Self	8/24/2006
22.21	Tony B.	Self	8/24/2006
22.22	Lisa Reynolds	Self	8/24/2006
22.23	Chris Kuiper	Self	8/24/2006
22.24	James Hayward Sr.	Self	8/24/2006
22.25	Joann Moore	Self	9/28/2006
22.26	S.M. Hagg	Self	

Letter 22

Response 22-1: The commenter is concerned about impacts to local public services and utilities. See Section 4.11 of the DEIR for discussion of the public utility services provided to the proposed project site. Impact 4.11-6 addresses the impacts the project would have on public services/utilities. The commenter does not provide any information to support their proposal that the project should be required to provide these services "outside the normal grid."

Letter 23

Date: 8/4/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: 23-1

Public Services/Utilities: There are no provisions made for Tullis, Inc. to provide these services for their proposed project outside of the normal grids from which we surrounding property owners draw our utilities, and which utilities are already strained to the maximum during high-use times.

Low voltage in our area is a constant - Black outs are not uncommon - Most lasting only minutes or seconds - Where is the power going to come from? Our homes!! 23-2

Vicky Harris
5340 Balls Ferry
Anderson
365-5777

cc: Shasta County Board of Supervisors

Letter 23

Vicky Harris, August 4, 2006

Response 23-1: See Response 22-1.

Response 23-2: The power will be provided by Pacific Gas and Electric (PG&E). PG&E has not expressed any concerns about serving the project. There is no information to suggest that the proposed project will aggravate whatever problems local residents are already experiencing in electric service.

Letter 24

Date: 8-27-'06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Dust/Fumes: There is no pollution control device which is 100% effective for this kind of operation. The air-borne dust created by this gravel process would undoubtedly contain dioxins and furans lying dormant – substances better left undisturbed. This, mixed with diesel fumes (a known carcinogen) from the fleet of gravel trucks and other equipment, would make an evil concoction which would adversely affect those of us in a great area surrounding the proposed gravel pit, especially during any of our frequent summer air inversions. **24-1**

Mary Beatrice Craig
19998 alexander drive.
Anderson, Ca. 96007

cc: Shasta County Board of Supervisors

The following table has been provided to identify those individuals who shared the same comment.

Letter	Individual or Signatory	Affiliation	Date
24	Mary Beatrice Craig	Self	8/27/2006
24.01	Kristina Sims	Self	8/4/2006
24.02	John & Jane Karos	Self	
24.03	Peggy Prescott	Self	
24.04	Ed & Fran Robinson	Self	
24.05	C.A. Berg	Self	
24.06	Lois Rohlf	Self	
24.07	Charlene Houghton	Self	8/27/2006
24.08	Frank L. Craig	Self	8/27/2006
24.09	Jim McGowan	Self	
24.10	William and Henry Mitchell	Self	
24.11	Beth M. Wood	Self	9/25/2006
24.12	Patsy Dunn	Self	
24.13	Arleigh and Rosemarie Oliver	Self	9/15/2006
24.14	Marilee & Ronnie Lee Webb	Self	
24.15	James and Gail Mellow	Self	
24.16	Robert Brannon	Self	9/29/2006
24.17	Tom Giles	Self	8/24/2006
24.18	Rosemary Reeves Mashore	Self	8/22/2006
24.19	Jane McFarland	Self	
24.20	Bill Mitchell	Self	
24.21	Patricia K. Tiberend	Self	
24.22	Klaus and Pamela Ryser	Self	
24.23	Elaine Blexhern	Self	
24.24	Greg W. Beitel	Self	

Letter 24

Response 24-1: As noted in the DEIR, the primary mobile-source criteria pollutant of local concern is carbon monoxide (CO). Concentrations of CO are a direct function of vehicle idling time and, thus, traffic flow conditions. As noted in the DEIR, localized concentrations of mobile-source CO were not found to exceed applicable ambient air quality standards. Please refer to Impact 4.4-3 of the DEIR for additional discussion of localized CO impacts.

As noted in the DEIR, implementation of the proposed project would result in an increased number of material haul trucks along area roadways, as well as use of diesel-powered equipment on the project site. Predicted concentrations of diesel-exhaust particulate matter (DEPM) along the haul route were modeled assuming an average of 64 haul truck trips. (128 one-way trips) As noted in Section 4.3, Transportation and Circulation of the DEIR, trip generation for the proposed project was estimated based on information provided by the project applicant regarding the amount of gravel that will be extracted and processed per day. This information was used to estimate the number of truck trips entering and exiting the site. Based on this information, implementation of the proposed project would result in an average increase in truck haul trips of approximately 64 total daily inbound and outbound trips.

Based on the analysis conducted, predicted cancer risks at receptors located within 150 feet of haul routes would exceed the cancer risk threshold of 10 in one million. As noted in the DEIR, implementation of the proposed mitigation measures, as well as compliance with ARB's ongoing diesel exhaust emissions reduction programs and rules, would result in substantial reductions in DEPM emissions. However, predicted concentrations at the nearest receptors would still be anticipated to exceed applicable standards. As a result, exposure to localized concentrations of DEPM were considered significant and unavoidable.

As noted in the DEIR, Section 4.12, an air toxics evaluation was conducted to estimate the potential non-cancer and cancer health risks associated with exposure to dioxin and furans that may become airborne during future quarry operations in Phase 3 of the proposed project. The Office of Environmental Health Hazard Assessment (OEHHA) guidelines for estimating potential exposure to chemical emissions were used to assess the potential human exposure to airborne chemicals from a variety of exposure pathways. The toxicity, exposure and risk assessment levels were all found below the levels that typically require emission controls by the California Air District.

Concerning dioxin, see the DEIR, page 4.12-15 for a complete discussion of dioxin emissions in air related to toxicity exposure and risk assessment. The theoretical carcinogenic risk assuming the potential residential exposure to dioxin and furans in dust generated by mining and reclamation activities is 0.00000005 $\mu g/m^3$. The total risk assessment value is 0.00000005 $\mu g/m^3$, which is less than the standard 0.000001 $\mu g/m^3$. The hazard index assuming potential residential exposure to dioxin and furans in dust generated by mining and

reclamation activities is 0.0003 $\mu g/m^3$. This level is less than 1 $\mu g/m^3$, the level typically requiring emission controls by California Air District.

Letter 25

Date: 8-4-06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Dust/Fumes: There is no pollution control device which is 100% effective for this kind of operation. The air-borne dust created by this gravel process would undoubtedly contain dioxins and furans lying dormant – substances better left undisturbed. This, mixed with diesel fumes (a known carcinogen) from the fleet of gravel trucks and other equipment, would make an evil concoction which would adversely affect those of us in a great area surrounding the proposed gravel pit, especially during any of our frequent summer air inversions. 25-1

There are also no provisions for the trucks to cover their loads – the pollution from uncovered gravel trucks would be immense all along the proposed routes – ~~[illegible]~~ the community is heavy in orchards of all kinds, plus crop commodities which we eat + sell to the public – those that farm for Organic reasons would be violated + the possibility of damage to the orchards + crops is a risk this community is not willing to take. 25-2 25-3

cc: Shasta County Board of Supervisors

Vicki Harris
5340 Balls Ferry
365-5777

Letter 25

Vicky Harris, August 4, 2006

Response 25-1: See Response 24-1.

Response 25-2: See Response 4-2.

Response 25-3: As noted in the DEIR, uncontrolled localized concentrations of fugitive dust on plants can affect photosynthesis. Based on the air quality analysis conducted and implementation of the proposed mitigation measures, predicted offsite concentrations of fugitive dust at the nearest orchards would not exceed the national secondary (welfare-based) annual ambient air quality standards for PM_{10}. As discussed in the DEIR, these secondary standards have been established for the purpose of protecting human welfare, which includes damage to agricultural crops (EPA 2006(a)). With mitigation, localized impacts to agricultural crops would be considered less than significant.

Although localized concentrations of PM_{10} would not exceed the national secondary standards, predicted localized concentrations of PM_{10} were found to exceed applicable primary standards, which have been established for the protection of human health. Mitigation measures were incorporated to reduce operational emissions. However, even with mitigation, predicted localized concentrations would still be anticipated to exceed ambient air quality standards for PM_{10} on some days. No additional measures have been identified that would reduce predicted localized concentrations of PM_{10} at nearby receptors to a less than significant level. As a result, this impact was considered significant and unavoidable. Please refer to Table 4.4-1 of the DEIR for a discussion of health-related impacts associated with airborne particulate matter.

Letter 26

Date: 8/4/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: **26-1**

Widen Roads: The plan to widen Balls Ferry Road would create a disaster for many of the residents alongside. Homes, wells, and ACID ditches would be destroyed. At the same time, the widening of this road would not begin to resolve the traffic problems which would be caused by this proposed gravel project.

Vicky Hanes
5340 Balls Ferry
Anderson
365-5777

cc: Shasta County Board of Supervisors

The following table has been provided to identify those individuals who shared the same comment.

Letter	Individual or Signatory	Affiliation	Date
26	Vicky Harris	Self	8/4/2006
26.01	Mary Beatrice Craig	Self	8/27/2006
26.02	Peggy Prescott	Self	
26.03	Miles Berry	Self	
26.04	Ed & Fran Robinson	Self	
26.05	C.A. Berg	Self	
26.06	Charlene Houghton	Self	8/27/2006
26.07	Frank L. Craig	Self	8/27/2006
26.08	William and Henry Mitchell	Self	
26.09	Arleigh and Rosemarie Oliver	Self	9/15/2006
26.10	Marilee & Ronnie Lee Webb	Self	
26.11	James and Gail Mellow	Self	
26.12	Tom and Sandy Giles	Self	8/24/2006
26.13	Bill Mitchell	Self	
26.14	Patricia K. Tiberend	Self	
26.15	Klaus and Pamela Ryser	Self	
26.16	Greg W. Beitel	Self	
26.17	Jane McFarland	Self	
26.18	Tony B.	Self	8/24/2006
26.19	Charles Reynolds	Self	8/24/2006
26.20	Chris Kuiper	Self	8/24/2006
26.21	James Hayward Sr.	Self	8/24/2006
26.22	Joann Moore	Self	9/28/2006
26.23	Elaine Blexhern	Self	
26.24	S.M. Hagg	Self	
26.25	Rhonda Hansen	Self	8/24/2006
26.26	Lisa Reynolds	Self	8/24/2006

Letter 26

Response 26-1: Please see Response 1-1. The identified roadway widening would allow the facility to meet current County design standards, which will facilitate the safe and efficient movement of all modes of travel. However, the County may concur that it is not realistic to widen the roads as recommended in the DEIR.

Letter 27

Date:

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: **27-1**

Widen Roads: The plan to widen Balls Ferry Road would create a disaster for many of the residents alongside. Homes, wells, and ACID ditches would be destroyed. At the same time, the widening of this road would not begin to resolve the traffic problems which would be caused by this proposed gravel project.

Kiara Anno
6894 Lady Smith Ave
Anderson Ca 96007

This encourages more traffic I'm against more traffic **27-2**

cc: Shasta County Board of Supervisors

Letter 27

Kiara Anno

Response 27-1: See Response 1-1.

Response 27-2: There is no information to support the claim that widening the roadways to current County Design Standards will substantially increase traffic volumes on the roadway.

August 15, 2006

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED

AUG 17 2006

PLANNING/BUILDING DIVISIONS

Letter 28

To: Shasta County Department of Resource Management, Planning Division
1855 Placer Street, Suite 103
Redding CA 96001 Attn: Bill Walker, Senior Planner

RE: Project Title: Use Permit 05-010 and Reclamation Plan 05-001
: Shasta Ranch Mining and Reclamation Plan

From: Mrs. Joy M. Mellow, 5797 Green Acres Drive, Anderson CA 96007

Our family has owned this property for 44½ years. I am now a widow living at this address as I have for all these years.

This property is approximately 1.1 irrigated (AC/D) acres near the WNW border line of the above property of Shasta Ranch, etc. – close enough to be affected and so notified by your office.

My concerns are certainly all contained in the DEIR conclusions which confirm that it "finds significant and unavoidable impacts" to our area.

#1 Noise Levels – Not acceptable

Noise emanating from this site: Explosions, large machines moving earth, Grinding, Stockpiling, Loading sounds, and the constant "ding-ding-ding" as trucks are in reverse for loading. 28-1

These sounds would be heard at all times – not just when there are "air inversions" or on "windy days."

All these noises exceed "County noise standards."

(OVER)

Letter 28 Continued

#2 Emissions from this site - not acceptable
"NO_x and PM10 emissions will exceed acceptable thresholds".
Increased PM10 at nearby sensitive receptors would "exceed" State and Federal standards." 28-2
"Increased emissions of ozone precursors and particulate matter exacerbates the existing exceedances of state ambient air quality standards for ozone and respirable particular matter." 28-3

#3 Re: CA GOV. CODE - SECTION 65962.5 (the Cortese List)
This project site is located or certainly should be known as "Hazardous Waste Property" or as a "Hazardous Waste Disposal Site". I consider (as the Cortese List should) DIOXIN: a most hazardous waste. Simpson Paper Company used this area as its waste disposal site!! (For Dioxin that is.) 28-4
Moving so much dirt certainly contaminates a very large area and not necessarily just ~~onto~~ this project site! ("Approximately 3.43 million cubic yds. of overburden.) 28-5

#4 I consider myself a nearby "sensitive receptor". I currently use medication for respiratory problems. 28-6

#5 I would hope that you and other planners would visit my area to see for yourself how quiet our area now is. We also have an abundance of wild life that visit our property, e.g. deer, wild turkeys, quail, pheasants, and many species of wild birds. Noise and unhealthy emissions can affect all of us 28-7

Thank you for your consideration. [signature]

Letter 28

Joy Mellow, August 17, 2006

Response 28-1: Concerning noise impacts, see Response 10-1.

Response 28-2: Concerning air quality, see Response 24-1.

Response 28-3: Concerning air quality, see Response 24-1.

Response 28-4: The commenter expresses concerns about hazardous materials. The provisions in Government Code Section 65962.5 are commonly referred to as the "Cortese list" (after the Legislator who authored the legislation that enacted it). The list, or a site's presence on the list, has bearing on the local permitting process as well as on compliance with the California Environmental Quality Act (CEQA).

California Health and Safety Code section 65962.5 was originally adopted in 1985 and required Department of Toxic Substances Control (DTSC) to develop and publish a list of specific sites in California that were subject to corrective action by DTSC regulatory review. Because this statute was enacted over twenty years ago, some of the provisions refer to agency activities that were conducted many years ago and are no longer being implemented and, in some cases, the information to be included in the Cortese List does not exist.

To be listed a site must have met the following criteria:

1) Hazardous waste facilities subject to corrective action pursuant to Section 25187.5 ("HSC"). The hazardous waste facilities identified in HSC § 25187.5 are those where DTSC has taken or contracted for corrective action because a facility owner/operator has failed to comply with a date for taking corrective action in an order issued under HSC § 25187, or because DTSC determined that immediate corrective action was necessary to abate an imminent or substantial endangerment. The Shasta Ranch site was never subject to corrective action.

2) Lands designated as hazardous waste property or border zone property pursuant to Article 11 (commencing with Section 25220) of Chapter 6.5 of Division 20 of the Health and Safety Code. The Shasta Ranch is not so designated.

3) Information received by the Department of Toxic Substances Control pursuant to Section 25242 of the Health and Safety Code on hazardous waste disposals on public land. Shasta Ranch is not public lands.

4) All sites listed pursuant to Section 25356 of the Health and Safety Code. This section deals with site subject to DTSC response and oversight.

5) Sites included in the Abandoned Site Assessment Program. DTSC had an abandoned site program in the 1980s. HSC § 25369, which was enacted in

1985, required an abandoned site survey in "rural unsurveyed counties." Sites identified in the abandoned site program were included in the "CalSites" database of known and potential hazardous substance release sites. After further investigation, many sites were removed from the "CalSites" database because there was no evidence that a release of hazardous substances occurred. Some time in the early 1990s, DTSC's activities under HSC § 25369, and the entire Abandoned Site Program, were concluded. Shasta Ranch is not in the abandoned site program.

In addition to information provided by DTSC the State Water Resources Control Board was required to compile and update as appropriate, but at least annually, and shall submit to the Secretary for Environmental Protection, a list of all of the following:

(1) All underground storage tanks for which an unauthorized release report is filed pursuant to Section 25295 of the Health and Safety Code. The Shasta Ranch has no leaking underground storage tanks.

(2) All solid waste disposal facilities from which there is a migration of hazardous waste and for which a California Regional Water Quality Control Board has notified the Department of Toxic Substances Control pursuant to subdivision (e) of Section 13273 of the Water Code. Shasta Ranch does not include a solid waste disposal facility from which there has been a migration of water.

(3) All Cease and Desist Orders issued after January 1, 1986, pursuant to Section 13301 of the Water Code, and all cleanup or abatement orders issued after January 1, 1986, pursuant to Section 13304 of the Water Code, that concern the discharge of wastes that are hazardous materials. A Cease and Desist Order has not been issued to the owners of the Shasta Ranch.

Lastly the local enforcement agency, as designated pursuant to Section 18051 of Title 14 of the California Code of Regulations, shall compile and shall submit to the California Integrated Waste Management Board, a list of all solid waste disposal facilities from which there is a known migration of hazardous waste. The California Integrated Waste Management Board shall compile the local lists into a statewide list, which shall be submitted to the Secretary for Environmental Protection and shall be available to any person who requests the information .

Government Code § 65962.5 was originally enacted in 1985, and per subsection (g), the effective date of the changes called for under the amendments to this section was January 1, 1992. While Government Code Section 65962.5 makes reference to the preparation of a "list," many changes have occurred related to web-based information access since 1992 and this information is now largely available on the Internet sites of the responsible organizations. Those requesting a copy of the Cortese "list" are now referred directly to the appropriate information resources contained on the Internet web sites of the boards or departments that are referenced in the statute, as listed below. A hard copy of the Cortese "list" is maintained in Cal/EPA's Library in Sacramento. DTSC recently replaced the "CalSites" database with

a new database of hazardous substance release sites, known as the "EnviroStor" database. The EnviroStor database does not indicate if a specific site was at one time included in the abandoned site program and does not have a category for sites that are considered abandoned. The CalSites database also did not include this information. Consequently, DTSC does not provide the information to Cal/EPA originally called for under section 65962.5(a)(5).

Response 28-5: The comment addresses the movement of contaminated material. See Responses M-1 and M-2.

Response 28-6: Residences in the vicinity have been considered as "sensitive receptors." See DEIR, page 4.4-11.

Response 28-7: Noise-related impacts to wildlife were addressed in Section 4.5, Biological Resources, of the DEIR. As noted in the DEIR, implementation of the proposed project was found to have a potential significant impact to nearby wildlife. Noise-related impacts would be primarily associated with potential for interference with foraging, nesting and breeding activities of special status birds. Mitigation measures were incorporated to reduce potential noise related impacts that may adversely affect wildlife to less-than-significant levels. These measures included requirements for conducting pre-construction surveys, as well as establishment of buffer zones, as necessary, and consultation with the California Department of Fish and Game. Please refer to Section 4.5 of the DEIR for additional discussion of noise-related impacts to wildlife.

Letter 29

Aug. 5. 2006

Regarding permit 05-010 and plan 05-001

To the Dept. of Resource Management:

We are truly very much against the proposed gravel pit! The dust and noise would change our neighborhood! 29-1

What about fishing on the Sacramento River? The proposed site is very near one of the prime fishing holes! 29-2

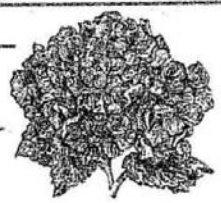
What about the school bus stops on Dalla Ferry Road? Truck traffic would be a danger to the children! 29-3

Take a look at the existing gravel plant on Cottonwood Creek and you will see what this new gravel pit would make our neighborhood look like! 29-4

Thank you for your attention

J.D. & Jean Higgins
22029 Reading Dr.
Anderson Ca

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
AUG 09 2006
PLANNING/BUILDING DIVISIONS



Letter 29

J.D. and Jean Higgins, August 5, 2006

Response 29-1: The commenter is opposed to the project, comments on dust and noise. Concerning dust, see Response 25-3. Concerning noise, see Response 10-1.

Response 29-2: The commenter questions what will happen to fishing on the Sacramento River, but does not specifically comment on the analysis provided in the Draft EIR. Potential effects on listed salmonids, including spawning gravels, are discussed under Impact 4.5-6 of the Draft EIR. In addition, the property is private property. Therefore, unauthorized entry would be considered trespassing. Fishing access is provided along the Sacramento River in designated public access areas.

Response 29-3: See Response 1-1.

Response 29-4: Comment noted. The comment does not address the adequacy of the DEIR. Therefore, no further response is necessary.

Letter 30

Margot King
P.O. 1186 Anderson, Ca 96007-1186
(530) 365-1020 Cell (530) 515-0800 Store (530) 365-5700

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
JUL 25 2006
PLANNING/BUILDING DIVISIONS

July 22, 2006

Shasta Ranch Gravel Pit

Bill Walker, Senior Planner
Shasta County Department of Resource Management
Planning Division
1855 Placer Street...Suite 103
Redding, Calif. 96001-1759

Dear Mr. Walker;

I have written to you a couple of times already, from a purely personal stand point and from an environmental stand point, as I am sure a lot of other people have. Here I am again.... **I definitely oppose the proposed project**. I live almost next door to this project site. To have a "gravel operation" is an awful thing to look forward to. I am 2nd to the last home on Blue Jay Lane right next to the proposed project. I would not have purchased this home as my retirement home, if I had had any idea this project was in the works. I am concerned about the following: **30-1**

My well: When the ground is disturbed my well with most likely be contaminated/poisoned. I live approx ½ mile from stage one of this project. There is no city water available here in the country. **What do I do for water?** **30-2**

My peace & quiet: I moved to the country to enjoy the quiet away from the City noises. I was willing to be spend additional time on the road to and pay more for fuel just to be able to live in a quiet country neighborhood. I am definitely going to have a lot of noise if this goes through. **What about my right to peace and quiet?** **30-3**

My air: There is going to be excessive dust and diesel fumes in my home and grounds. They will do just like Knauf did..buy additional pollution credits when they already are damaging the atmosphere and my air. I have two grandsons that will not be able to visit me due to their Asthma & bronchitis. They live six hours away, so it is not an option for me to travel to see them, since I am still working and do not have that much time off. So far I personally do not have a breathing problem. **But will I?** **30-4**

Traffic: Balls Ferry is a very narrow road; there is not even a shoulder for someone to ride a bike on. There is farm equipment, school buses and homes very close to the road. I see a very dangerous situation emerging from this excessive use by big heavy **30-5**

Over

Letter 30 Continued

trucks using this road. Balls Ferry is a country road; even if the road were widened it will not be able to accommodate this type of traffic. I am going to be very uncomfortable trying to leave my property and drive down Balls Ferry with the big trucks going and coming. I am the typical "little old lady driver" but I bet others will not be. I can see disgusted drivers passing when it is not safe to do so. With my luck…I'll be the one they run into **head on.** Further, the road is going to be over used and then who pays for repairs? **I'm not willing to.** 30-5 cont.

Property values: I just purchased this property on the River, about a year ago (have been trying to accomplish a home on the River since 1988). Well I'm here and I paid a lot more than I was comfortable with…but felt I better do it before prices go any higher. Now this project is in the works…I can assure you, I could not re-sell this property and move without taking a big financial loss due to this gravel project. This Gravel Pit has essentially decreased the value of my property by a lot. The property is now worth a lot less than when I purchased it. I bought a property in the country, on the Sacramento River to enjoy the peace and quiet and the river…Now my peace and quiet is going to be gone. If I could sell and move somewhere else…I would. However, as I stated above…the value of my property due to this proposed gravel pit just decreased a lot.. I would take a very large loss **if** I could even sell it. That might be a real issue…What buyer would buy a property that is going to be ½ mile from this gravel pit? Of course you would have to disclose this issue and I doubt anyone would even consider a purchase of my property even at a greatly reduced price. **Why is this fair?** 30-6

In conclusion….I do not think that the Gravel Pit is in keeping with the rural country atmosphere of our area. Aside from my personal concerns about my personal living space…I am also concerned about this project being right next to the Sacramento River. This location is not an appropriate spot. The Sacramento River is going to be poisoned and I don't care what kind of assurances the developers have made… They are just trying to smooth over the whole situation to accomplish what they want. Lets face it ..there is a lot of money involved.. The neighbors, and others that will be impacted, really don't have the kind of money needed to stop this and our only hope is that the various departments in the County will realize that this is a very bad idea and put a stop to it. It is not in the best interest of our community or the Sacramento River. 30-7

There was a lot of dumping of toxic waste that went on with this property that is not even of record. Many reports were not made official due to the previous owners losing the property and not applying for the proper disclosures etc. That site is a toxic and it seems that a lot of information is just not being made public or even known about. It really has not been thoroughly checked out. I understand there are a lot of wells on this property and only a few have been checked. There were also trenches that have been covered over and the vegetation has covered where they were. **I am very concerned, for myself & my family personally, the health of the area, and the health of the Sacramento River.** 30-8

Sincerely,

Margot King

Margot King
22920 Blue Jay Lane
Anderson, Calif. 96007

Letter 30

Margot King, July 22, 2006

Response 30-1: Commenter notes they live next to the project site and are opposed to the project.

Response 30-2: The commenter is concerned about what to do for water if their well is contaminated or poisoned from the ground disturbance activities associated with the proposed project. See Response 13-1. There is no information to support the claim that proposed mining operations will impact groundwater quality and affect wells in the vicinity. Domestic wells in the vicinity of the Shasta Ranch property are located up-gradient of the site activities; the groundwater flow direction is away from local residences. Dioxin is hydrophobic. As such, it adheres readily to soil and is unlikely to move through the soil profile into groundwater. This has been confirmed by testing of wells on-site.

Response 30-3: The comment is noted. The noise impacts are addressed under Section 4.7 of the DEIR.

Response 30-4: The commenter is concerned about excessive fumes and diesel exhaust and asks if they will develop breathing problems. See Section 4.4 of the DEIR for a list of common air pollutants and associated health risks associated with each pollutant. See Section 4.4.5 Impacts and Mitigation Measures in the DEIR for more information on impacts associated with the predicted airborne concentrations of diesel exhaust particulate matter.

Response 30-5: See Response 1-1.

Response 30-6: Comment on perceived property values is noted. The comment does not address the adequacy of the EIR, therefore, no further response is necessary.

Response 30-7: The commenter is concerned with the Sacramento River being poisoned. See Responses 13-1, 15-1 and 16-2 for an explanation of site testing and agency review. No constituents of concern were identified over screening level limits for protection for aquatic organism, human health, or the environment at the site. Because of the low laboratory detection level for dioxins and the natural contribution from occurrences such as forest fires – detectable levels of dioxin compounds are likely in the environment, especially in areas where forest fires have impacted air quality. No chemicals, such as flocculants or cleaners, will be employed to assist in the washing of gravel at the site. Therefore gravel washing operations will not introduce chemicals that would have adverse impacts on fisheries or the Sacramento River.

Response 30-8: The commenter claims that there was a lot of toxic waste dumped on the site that was not recorded and a lot of information is not being made public. No information is provided to support the claim. Please refer to Response 13-1, 15-1, and 16-2 for more information on site testing and agency review of site contamination. All information on the site relative to the past use of treated effluent has been disclosed. The levels of dioxin and related compounds

detected at the site are below levels determined by regulatory agencies to be protective of human health and the environment.

Initially under federal authority, EPA conducted a screening evaluation at the site and determined that no further action, under federal status and regulation for the protection of human health and the environment, was required.

Within California, the Department of Toxics Substances Control (DTSC) or, when appropriate, the California Regional Water Quality Board, is the state agency with responsibility for ensuring that a required action in response to a hazardous substance release, or threatened release, at a site is carried out in compliance with the procedures, standards, and other requirements of the California Health and Safety Code and related statutes as appropriate. Recent monitoring activities were conducted under the review and oversight of the RWQCB. A work plan was submitted to, and approved by, the RWQCB for the monitoring conducted by Shasta Ranch at the request of the RWQCB in 2005-2006. That monitoring has been completed, and no additional groundwater monitoring is required at the site.

Letter 31

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
AUG 28 2006
PLANNING/BUILDING DIVISIONS

To: Shasta County Dept. of Resource Mgmt.
Planning Division
1855 Placer Street #103
Redding, Ca. 96001
Attn: Bill Walker - Senior Planner

Re Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

Hours of Operation:
Limit to weekdays only. No weekends, ever. **31-1**

Toxins: (per report in DEIR)
38,000 tons of sludge deposited in on site landfill 1964-1971 and 15 Tons of sludge per day on the site and Toxic filled pits (unlined pits) now covered by 10 feet of dirt. Yet testing only conducted 6"-10" in depth. (No wonder higher degree of toxins not found.) Project will dig 35 feet down. Load toxic dirt & sand and transport it through communites of Anderson & Cottonwood. **31-2**

See next pg Toxins.

Toxic Dust or no toxic dust. Houses too close to the road on Balls Ferry. Plan appears to be to widen the lanes, not just shoulder, of Balls Ferry. Trucks will be even closer to homes. **31-3**
Diesel fumes / Dust / noise

(See next pg Diesel)

Letter 31 Continued

Planning Commissioners & our elected County Supervisors make final decision.

Site:
Phase 3 should never be touched. Too much toxic material dumped there for 30 years. 31-4

Asphalt / Cement Plants: Should never, ever allowed on this site. 31-5

Duration of project:
No extension ever. They have an additional ten years, after the final gravel is extracted within which to complete reclamation plan. Current draft EIR says if there is more gravel possible, then can extend years & years! 31-6
There is nothing that says at the end of gravel extraction a For Sale sign can't immediately go up!

* Diesel fumes:
Known carcinogen. Cause cancer and respiratory problems, harmful to children. Most Houses on Bella Ferry are up near the roadway now, not on the back acreage. Trucks even closer if road widened. They can buy pollution credits like Kaiser. 31-7

In a survey conducted in Sept 1996 - there were 5,449 people living within 4 miles of this proposed gravel pit site.

Letter 31 Continued

In DEIR:

Plan to turn Deschutes and Balls Ferry into truck route all for the benefit of Mr Fullis.
No traffic light at BF/Deschutes. That is "in the future plan. Not a mitigation measure 31-8

Aggregate is needed, but not here! 31-9

When is $ not the deciding factor?

Draft EIR found everything that directly effects the people, i.e.: dust, pollution, noise, traffic, toxins all to be Significant, but unavoidable. 31-10

Why would this get approved — what a legacy for commissioners & co. supv. to leave behind!
Follow the money —

Aggregate $12/cu yard (I think)
3.43 million cubic yards of overburden
6.06 million cubic yards of soil & gravel exported

Sincerely Chris Hells
2186 Mangrove Ln
Anderson Ca. 365-1376

Letter 31

Chris Wells, August 28, 2006

Response 31-1: See Response 7-1.

Response 31-2: The commenter refers to the Geomatrix soil samples taken from fields that received mill sludge and/or effluent that were collected at depths of 6 to 10 inches included in Appendix 4.8-2 of the DEIR. See Response M-1. The disposal trenches are located 70 feet from the access road located on the east side of the levee. See Figure 14A of the Amended Shasta Ranch Mining and Reclamation Plan in Appendix 3.0-3 of the FEIR. A Storm Water Pollution Prevention Plan (SWPPP) has been prepared that includes implementation measures to further prevent impacts of pollutants being introduced to storm water discharges in compliance with the statewide General Permit (Water Quality Order No. 99-08-DWQ) and the National Pollution Discharge Elimination System (NPDES). (See Appendix 4.9-7 of the FEIR.) In addition, Mitigation Measure MM 4.9-3(b) in the DEIR states, construction of the site levees and grading performed during mining operations will be performed in a manner such that on-site runoff will be directed to the interior of the mining phases.

Response 31-3: See Response 1-1 concerning widening of roads. There is no proposal to widen the travel lanes, only the shoulders.

Response 31-4: Commenter states Phase 3 should never be touched because of toxic material. See Responses M-1, M-2 and B-2.

Response 31-5: See Response 17-1.

Response 31-6: Comment noted. There should be no extension of time granted after the 10 years to complete the final site reclamation.

Response 31-7: Commenter is concerned with diesel fumes for houses near roadway. See Section 4.4.5 Impacts and Mitigation Measures discussed in the DEIR for more information on impacts associated with the predicted airborne concentrations of diesel exhaust particulate matter.

Response 31-8: The DEIR states that Balls Ferry should be improved to meet current county standard (such that all modes of traffic could be accommodated). As described in the DEIR, traffic projections indicate that a traffic signal is not warranted under Existing or Baseline Conditions, with or without the project. However, under Cumulative Conditions (which accounts for additional growth in the area and the region), a signal is warranted at this location. See DEIR, Section 4.3, Traffic and Circulation, for more information.

Response 31-9: Comment noted. The comment does not address environmental issues. Therefore, no further response is necessary.

Response 31-10: Comment notes that the DEIR identifies a number of impacts that are considered significant and unavoidable. The California Environmental Quality

Act's (CEQA) main objective is to disclose to decision makers and the public the potentially significant environmental effects of proposed activities and requires agencies to avoid or reduce the environmental effects by implementing feasible alternatives or mitigation measures. The final decision to approve or disapprove a project is determined by the Planning Commission and if appealed, by the County Board of Supervisors. CEQA also gives agencies the authority to make findings to approve projects that will have significant environmental impacts.

Letter 32

(1)

RECEIVED
JUL 18 2006
PLANNING/BUILDING DIVISIONS

Dear Mr. Walker, 7-17-06

32-1 name is Stacey Frase, and I own a 12 acre piece of property over on Lone Tree Road. I bought this land close to 12 years ago with the intention of building a house for my children (Chelsey 12 years old and T.J. 7 years old) to grow up in. Well, now I am finally able to do this for my children and here comes this project. I know I am one of hundreds and hundreds of letters you will receive about this, but I'm sure the concerns are similar. My dream of this new house, never included following 100 big trucks everyday, as I drive my kids

(2)

to St. Joseph and St. Francis Schools everyday. Or as

32-2 I read in this letter having to worry about the increase chance of health problems, including cancer that I read about in the DEIR. Or the fact of living in the country, will turn into a lot of noise and damage, to the look and feel of the country. Like I said

32-3 there is hundreds of houses down there right now that feel the same way as I do. I also think if whoever is trying to help this project go through just thinks to themselves how would I feel

32-4 if this was coming to my neighborhood. I think you could ask everyone of them if they would welcome

Letter 32 Continued

③

this next door to their
houses where they are
raising their kids, they
would all say "No".
I think it is really time
to stop this project and
start looking for a site,
that would not affect hundreds
and hundreds of families. **32-4 cont.**
Again I really do pray that
the people trying to push
this project through, stop
and ask the question honestly
"Am I ready to move my
family right next to this
project, like all these other
families?" Thank you for
your time and please really
sit and think about what
I wrote here.
If you need to Thank you,
talk to me, my Stacey Frase
is.-746-2878

Letter 32

Stacey Frase, July 17, 2006

Response 32-1: Comment noted. The commenter does not address environmental issues. Therefore, no further response is necessary.

Response 32-2: The commenter's concern is noted regarding the health risks associated with various air pollutants identified in Section 4.4 of the DEIR. Page 4.12.15 of the DEIR provides additional information on dioxin emissions related to toxicity exposure and risk assessment.

Response 32-3: See Response 10-1 regarding noise impacts.

Response 32-4: Comment noted. The commenter does not comment on the adequacy of the DEIR. Therefore, no further response is necessary.

Letter 33

VICKY HARRIS

P.O. BOX 798
ANDERSON, CA 96007
Phone/Fax 530-365-5777

REC'D AUG 21 2006

August 21, 2006

Mr. Bill Walker
Dept. of Resource Mgmt
Planning Division
1855 Placer St. Ste 103
Redding, CA 96001

Ref: Shasta Ranch Mining Opera

Dear Mr. Walker,

I am writing to ask for an extension of time to review the DEIR on the above mentioned project. This DEIR is large and extensive, requiring time consuming and methodical overview. I have found many inconsistencies which have slowed the review process and more time is needed to accurately respond to this report. 33-1

Thank you for any consideration you may give me in this matter.

Sincerely,

Vicky Harris

Vicky Harris
5340 Balls Ferry Rd.
Anderson, CA 96007

Letter 33

Vicky Harris

Response 33-1: See Response 37-1.

Letter 34

August 15, 2006

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED

AUG 21 2006

PLANNING/BUILDING DIVISIONS

William and Gloria Pedretti
21956 Whispering Water Lane
Anderson, CA 96007

Bill Walker, Senior Planner
Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Ste.103
Redding, CA 96001

RE: Shasta Ranch Mining and Reclamation
Use Permit 05-010, Reclamation Plan 05-001

Dear Mr. Walker:

We would like to express many concerns regarding the DEIR for the aforementioned project. First of all, the word "mitigate" and "mitigation" is of great concern. The word shows up over and over in the DEIR. Defined, it means "to make less severe, less rigorous, moderate." Who, our question is, will "mitigate" all the items which are in need of mitigation, and to what degree will these items be mitigated?

Roads/Traffic—The increase in traffic because of the heavy gravel haulers will create chaos in this rural area. Driving on Balls Ferry Road gives one reason to wonder how it would feel to share that road with gravel trucks hurrying to dump a load of gravel or to pick up another. Is Balls Ferry Road presently strong enough to accomodate this increased heavy traffic? **34-1**

School buses drop off and pick up children on Balls Ferry an estimated 6,000 times per year. Will these pick up/ drop off areas be safe, or in the way of so many gravel trucks, estimated at one every 5—7 minutes? The same concern could be for mail vehicles which stop and go all along their route, slow moving agricultural vehicles, or just someone trying to get into and out of their own driveway. **34-2**

There has been some information out that perhaps Balls Ferry Road will be widened. Who will pay for the widening of the road AND the suggested larger shoulders at various intersections? Easy answer on this one.....The taxpayers of Shasta County! How is this fair to citizens who don't want this project in the first place? **34-3**

Will eminent domain be enforced to widen Balls Ferry Road? Who will be responsible for replacing wells needing to moved? Who will be responsible for ACID ditches in the way? What about the homes which are close to the road itself? **34-4**

It's not only Balls Ferry Road which will be affected. For example, Deschutes Road will be seriously affected. Automobiles and trucks alike drive on Deschutes with the speed of freeway traffic. Adding in so many more heavy trucks should make this road even more dangerous than it is. **34-5**

Noise—Traffic, increased as it will be, will be a large contributor to noise for the residents near the project. Additionally, the noise created by rock crushers, dredgers, and/or other heavy duty equipment during hours of operation will create unacceptable levels of noise pollution in this rural, agricultural setting. **34-6**

Health—We know that the site for this project had dioxins and furans dumped there for many years. It is a great concern to us that disturbing these substances would create real health dangers both to human and wildlife. **34-7**

Levees—Word has it that Tullis, Inc. has already begun to build levees for this project on this site. How is this possible when the project has yet to be approved? **34-8**

Utilities—Has Tullis, Inc. made any provision to provide additional utility service other than the normal grid from which surrounding property owners draw their utilities? **34-9**

Letter 34 Continued

The Future—Of course, no one can predict the future, but we can surely take precautions! Have provisions been made to prohibit expansion such as cement/asphalt plants on this same site? What will be a productive use of this site upon completion of this enormous, vast project? Will the Sacramento River area around this site ever be the same? What are our county/city planners willing to gamble on the future of this area for generations to come? What legacy does the County wish to leave its future residents? **34-10**

Sincerely,

William and Gloria Pedretti

William R. Pedretti
Gloria Pedretti

Letter 34

William and Gloria Pedretti, August 15, 2006

Response 34-1: See Response 1-1.

Response 34-2: See Response 1-1.

Response 34-3: See Response 1-1. It would be the project sponsor's responsibility to pay for the improvements. However, the County may participate and facilitate the work since it would provide a public benefit of improving the roads to County standards.

Response 34-4: See Response 1-1. The commenter asks will eminent domain be required to widen Balls Ferry Road? The County has no intent to require eminent domain. If widening of Balls Ferry Road is required as part of future projects, then additional studies, including a formal wetlands delineation, will be required.

The commenter asks who will be responsible for replacing wells needing to be moved and who will be responsible for ACID ditches in the way? The County does not anticipate the removal of any wells as part of the project nor is the ACID ditch in the way of the proposed project activities. The commenter asks what about the homes which are close to the road itself? The project will not directly affect any houses requiring relocation for demolition of existing homes.

Response 34-5: See Response 1-1.

Response 34-6: See Response 10-1.

Response 34-7: See Responses 13-1, 15-1 and 16-2 for more information on site testing and agency review of dioxin contaminants.

Response 34-8: The commenter states the property owner has already started constructing levees on the property. The only activities that have occurred on the property to date include farming activities, clearing and grading associated with existing easements on the property that require routine maintenance. For example, maintenance crews were seen burning, clearing, and disposing of brush and debris within waterways (i.e. ACID).

Response 34-9: See Response 22-1.

Response 34-10: Comments noted. The commenter has asked several questions. See Response 17-1 regarding cement/asphalt plants. As stated in Section 3.0, Project Description of the DEIR, the reclaimed land use would include two ponds and approximately 85 acres of agricultural farmland. Refer to Appendix 3.0-3 of the FEIR for a complete description of the Shasta Ranch Mining and Reclamation Plan. In accordance with the County Zoning Ordinance, Section 17.92, activities that may have an adverse affect on the environment are subject to the CEQA review process. See Response 20-1.

Letter 35

Margot King
P.O. Box 1186 Anderson Ca 96007 (22920 Blue Jay Lane, Anderson)
(530) 365-1020 **FAX (530) 365-6862**

July 17, 2006

Re: Use permit 05-010 and reclamation plan 05-001
Shasta Ranch Mining and Reclamation Plan

Bill Walker, Senior Planner
Shasta County Department of Resource Management
Planning Division
1855 Placer Street Suite 103
Redding, Calif. 96001

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
JUL 19 2006
PLANNING/BUILDING DIVISIONS

Dear Mr. Walker;

I am in receipt of the Public Notice regarding the Shasta Ranch project (Gravel Pit). The DEIR in your notice should obviously show that this project is not acceptable. I am having a hard time trying to figure out why it has even gotten this far. The DEIR mentions many significant environmental impacts that are huge! This could certainly be avoided…do not allow this to go forward. The conclusion saying that the Shasta Ranch project site is not located on a known hazardous waste disposal site is not true. All the local people in Anderson know that this site was used for dumping hazardous waste for years. It may not be of record, but many of the old timers even participated in dumping waste from the paper plant and other sources. I am not an old time local but I've talked to them. **35-1**

Further, I can only wonder why we have gone to such time and expense to try and keep salmon running in the Sacramento River...only to have it destroyed by the run off of this proposed gravel pit. Once the ground is disturbed, toxic run off is ultimately going to kill much of the wildlife in the Sacramento River. I have heard about the plans for blocking the run off. We all know that water sinks down and then goes to the lowest point. The proposed measures are not going to accomplish keeping the toxic run off out of the Sacramento River. The Sacramento River is the place where all the run over will end up. How could this even be considered? **35-2**

Further the traffic of all the gravel trucks going and coming down Balls Ferry Road is going to make the Balls Ferry road even more dangerous than it already is. **35-3**

What about the air quality from all the trucks and equipment that this gravel pit is going to cause?

I guess in conclusion, air quality traffic, noise, destruction of farmland is bad enough…but to put this project right next to the Sacramento River????? I am soooo surprised this project has even gotten to this stage. Surely someone can put a stop to such a destructive venture. Does big money really talk that loud? What about are quality of life and saving the Sacramento River from this very bad idea? Where is Fish & Game standing on this? Do we really want to poison the Sacramento River? **35-4**

Sincerely,

Margot King

Letter 35

Margot King, July 17, 2006

Response 35-1: The commenter disagrees with the conclusions of the DEIR stating the Shasta Ranch project site is not located on a known hazardous waste disposal site. In response, the site was evaluated for listing on the National Priority List (NPL) under CERCLA by EPA in 1996 and was determined to not merit further consideration. Following a detailed review of the site EPA concluded:

- Concentrations of site-related hazardous substances detected in sediment samples collected downstream from the site are comparable to background concentrations.
- No site-related hazardous substances were detected in groundwater samples collected from on-site drinking water wells.
- EPA's only follow up recommendation was that the discharger continues to monitor on-site groundwater for dioxins, which was ongoing for many years and was again undertaken by the current site owners at the request of the Regional Water Quality Control Board.

Under the California's Constitution, the people of California have the right to access information under California Public Records Act which states governmental records shall be disclosed to the public upon request, unless there is a specific reason not to do so. Therefore, testing and results conducted under a federal investigation is a matter of public record which contradicts any attempt to "cover up" the results of the EPA screening investigation. Sites with the potential to impact human health and the environment are categorized and managed by the level of threat and the regulatory agency oversight applied based on the medium (soil, water, air). The terms hazardous waste, hazardous waste release site, Superfund, CERCLA, CERCLIS, etc. all have specific regulatory definitions, associated bodies of law that set standards and protocols for evaluation, and remediation. Because each term is associated with a specific body of law, each has a different meaning and requirements, and should not be used interchangeably.

Also, see Responses M-1 and M-2.

Response 35-2: The commenter asserts that project activities could release toxins into the river and harm fish, but does not provide documentation to rebut the analysis provided under Impact 4.5-6 in the DEIR. Please see Responses M-2, S-2, 13-1 and 15-1.

Response 35-3: Although no capacity issues were identified along Balls Ferry Road, see response 1-1 regarding roadway widths and safety along Balls Ferry Road. See Response 24-1 concerning air quality impacts.

Response 35-4: In response to the commenter's statement on "saving the Sacramento River from this very bad idea" the commenter does not comment on the

adequacy of the DEIR, therefore, no further response is necessary. It may be noted that the reason the project is proposed near the river is that this is where the aggregate resources have been deposited over time. In response to the California Department of Fish and Games position, see response to comment letter S.

Letter 36

August 28, 2006

DEPARTMENT OF
RESOURCE MANAGEMENT
RECEIVED

AUG 3 1 2006

PLANNING/BUILDING
DIVISIONS

Shasta County Dept. of Resource Management
Planning Division

Attn: Mr. Bill Walker

Regards: Shasta Mining & Reclamation- permit 05-001

We strongly object to the permit being issued for this project.

Our 1st comment is in regards to the last sentence in the Public Notice of Availability of the EIR.

This last sentence states the land was not listed as a known hazardous waste property on the Cortese List. Anyone that is not familiar with the history of this property would wrongly assume that it had never been contaminated.

It is on record that this was a disposal site for tons of sludge and billions of gallons of effluent contaminated with dioxins, & furans 2,3,7&8 for over thirty years. In 1988 the state warned the public not to eat the fish in the Sacramento River from between Red Bluff and Keswick Dam because of contamination from this dumping by the mills. Hay or anything else grown on the property could not be sold where it could get back into the food chain. Up until recently there was a sign on a gate at the end of Riverland Dr. warning of the contamination. 36-1

Contamination of the soil is a big issue and only acknowledging that it was not on the Cortese List painted a very one sided, rosy picture making it seem as though the land had never been contaminated. This omission makes us very concerned about the EIR. More testing for contaminates should be in accordance with EPA standards. Testing should be done at different depths varying from two to thirty feet.

The EIR does not come up with a reasonable way to stop the noise from the dredgers, rock crushers, and big machinery that will be 36-2

Letter 36 Continued

operating at the gravel pit. Besides being noisy this gravel mining operation will create dust. **36-2 cont.**

All of these issues are major health concerns and we feel that the EIR has not addressed these issues sufficiently. We cannot even believe that this property is being considered for a gravel operation site with its horrible environmental history. It would make more sense for this company to find oth
contaminated past.

The permit should also be denied because of the increase in abnormal traffic. This is not an increase in residential type traffic but huge gravel trucks that will make it hazardous and unsafe to travel on our roads. School buses that have to pull off and on the roads are going to be in much more danger of being in a deadly accident when they have to deal with a gravel truck passing by every 4 to 6 minutes. The buses return the children in the middle of the afternoon when the gravel plant will be operating. **36-3**

The EIR proposes to widen Balls Ferry Rd. Widening the road is not going to make less traffic.

Widening the road will do absolutely nothing to stop the diesel exhaust fumes from polluting the air we breathe. **36-4**

Widening the road will not stop the noise or vibrations these trucks make when they go by. These trucks will certainly cause road damage, ruts and holes that will fill up with water and be a driving hazard.

We don't want to breathe polluted air and increase our chances of getting cancer and or some lung disease. We don't want to hear a bunch of racket. We don't want to watch a parade of gigantic diesel spewing gravel trucks going by every few minutes.

We don't want to drive, walk, bike, or ride a horse along side the road with one of these trucks coming along every few minutes. **36-5**
As a test the EIR should have gravel trucks traveling our roads every 4 minutes as projected and experience what our daily lives will be like living near the road or traveling it for the next 30 years.

Letter 36 Continued

We have lived here on 10 acres on Balls Ferry Rd. for over 28 years and have raised cattle. We imagine everyone in the area moved here because of the rural and agricultural environment. This gravel pit will not improve our neighborhood or way of life. It will only cause harm to the people who live in its vicinity. I guess the only purpose for the owners of the Shasta (Ranch ?) Mining is to makes lots of money. They will make money and we will all lose it in the reduction of our property value. What gives one person or company the right to do this at the expense of so many of us who live here? Who wants to live near a gravel plant? No thank you. Please deny their request for a permit for all of the above reasons **36-5 cont.**

Thank you.

William & Pamela Johnson
4384 Balls Ferry Rd., Cottonwood, CA 96022

William Johnson
Pamela Johnson

Letter 36

William and Pamela Johnson, August 28, 2006

Response 36-1: The commenter expresses opposition to the project. The commenter disagrees with the conclusions of the DEIR stating the Shasta Ranch project site is not listed as a known hazardous waste disposal site on the Cortese List. In response, the site was evaluated for listing on the National Priority List (NPL) under CERCLA by EPA in 1996 and was determined to not merit further consideration. See responses 16-2, and 28-4.

Response 36-2: The commenter states the DEIR does not provide a reasonable way to stop the noise from the stationary equipment of the gravel operation. Impact 4.7.2 in the DEIR discusses noise impacts associated with stationary equipment. Mitigation Measures MM 4.7.2(a-f) are considered adequate in accordance with CEQA guidelines.

Response 36-3: See Response 1-1.

Response 36-4: The commenter states that widening the roadway will not decrease traffic, which is consistent with Section 4.3, Transportation and Circulation, of the DEIR. However, the widening is not due to capacity constraints on the roadway (the level of service analysis identified sufficient capacity for project traffic), it is to improve safety. See response 1-1. The DEIR addresses traffic-related noise impacts under Section 4.7, Noise and dust related impacts under Section 4.4, Air Quality.

Response 36-5: See Response 1-1 concerning traffic impacts. Much of the comment addresses the commenter's expectations concerning the incompatibility of the project with residential and other uses in the vicinity of the site and long local roads. Compatibility factors consist of the various environmental factors addressed throughout the DEIR and responses to comments.

Letter 37

SHASTA COUNTY

DEPARTMENT OF RESOURCE MANAGEMENT
1855 Placer Street, Redding, CA 96001

Russ Mull, R.E.H.S., A.I.C.P.
Director

August 17, 2006

Jessica Morris
4434 Balls Ferry Roa
Cottonwood, CA 96C

Dear Mrs. Morris:

Thank you for your letter requesting that the comment period on the Draft Environmental Impact Report for the Shasta Ranch Project be extended from 45 days to 60 days. We appreciate the fact that you are pursuing so diligently an informed position on the project.

As you are probably aware, the land use process in the State of California is a very lengthy process of review after a project is applied for. The written comment period, while significantly long at 45 days, is not the only opportunity for comment on the project. You will additionally have the opportunity to make comments at the public hearings that will be held sometime after the close of the written comment period on the draft document. The public hearing has yet to be set. The County is obligated under either circumstance to consider your comments whether or not they are submitted at the end of the written comment period or at the public hearing. **37-1**

We would certainly recommend that you make every effort to assemble your comments and get them to us within the 45 day comment period. If there are items that you still wish to comment on, you are more than welcome to do that at the subsequent public hearing.

Again, I appreciate your interest in the project.

Sincerely,

Russ Mull, R.E.H.S., A.I.C.P.
Director of Resource Management

RM/v

☐ Suite 101
IR QUALITY MANAGEMENT DISTRICT
30] 225-5674
.X: (530) 225-5237

☐ Suite 102
BUILDING DIVISION
(530) 225-5761
FAX: (530) 245-6468

☐ Suite 103
PLANNING DIVISION
(530) 225-5532
FAX: (530) 245-6468

☐ Suite 201
ENVIRONMENTAL HEALTH DIVISION
(530) 225-5787
FAX: (530) 225-5413

☒ Suite 200
ADMINISTRATION & COMMUNITY EDUCATION
(530) 225-5789
FAX: (530)-225-5807

Toll Free Access Within Shasta County 1-800-528-2850

Letter 37

Russ Mull, Director of Resource Management; Shasta County Department of Resource Management, August 17, 2006

Response 37-1: The letter is, in fact, a response to comments and requests for an extension of the review period. Initially, the DEIR was released for a 45-day review period (July 14, 2006 to August 31, 2006). It was subsequently extended 30 days (until September 29, 2006).

Letter 38

August 14, 2006

Russ Mull, Planning Director
Shasta County Planning Department
1855 Placer Road, Suite 103
Redding, CA 96001

Dear Mr. Mull:

I am requesting an extension of the public review period for the Shasta Ranch Draft EIR. I would also like you to provide extra copies to the Shasta County Library that could be checked out for a one- or two-week period.

This document is quite lengthy, with ten of the more substantive sections totaling 348 pages. Some of the supporting material in the appendices is lengthy, as well, and slow reading. It is not just a matter of reading the material, either. People need a chance to digest and discuss the information. According to the report, there are over 40 potentially significant impacts identified in the report, including at least ten that apparently can't be mitigated. There are many pieces of data and analyses that I do not understand completely and am spending much time trying to figure out what I am missing. I have a long list already of items that I will attempt to get clarification on from the appropriate agency staff person or consultant. It appears that there are some significant discrepancies in the report. Lastly, once all this material has been digested and discussed, a written response will take several hours over the course of several days or even weekends, with a person's typical schedule.

I spoke with Bill Walker to find out if an extension would be possible. It appears that the CEQA Guidelines allow a review period of up to 60 days, with extensions under unusual circumstances. In my experience with the environmental review process, I believe the upper limit has been established primarily to force large bureaucracies to review projects in a timely manner. I do not know what the underlying law allows, but it is about impossible for a citizen that works full-time and has a family, to review, consider and respond to this several hundred-page report in 45 days. I would like you to pursue an extension of a minimum of an additional 30 days. **38-1**

To make matters worse, most people will have to read the document on the computer, as a paper copy of the report (without appendices) is $200. This seems unreasonably expensive, especially for a public document. Initially, I thought I would prefer the computer version anyway to save paper. However, I'm realizing that I have only a limited amount of time that I may spend undisturbed on the computer. Without a paper copy, I cannot read the report at other free times in my day. Not to mention how hard it is on the eyes to read this material for long periods of time on a monitor. For these reasons, I think it is important that you provide several extra copies to the library that may be checked-out.

I am afraid that the expense and the heft of the report have dissuaded many people from tackling the document. Perhaps a notification of the extension and the availability of copies from the library would bring about greater consideration of the impacts of this project. I can see at this point that I cannot adequately evaluate this document in the time frame given. I think many of us would benefit immensely from an extension of the review period.

Sincerely,

Jessica Morris
4434 Balls Ferry Road, Cottonwood

cc: Bill Walker and the Board of Supervisors
Editors of the Record Searchlight and the Valley Post
Lyle Tullis

Letter 38

Jessica Morris, August 14, 2006

Response 38-1: See Response 37-1.

Letter 39

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
AUG 18 2006
PLANNING/BUILDING DIVISIONS

August 15, 2006

Shasta Co. Dept. of Resource Management
Planning Division
1855 Placer St., Suite 103
Redding, CA 96001

Dear Mr. Walker:

Over twenty-two years ago we moved to Shasta County as we found it a very desirable place to live with clean air, great beauty, and a quiet rural atmosphere. We have been very concerned with the proposed gravel plant project near our home on Balls Ferry Road. After reviewing the project summary it would appear to us that any further consideration by the county to issue a use permit would be impossible with the numerous violations specified in the DEIR.

Consequently, we submit this letter to voice our extreme opposition to this project. We stand to lose all that we moved to Shasta County to enjoy. If this project is allowed to go forward we will be forced to join with our neighbors to seek legal action to preserve our rights and our property. If that action failed we would sell our home, our business and commercial property in this county and seek to live elsewhere. We enjoy living here and certainly hope the powers that be will reject this proposed project because of the impact on the lives and property of those affected. **39-1**

Thank you for your consideration and help in this matter.

Sincerely,

Phillip D. Sargeant

Phillip D. Sargeant

Marcie D. Sargeant

Marcie D. Sargeant

Letter 39

Phillip Sargeant and Marcie Sargeant, August 15, 2006

Response 39-1: Commenter's opposition to the project is noted. No new environmental issues are raised. It is noted that the commenter states a use permit would have "numerous violations specified in the DEIR." The term "violations" is incorrect. The commenter is probably referring to the impacts that have been identified as "significant and unavoidable." These are not, per se, "violations" and pursuant to the California Environmental Quality Act, the County can approve projects with such impacts when the County makes required findings of overriding consideration.

Letter 40

Aug. 20, 2006

Mr. Bill Walker
Dept of Resource Management
Shasta County, CA

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
AUG 22 2006
PLANNING/BUILDING DIVISIONS

Mr. Walker:

Thank you for the opportunity to respond to the DEIR for the Shasta Ranch Mining and Reclamation project.

In my research, I have found there that there are endangered species on the Shasta Ranch property. These plants and animals are enrichment to the dwindling Sacramento River riparian area as well as the endangered Chinook salmon that reside in the Anderson Creek watershed area and it will be a shame to lose it. As soon as work begins on the property, the animals will have to change their habits and move on to a new place. Things will not stay the same for them, flight patterns will be disturbed, resting areas will not be quiet and safe. I do not want that to happen to them. Just across the river is the Fenwood Ranch, a Shasta Land Trust. The same species found there are found on the Shasta Ranch property. Just a short study by biologists can not possibly discover all the nesting areas and habitat. It is all controlled by time of year the study is done. <u>That study needs to be redone and cover a more lengthy time period to account for the seasons of life for the plants and animals.</u> **40-1**

These are some animals I have observed in the ranch area; willow flycatcher, bald eagles, bank swallows, osprey, sand hill cranes, Canadian honkers, river otters, mountain lion, wild turkey, wood ducks, hawks, quail. What will happen to them if this project proceeds? Wouldn't it be wonderful to have both sides of the river, the Fenwood Ranch and the Shasta Ranch be protected forever in a land trust? It would be a last vestige of a nearly wild river and refuge for these plants and animals for our future generations. **40-2**

In my research, the fact that Dioxins and Furans are present should be reason enough to halt the project. The prospect of having these chemical poisons blowing about Shasta County by way of deposit by trucks carrying the gravel product to sites is abhorrent to me. It has been proved in a 2003 study of Dioxin 2,3,6, 7 that there is no "threshold" dose - the tiniest amount can cause damage, and our bodies have no defense against it.

<u>FACT</u>: We know that dioxin exhibits serious health effects when it reaches as little as a few parts per trillion in your body fat. Dioxin is a powerful hormone disrupting chemical. By binding to a cell's hormone receptor, it literally modifies the functioning and genetic mechanism of the cell, causing a wide range of effects, from cancer to reduced immunity to nervous system disorders to miscarriages and birth deformity. Because it literally changes the functioning of your cells, the effects can be very obvious or very subtle. Because it changes gene functions, it can cause so-called genetic diseases to appear, and can interfere with child development. **40-3**

<u>FACT</u>: Because dioxin is so pervasive in the environment and our food supply, everyone is exposed to some degree of dioxin poison. People who are at particular risk for developing health problems caused by dioxin poison include young children, people who work or live near industrial or contaminated sites or products, and people who rely heavily on dioxin laden foods as their main source of sustenance. Dioxin poison takes years to be broken down in the body, allowing for the ill effects of this toxin to pose a threat to human health for most, if not all, of the human lifespan.

Letter 40 Continued

The DEIR states that available data didn't indicate presence of Dioxins and Furans exceeding drinking water standards; however, available data are limited and of questionable quality. This is on page 11 of Phase 1 Environmental Assessment. This indicates to me that another study needs to be done, more wells tested more often, and the pits need to be tested somehow. The people who did this EIR also say they do not even guarantee that their conclusions are correct or contain all the possible pollutants and poisons that are in that ground. **40-3 cont.**

I ask that you do a study on the dirt and dust that will be stirred up and measure it for dioxins. The dirt and gravel in the pits go down 30 to 40 feet, so testing needs to be done in holes that deep to get a proper reading. I don't have a clue how to do that, I am not a scientist. But I know that dioxin is a carcinogen and I do not want to breathe it or eat an animal that has it in his system because the dust landed on it and he absorbed it into his fatty tissue. Why do you suppose that a few years back an order was issued to residents to not eat the fish that they caught in the Sacramento River because of the dioxin content of the tissue of the fish? Why do you think that the Shasta Ranch grew pumpkins and told you not to eat them? **40-4**

South Vietnam is now seeing proof that the dioxin in Agent Orange poisoned the families that lived in the villages in the jungle where the U.S forces dropped the Agent Orange. Their children had birth defects and now it is showing up in their grandchild The people tested have measured 17 times the World Health Organization maximum level of dioxin in their bodies. This study was done by a group of Canadian researchers.

Knowing that, why dig the gravel and dust up and spread it about for your families to breathe and take the chance of ruining lives for the future. We know that dioxin and furans are in Shasta Ranch Mining and Reclamation project property and it is in Millville's Twin Bridges Mine. Please don't spread it out all over Shasta County. I have friends and family all over this county and will fight to protect them from this plague. If our Planners and our Supervisors don't protect us, who will? **40-5**

Leaving the land undisturbed and providing yet another piece of river frontage that people could use to ride horses, fish, and watch nature would be a better use for this land. Even a land trust, such as Shasta Land Trust, would be wonderful for this rare riparian area. There are far too few places people can go to get away from it all and even fewer places where they have river access to have an afternoon picnic and watch the river flow by. **40-6**

There are other areas to mine gravel that do not contain the dangers that this plant does. It doesn't make any sense to do harm to our people for the benefit of a few men who spent some money and do not want to lose it. We do not want to lose our lives or our health.

The asbestos content of the gravel was not addressed in the DIER. I only saw it addressed as to the buildings that are on the property. This was an issue that was mentioned in a letter by Bill Pedretti. Please address this issue. **40-7**

There just isn't enough time to study this report, understand it, research things and respond to everything. I wish we had more time.

Ken and Marcia Behnke
22048 Whispering Waters Lane
Anderson, CA 96007

Letter 40

Ken and Marcia Behnke, August 28, 2006

Response 40-1: The commenter asserts that the project site supports endangered species and that further study is required, but does not provide documentation to rebut the analysis provided in Section 4.5, Biological Resources, in the DEIR. A protocol-level floristic survey, comprehensive wildlife habitat characterization, and protocol-level survey for valley elderberry longhorn beetle were conducted within the project site. Based on these studies, the DEIR identified potentially significant impacts to the following special-status species: fox sedge, Sacramento River winter-run ESU Chinook salmon, Central Valley spring-run ESU Chinook salmon, Central Valley ESU steelhead, southern DPS green sturgeon, valley elderberry longhorn beetle, bald eagle, California red-legged frog, northwestern pond turtle, Cooper's hawk, osprey, white-tailed kite, purple martin, tricolored blackbird, California yellow warbler, yellow-breasted chat, loggerhead shrike, pallid bat, Townsend's big-eared bat, and ringtail cat. Mitigation measures that reduce these impacts to a less-than-significant level are provided in Section 4.5 of the EIR.

Response 40-2: The commenter lists a number of wildlife species that they have observed in the project area and asks what will happen to them as a result of the project. Impacts to special-status wildlife species such as bald eagle and osprey, as well as resident wildlife species with no special-status, are included in Section 4.5, Biological Resources of the DEIR.

The commenter also expresses a desire to see Shasta Ranch be protected in a land trust similar to Fenwood Ranch. No information is provided to support such an alternative. No change to the EIR is required.

Response 40-3: See responses M-1, M-2, 13-1, and 16-2.

Response 40-4: See responses M-1 and M-2. The commenter's request to conduct more testing of dioxin and furans in the soil is noted, but no information is provided to support the claim that the analysis that has been completed is inadequate.

Response 40-5: The EPA's screening level values for dioxin for residential exposure are 3.9 ppt and industrial exposure 16 ppt. Agent Orange was a defoliant, generally the herbicide 2,4,5-T used during the Vietnam War; 2,3,7, 8-TCDD is a contaminant of 2, 4, 5-T. The levels of TCDD found in any given lot of 2, 4, 5-T depend on the manufacturing process (Young et al., 1976), and different manufacturers produced 2, 4, 5-T with various concentrations of TCDD. (IOM, 1994.)

In response to the herbicides used in South Vietnam, only Agent Orange was formulated differently from the materials for commercial application that were readily available in the United States (Young et al., 1978). TCDD concentrations in individual shipments were not recorded, and levels of TCDD varied in sampled inventories of herbicides containing 2, 4, 5-T. Analysis of the TCDD concentration in stocks of Agent Orange remaining after the conflict, which had either been returned from South Vietnam or had been produced

but not shipped, ranged from less than 0.05 ppm to almost 50 ppm, averaging 1.98 ppm and 2.99 ppm. (NAS, 1974; Young et al., 197). Comparable manufacturing standards for domestic use of 2, 4, 5-T in 1974 required that TCDD levels be less than 0.05 ppm (NAS, 1974). Therefore, depending on which stocks were sampled, the level of dioxin contamination in Agent Orange could have been up to 1,000 times higher than the level of dioxin found in phenoxy herbicides domestically available at the time (IOM 1994).

The levels of dioxin detected in samples of Agent Orange evaluated after the war were up to 1,000,000 times higher (2.99 ppm vs. 3.9 ppt) than the screening level values used for the protection of human health in the evaluation of the Shasta Ranch project.

Response 40-6: The commenter's suggestion to leave the site undisturbed for passive recreational uses is noted. No information is provided on who would purchase the property and accomplish this. The quarry site is proposed near the river because that is where the aggregate is deposited.

Response 40-7: The commenter has requested the issue of asbestos be addressed. As noted in the DEIR Section 4.4, Air Quality, Impact 4.4.8 and Impact 4.4.12 both conclude that asbestos is a less than significant impact. Appendix 4.8-3, Geotechnical Investigation Report by Kleinfelder in the DEIR, concludes a geologic reconnaissance of the proposed project site did not identify any on-site deposits containing asbestos. The California Department of Conservation (DOC) has a detailed state map that shows the areas more likely to contain natural occurrences of asbestos in California. Its purpose is to inform government agencies, private industry, and the public of the areas in the State where natural occurrences of asbestos may be an issue. Natural occurrences of asbestos are more likely to be encountered in, and immediately adjacent to, areas of ultramafic rocks. The general location of these rocks is noted on this map.

The Shasta County Air Quality Management District has primary authority to regulate mine operations relating to Airborne Toxic Control Measures (ATCM) for asbestos. Mines are subject to specific ATCMs if:

- The mine is located in an area identified on maps published by the California Department of Conservation as ultramafic rock units; or

- An air district or the owner/operator has knowledge of the presence of ultramafic rock, serpentine, or asbestos on the site; or

- Ultramafic rock, serpentine, or asbestos is discovered during any operation or activity.

The occurrence of ultramafic rock or serpentine in gravel deposits of the Sacramento River is not common. (Puscom R. Bell SCAMD) Since the Shasta Ranch quarry is not located in an area mapped as an ultramafic map unit, the issue does not warrant further study or evaluation.

(Note: The air permit to be issued for quarry operators will include provisions regarding implementation of ATCMs should ultramafic rock be found during mining. Should ultramafic rock be found in the gravels at the site, the primary ATCMs implemented will be the control of dust.)

Letter 41

Aug 21 DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED

AUG 22 2006

PLANNING/BUILDING DIVISIONS

Mr. Bill Walker

RE: Shasta Ranch project

Dear Mr. Walker:

We mailed a letter on other issues, now I have the traffic issue. We drive down Balls Ferry Rd. in our Chrysler van to go to Cottonwood to dinner at the Cottonwood Eatery. When a gravel truck approaches and passes by us, we have to move over very carefully so that we do not go off the road. It has high shoulders and if your tire hits that edge, it slips off and gives you a flat tire. The gravel trucks are just single loaders that are working on the bridge construction at Lone Tree and Blue Jay. When and if the gravel plant is approved, those trucks will be the big double loaders. They will be even more daunting to pass by. It is almost frightening to think of school buses trying to pass by on that road. On Deschutes Rd. as we pull out from our road, the big rigs hauling hay or whatever are barreling down the road at you. It is difficult to judge the speed at which they are traveling, so to be safe, we just wait and wait until all the trucks in the distance pass. Sometimes you get impatient waiting. I can see that it would be possible to create an accident should a mistake in good judgement occur. **41-1**

There are wetlands all through Balls Ferry area and I did not see anything in the EIR about those wetlands that will be affected from widening Balls Ferry or other access roads that will be used by the gravel trucks. Do you have to do a whole new EIR, or should it be addressed in this one? **41-2**

You cannot ignore the traffic impact here. It will cost the taxpayers a lot of money to reconstruct all these miles of narrow roads for gravel plant traffic. In the report, it states the traffic issues of emissions, diesel exhaust, and traffic noise to be significant and unavoidable, but that is not true if you deny the project. **41-3**

Ken and Marcia Behnke
22048 Whispering Waters Lane
Anderson, CA 96007
365-5515

Letter 41

Ken and Marcia Behnke

Response 41-1: See Response 1-1.

Response 41-2: See response to comment 34-4. The commenter states that there are wetlands throughout the Balls Ferry area and that potential widening of the road would impact these resources. If widening of Balls Ferry Road is required as part of a future project, then additional studies, including a formal wetlands delineation, will be required.

Response 41-3: See Response 34-3.

Letter 42

William and Henry Mitchell
5317 Riverland Dr.
Anderson, CA 96007

PLANNING/BUILDING DIVISIONS
AUG 30 2006
DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED

Shasta County Resource Management
Planning Division
1855 Placer St., Suite 103
Redding, CA 96001
Attn: Bill Walker

After reading as much of the EIR as I could understand, without the extension (the 33 appendices alone are more than 1000 pages), there are too many "significant and unavoidable impacts on this community to let this project proceed, especially in the important areas of traffic, noise and air quality. **42-1**

A traffic flow chart on page 4.3-23 shows a traffic increase on Balls Ferry Road of 30%. The data in that traffic chart and all the others in the Traffic and Circulation Section is flawed because a Honda Civic or other typical vehicle that travels along Balls Ferry Road is counted the same as an 18 wheel tractor/double trailer combination. If the study had counted the traffic flow per axle instead of per vehicle the traffic flow along Balls Ferry Road would increase by 100% not just 30%. But even 30% would increase the traffic flow rating from an A to a C level of service. According to the chart on page 4.3-13 , the "...operation of individual users becomes SIGNIFICANTLY affected...." by the additional traffic with level C. **42-2**

The traffic chart on page 4.3-29 shows all E and F levels of service, which, by definition, are at or beyond capacity levels, and yet the level of significance after mitigation shows "less than significant", the best rating for all Traffic and Circulation impacts.
In the Traffic and Circulation Section, is there any provision for future growth in the area? What is Balls Ferry Road going to like 29 years from now, even without the 120 round trips per day made by a double trailer filled with gravel? **42-3**

In the Air Quality section, 6 of the 9 impacts show the level of significance after mitigation as "significant and unavoidable". That fact alone should stop this project. **42-4**

In the Noise section, fully half of the impacts show the level of significance after mitigation as "significant and unavoidable". THAT fact alone should stop this project. **42-5**

The Executive Summary states that this project will "not impact public services " (page 2.0-2), but the EIR study clearly states that Shasta County agencies will be responsible for enforcement/monitoring and implementation of 43 separate mitigation measures. Has anyone taken into account the cost of additional inspectors to monitor this project for the next 30 years? **42-6**

Finally, the EIR states that the proposed project "will not displace or divide any established community (no impact)." Well, the EIR finally got one thing right: this community is united against this project. Look around and listen, supervisors. **42-7**

Undersigned

PROPERTY OWNER

Letter 42

William and Henry Mitchell, August 30, 2006

Response 42-1: The commenter is opposed to project based on the number of significant and unavoidable impacts.

Response 42-2: Project traffic is accounted for in the volume estimates. All heavy vehicle traffic from the project has a 3.0 "passenger car equivalency factor" applied to it (e.g. one heavy vehicle is equal to three passenger cars). This is reflected in the 30% increase between Cumulative No Project and Cumulative with Project traffic forecasts on Balls Ferry Road – Deschutes to Kimberly. As stated in the DEIR, the roadway segment will continue to operate at LOS A.

Response 42-3: Tables 4.3-13 through 4.3-15 present Cumulative Conditions traffic operations on various facilities. The categories are "cumulative" and "cumulative plus project." These are traffic projections expected in the Year 2026. Please note that Cumulative Conditions assume additional development in the region that is currently pending or was identified in the County's travel demand forecasting model. At analysis locations where significant cumulative impacts plus the project were identified, the project sponsor is responsible for a fair-share contribution toward identified improvements.

In response to the question, "Are there provisions for future growth in the area?" Yes, the Shasta County General Plan (required under Government Code Section 65850) is a comprehensive plan that lays out the future of the County's development in general terms through a series of policy statements while the Zoning Ordinance is designed to translate the General Plan's broad policy statements into specific requirements on individual landowners. The Zoning Ordinance divides all land in the county into zones and specifies the permitted uses and required standards of each zone. Refer to the Shasta County General Plan's Circulation Element to determine the future growth of Balls Ferry Road.

Response 42-4: Comment noted. A County may approve a project with significant unavoidable impacts if it makes specific findings of overriding consideration.

Response 42-5: Comment noted. See Response 42-4

Response 42-6: In response, the Shasta County Planning Division is the lead agency responsible for conducting the annual inspections and enforcement as required under the Surface Mining and Reclamation Act (SMARA) and delegated by the Office of Mine Reclamation. It is the Mine Operator's responsibility to provide the annual report and fees to the Office of Mine Reclamation in order for the County to maintain annual inspections. Non-compliance of these requirements could lead to removal of the operators permit to operate. In addition the Mitigation and Monitoring Program is typically conducted by the County and paid for by the applicant. See Response 20-1.

Response 42-7: Comment is noted. No new environmental issue is raised.

Letter 43

Mike and Patty Marie Wallace
21909 Tranquil Lane
Anderson, CA 96007
(530) 365-2655

Shasta County Department of Resource Management, Planning Division,
1855 Placer Street, Suite 103
Redding, CA 96001

August 29, 2006

Dear Mr. Walker,

The Project Summary of the Draft EIR for the Proposed Shasta Ranch Mining and Reclamation Plan Project lists at least a dozen areas of our neighborhood and environment which would be significantly and unavoidably impacted by the mining operation in question.

The term "significant" in this context is, of course, negative: losing agricultural lands, emissions of NOx and PM10, particulate in the air from diesel engines, noise, traffic, etc. The statement "unavoidable impacts" can only be construed as being truthful by the person or persons interested in this business enterprise for their own fiscal gain. To the rest of us it is a meaningless defense of the indefensible. With such a preponderance of environmental hazards and disruption of an entire community of Americans, such a project should not be allowed to go forward. The truth is that it is entirely avoidable. **43-1**

Shasta County may well benefit from the gravel and rock that can be used to build housing developments in the future, but why get it here, in our backyard? And what about the people who live on Balls Ferry Road who have to relinquish sixty feet or so of their front yards to accommodate a wider road for the trucks? (At the very least some alternate roads should be considered. There are some in less populated areas that lead to the train tracks between Cottonwood and Anderson.) The Shasta Ranch Mining and Reclamation Plan Project is a private enterprise which would not benefit the citizenry in its environs. I am not a lawyer, but the eminent domain clause does not apply here. **43-2**

I sincerely hope that our elected officials who can make such determinations as to whose property to utilize for widening roads and when, and whether or not to industrialize a residential area would not be at the beck and call of those who have great capital but that they would remember who it is they really serve. **43-3**

Sincerely,

Patricia M. Wallace

Patty Marie Wallace.

Letter 43

Patty Marie Wallace, August 29, 2006

Response 43-1: The commenter expresses opposition to the project based on the number of significant and unavoidable impacts identified in the DEIR. No new environmental issues are raised.

Response 43-2: The commenters' claim that property owners would need to relinquish "sixty feet" is not supported by any information. There will be no right-of way acquisition. See also Response 1-1.

Response 43-3: Comment noted. The comment does not address the adequacy of the DEIR. Therefore, no further response is necessary.

Letter 44

Joann Moore
21964 Whispering Waters
Lane
Anderson, CA 96007

August 21, 2006

Re: Extension of Comment Period to DEIR
Shasta Ranch Mining and Reclamation Project

Dear Mr. Walker,

I want to make a formal request for an extension on the comment period to the DEIR for the Shasta Ranch Mining and Reclamation Project off of Balls Ferry Road near Anderson, CA. Due to the massive amount of information in the Draft Environmental Impact Report, I feel the community needs more time to read, comprehend information, and make educated responses. Please consider this request seriously and grant an extension. **44-1**

Thank You,
Joann Moore
Joann Moore

Letter 44

Joann Moore, August 21, 2006

Response 44-1: See Response 37-1.

Letter 45

July 19, 2006

Linda Schreiber and Deon Pollett
5481 Balls Ferry Rd
Anderson, Ca 96007

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
JUL 20 2006
PLANNING/BUILDING DIVISIONS

Shasta County Department of Resource Management
Planning Division
1855 Placer St Ste. #103
Redding, CA 96001

Re: Proposed Shasta Ranch Mining and Reclamation Plan Project

Our family lives on Balls Ferry near the proposed gravel mining project. We are very much against it because of the traffic, pollution and misuse of prime farm land. We moved here because of the beauty, serenity, clean air and agrarian environment. Since coming to Shasta County in 1945, I have seen this area grow and still maintain its country atmosphere. We chose to buy on Balls Ferry trusting that the air would stay clean, the traffic minimal and the wonderful river bottom land be maintained as it should be, for ranching and farming, a greenbelt. **45-1**

This mining project will cause traffic to be terrible. With one truck going by every 15 to 30 seconds, the diesel fumes will be horrendous, the roads will be torn up by the weight, and my lungs will be poisoned from the particulate matter. Even though it is widely known that diesel is especially harmful to lungs, there is no hope in sight for meaningful environmental regulation of diesel emissions. **45-2**

What will happen to the deer, wild turkeys, snowy egrets, ducks, geese and pheasants that live here? What will happen to their lungs and tranquil nesting and feeding areas? Already the pheasants are becoming scarce. What will happen to the gravel that the salmon would normally lay their eggs in? This is one of the best fishing areas in the entire country. Fishermen and hunters beware! **45-3**

Trying to get out onto a road filled with trucks rushing past on an overly busy narrow road is a hazardous situation. I have seen the gravel operation in Cottonwood grow and take over the main street in town. There is gravel all over the road, dust flying, and roads torn up. How dare they even think of driving through the center of town! But they do. Cottonwood is stuck with a gravel mining operation in the middle of town.

Large companies can push us country folk around once they get their boots in the door. (Note that the Knauf plant wants to have permission to emit even more pollutants). This mining proposal in Anderson already exceeds state air quality and county noise standards. Besides the traffic and pollution, what other hazards will they cause? What toxins will they hide in holes to keep from prying eyes of concerned citizens? Accidents do happen and we know this is done. Who will oversee these issues when inspectors are rare and usually paid by industry and not the people? **45-4**

We do not want to see us get stuck with what happened to Cottonwood. But no matter what routes they use, they leave their filth behind in the air and on the ground and the wreckage of a wonderful community of people and wildlife. They will get their money and we will get the shaft.

The proposed mining project must not be approved.

Linda Schreiber
Deon Pollett

Linda Schreiber
Deon Pollett

Letter 45

Linda Schreiber and Deon Pollett, July 19, 2006

Response 45-1: The commenter expresses opposition to the project based on impacts and incompatibility with residential uses. No new environmental issues were raised.

Response 45-2: As shown in Table 4.3-9 of the DEIR, the project would generate an average of 64 daily inbound and 64 out bound truck trips (a total of 128 one-way trips) per day. Assuming these come and go over a ten-hour period, that would equal approximately 13 trips an hour, or approximately one truck trip every five minutes (not 15- to 30-seconds as claimed).

Response 45-3: The commenter questions what will happen to resident wildlife (deer, wild turkeys, snowy egrets, ducks, geese, and pheasants) and to the gravel used by salmon for spawning, but does not specifically comment on the analysis provided in Section 4.5, Biological Resources, of the DEIR. Potential effects on listed salmonids, including spawning gravels, are discussed under Impact 4.5-6 of the DEIR. Effects to resident wildlife are included in the analysis provided under Impact 4.5-17 (fish and wildlife migration/travel corridors).

Response 45-4: As shown on page 4.3-20 of the DEIR, the project would generate an average of 64 daily inbound and 64 out bound truck trips (a total of 128 one-way trips) per day. Assuming these come and go over a ten-hour period, that would equal approximately 13 trips an hour, or approximately one truck trip every five minutes (not 15- to 30-seconds). Mitigation measure MM 4.3-1 would require the roadway to be constructed to current County standards. (However, see Response 1-1).

The commenter claims other potential impacts and suspicions that are unsubstantiated. Concerning monitoring and enforcement of the project, the Shasta County Department of Resource Management will be responsible for enforcing the use permit (if approved) and the Mining and Reclamation Plan.

Letter 46

Aug. 2006

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED AUG 29 2006 PLANNING/BUILDING DIVISIONS

Mrs Donna Collier
3038 Marmor Rd:
Anderson, CA. 96007-3723

Shasta Ranch Mining and Reclamation Project.

Shasta County Dept. of Resource Management,
Planning Division, Att: Bill Walker
1855 Placer St. Suite 103
Redding, CA. 96001

Dear Bill Walker:

46-1 "I am one of those in opposing the "Gravel Pit".
Yes we did have Simpson Paper Co. and the toxic ground is still there.
We had the very smelly plastic plant also and Knapp bought their contamination
Whulabrater is still here.
I have lived here 38 yrs, and do not now want a Gravel Pit!
I have COPD and also on O2.
I am opposed.

Thank you
Donna Collier

Letter 46

Donna Collier, August 29, 2006

Response 46-1: Commenter's opposition to the project is noted. No new environmental issues are raised.

Letter 47

DEPARTMENT OF
RESOURCE MANAGEMENT
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JUL 2 5 2006

PLANNING/BUILDING
DIVISIONS

Dear Sir:

Proposed Shasta Ranch Mining and Reclamation Project comments.
Use permit 05-010 and 05-001
The applicant is Tullis Inc.

According to the Public Notice I have received the DEIR report list some Very negative environmental impacts on the surrounding area and probably to the city of Anderson.

This is a rural farming area and an idyllic area to live. We do not need polluted air and cancer causing particles to breathe. **47-1**

The approval of this permit would destroy hundreds of acres of the best farm land in the area. This land can not be replaced.

The emission of NOx and PM10 exceeding State and Federal standards and diesel exhaust exceeding cancer risk thresholds should require this permit be denied. **47-2**

The noise levels of the operation and the dust created will be Daily for 30 years. This air and noise pollution will never be adaptable with this quiet rural area. If we can hear the Anderson Fair races on Saturday night here in the country, then the city of Anderson will hear this operation daily and the dust will permeate Anderson also. **47-3**

Balls Ferry Road is a rural road with many homes adjoining it. It came into being as a road to get to your farm and now our homes. It was NOT designed to handle 100 huge gravel trucks per day. The polluting diesel fumes will be extreme cancer causing for the residents of this road plus the noise. **47-4**

This permit should be denied. The DEIR report should be evidence enough already and approval of the permit will RUIN a rural way of life for the Anderson area. **47-5**

Please do not Approve.

Leonard Smith / 365-1676
5688 Riverland Dr
96007

Letter 47

Leonard Smith, July 26, 2006

Response 47-1: The commenter expresses their concerns about polluted air and cancer causing particles. As noted in the DEIR, Section 4.12, an air toxics evaluation was conducted to estimate the potential non-cancer and cancer health risks associated with exposure to dioxin and furans that may become airborne during future quarry operations in Phase 3 of the proposed project. The Office of Environmental Health Hazard Assessment (OEHHA) guidelines for estimating potential exposure to chemical emissions were used to assess the potential human exposure to airborne chemicals from a variety of exposure pathways. The toxicity, exposure and risk assessment levels were all found below the levels that typically require emission controls by the California Air District. See Response 24-1 for more information regarding dust and fumes associated with traffic.

In response to the loss of farmland, Impact 4.2.1 addresses the conversion of prime agricultural farmland. Additional information has been added to the FEIR to clarify the total area impacted. See Response 50-1.

The project site is within the Sacramento River Aggregate Resource Area (ARA). Lands that have compatible uses are defined as those that are non-urbanized or that have very low density residential development (one unit per 10 acres), land that does not have high cost improvements, and lands used for agriculture, silviculture, grazing or open space.

Response 47-2: Comment noted. The rain quality issues have been addressed in DEIR Section 4.4, Air Quality.

Response 47-3: There is no basis for comparing the noise levels of the race track to the proposed project. Also, the operation will not be "daily" but six days a week. Otherwise, the comment does not raise any new environmental issues.

Response 47-4: Comment noted. The DEIR addressed the adequacy of the roads. The issue of diesel fumes is addressed in the DEIR. See Impact 4.4-6.

Response 47-5: Commenter Is opposed to approval of a use permit for the proposed project. No new environmental issues are raised.

RESOURCE MANAGEMENT
RECEIVED
JUL 18 2006
PLANNING/BUILDING DIVISIONS

Letter 48
(traffic)

Dear Mr. Wolfe

I live on Kimberly Road here about to for 40 years. Kimberly Road is already over load with too much but traffic, it is mostly a residential area with children and animals on it at times.

I have complained for years about the speed on Kimberly Road the country uses to put up signs and the CHP make little effort to slow it down, the last thing we need is 100 trucks speeding up and down the road. **48-1**

on the two port days they did haul gravel out of that area, as there is no signs setting a speed limit it is 55 mph and most of them were doing that, it was like I-5.

Wheelbits of rocks in this country let them get out in the country to haul their gravel pit.

As you may have guessed I am most certainly against a gravel pit in our area. **48-1 cont.**

Stanley Easton
21453 Kimberly Rd
Anderson, CA 96007

Letter 48

Stanley Waston, July 18, 2006

Response 48-1: Comment noted. The state has specific requirements to establishing speed limits based on the speed vehicles travel which are outlined in the California Vehicle Code. As noted in the Section 4.3 of the DEIR, Kimberly Road is adequate for the existing residential-oriented traffic and the additional truck traffic will increase congestion and ultimately slow traffic speeds. The actual distribution of truck traffic has been provided in Section 3.0 of the Final EIR in Table 3.0-4. In result, the percentage of project related truck traffic anticipated on Kimberly Road would be considerably less than that of Balls Ferry Road.

Letter 49

August 25, 2006

Dear Mr.Walker,

I Live in Anderson on Gaines Lane; not far from the proposed gravel pit. I have read the air quality section of the E.I.R. and have many concerns about it. The report says that Shasta County is like a big bowl, that collects smog and has frequent inversion layers that acts like a lid to keep it in. At this time Shata County is past acceptable limits of NOx (nitiric oxide and nitrogen dioxide) in many areas. The proposed project would result in emmision of NOx and PM10 (fine particilate matter) that would exceed acceptable **49-1**

thresholds. The PM10 would negatively effect agriculture by reducing photosynthesis and encourageing the proliferation of mites. The report states that these problems could be fixed by mitigation. Mitigation consists of using high tech catalytic converters, for diesel engines, bio diesel and particulate filters, or they could just purchase pollution credits like Knaugh so they could get away with going over the limits. I think it would be cheaper for them to do the latter. I hope you have as negative view of this project as I do. **49-2**

Sincerly Yours,
albert Wood

DEPARTMENT OF
RESOURCE MANAGEMENT
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AUG 28 2006

PLANNING/BUILDING
DIVISIONS

Albert Wood

Letter 49

Albert Wood, August 28, 2006

Response 49-1: The commenter refers to air quality issues that have been addressed in the DEIR, Section 4,4 Air Quality. No new issues are raised. No further response is necessary.

Response 49-2: The commenter refers to PM10 issues that have been addressed in the DEIR, Section 4.4, Air Quality. No new environmental issues are raised. No further response is necessary.

Letter 50

DEPARTMENT OF
RESOURCE MANAGEMENT
RECEIVED

AUG 0 9 2006

PLANNING/BUILDING
DIVISIONS

August 8, 2006

Shasta Co. Dept. of Resource Management
Planning Division
1855 Placer St., Suite 103
Redding, CA 96001
Attn: Bill Walker

Dear Mr. Walker:

I live on Balls Ferry Rd. and am submitting my comments on the proposed gravel plant.

Every time I open the paper it seems, there is another serious assault on our formerly agricultural community. It breaks my heart. **50-1**

A gravel plant is not an appropriate use for this prime farmland, farmland that is being lost in California in huge amounts every day. A gravel plant is not appropriate for the area – it's inconceivable that those of us who live and drive on Balls Ferry Rd. should have to hear, see and dodge 100 gravel trucks a day! I don't see how anyone could even consider such a ridiculous notion. There are children riding bikes and horses on Balls Ferry Rd. There are people trying to take walks. There are dogs and cats. There are houses close to the road. Can you imagine the noise we would be enduring every day? **50-2**

This needs to stop. The people who live in an area have rights. Shasta Co. gives developers of all types preferential treatment and the voters are finally starting to see it.

Thank you,

Kathy Grissom

Kathy Grissom
4788 Balls Ferry Rd.
Anderson, CA 96007
365-1641

Letter 50

Kathy Grissom, August 9, 2006

Response 50-1: See Impacts 4.2.1 and 4.2.2 for a complete discussion of the impacts on converting agricultural lands. The County's existing zoning designation for both Agricultural and Mineral Resource Extraction illustrates that the County previously identified and accepted the potential loss of agricultural lands during mineral resource extraction activities. In result, the Shasta County General Plan and CEQA review already addressed and accepted the mutually exclusive uses.

On page 4.2-3 of the DEIR, the following revisions were made for clarification under the Agricultural Resources section, paragraph five, last sentence:

According to the *NRCS* ~~Based on this~~ soil survey, ~~the soils found on site are considered to be "farmland of statewide importance", or "prime farmland" if irrigated.~~ t*he total project area, (660 acres), has a total of 406.7 acres of Prime Farmland, 49.7 acres Farmland of Statewide Importance, and 50.9 acres of Unique Farmland. See Figure 4.2-1. A total of 162.8 acres of Prime Agricultural farmland, 16.2 acres of Farmlands of statewide importance, and 12.3 acres of Unique farmland are located within the 268-acre project area.*

Pages 4.2-21 Impact 4.2.1 was revised to clarify the total loss of agricultural lands conversion.

Impact 4.2.1 The proposed project would result in a conversion of *approximately 268 acres* of agricultural land *which includes 162.8 acres of Prime Farmland, 16.2 acres of Farmland of Statewide Importance, and 12.3 acres of Unique Farmland* to non-agricultural land uses, ~~and would convert prime farmland, farmland of statewide importance, and unique farmland on the project site.~~ This impact is considered a *significant and unavoidable impact.* (SU)

Page 4.2-22, Paragraph two was revised as shown below:

The proposed mining project will disturb soils and areas that are designated prime farmland, farmland of statewide importance and unique farmland according to the Department of Conservation Mapping and Monitoring Program. T*he total project area, (660 acres), has a total of 406.7 acres of Prime Farmland, 49.7 acres Farmland of Statewide Importance, and 50.9 acres of Unique Farmland. The total disturbed project area including Phases 1, 2, and 3 represents 268 acres. See Figure 4.2-4 provided in Section 3.0-A, Revised Figures of the Draft EIR. Table 4.2-4 below illustrates the total acreage of agricultural soils that may be converted during each phase of the project.*

TABLE 4.2-4
Total Conversion of Agricultural Lands

Agricultural Soils Classifications	Phase 1 (acres)	Phase 2 (acres)	Phase 3 (acres)	Total (acres)
Prime Farmland (P)	22.2	92.8	47.8	**162.8**
Farmland of Statewide Importance (S)	7.2	9	0	**16.2**
Unique Farmland (U)	0	12.3	0	**12.3**

Source: NRCS Data Mapping and Monitoring Program and Pacific Municipal Consultants.

Based on Table 4.2-4 and the overall project area of 660 acres, the total loss of Prime Farmland is 162.8 acres (40%), Farmland of Statewide Importance 16.2 acres (33%), and 12.3 acres (24%) of Unique Farmland. ~~portions of~~ *Note the majority of the Prime Farmland exists within the* Phase 2 ~~project area~~ and ~~a majority of the~~ Phase 3 project areas ~~are classified as prime farmland~~. ~~There will be a loss of agricultural lands due to the extraction of aggregate material. As noted above,~~ ~~After more~~ ~~detailed~~ Site studies *conducted by Geomatrix and Kleinfelder Inc. in 2004 indicated the NRCS mapping data may be misrepresented in Phase 1 as,* the existing conditions are fallow land covered with natural vegetation, shallow topsoil, and a high aggregate content (cobblestone, gravel, etc.) *concluding the* Phase 1 area does not appear to have special farmland soil characteristics. ~~as the existing conditions are fallow land covered with natural vegetation, shallow topsoil, and a high aggregate content (cobblestone, gravel, etc.).~~

The project applicant has stated that Phase 3 may never be mined based on the timing of the Use Permit and the availability of aggregate in Phases 1 and 2. If Phase 3 is not mined and Phase 1 was inaccurately misrepresented, approximately 70 acres of Prime Farmland and 7.2 acres of Farmland of Statewide Importance would not be converted. This would result in a non-conversion of 43% Prime Farmland and 44% Farmland of Statewide Importance.

In accordance with the project description, ~~Although~~ the conversion of agricultural land would alter existing conditions, *however* the project would not result in a total loss of agricultural soils.

Figure 4.2-4, titled "Agricultural Soils Map with Project Overlay" is provided in Section 3.0-A, Revised Figures in the FEIR to illustrate the existing Agricultural Soils in relation to the project phases.

In response to noise impacts, see Response 10-1.

Response 50-2: Commenter expresses concern that a gravel plant is not appropriate for the area due to the limitations of Balls Ferry Road. Comment noted. See Response 1-1.

Letter 51

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
AUG 1 0 2006
PLANNING/BUILDING DIVISIONS

August 8, 2006

Re: Tullis Project-Shasta Ranch Mining & Reclamation Project

This project should not go forward for the following reasons:

The DEIR summary states numerous unacceptable problems would occur in the area surrounding the gravel pit. Noise pollution would affect us directly as we live as the crow flies straight across the river to the east. We can hear the trains and stock car races in Anderson from our house and they are twice the distance of the Shasta Ranch. The air pollution would affect neighbors for miles around. The decimation of the land and water is unacceptable. The huge amount of industrial type traffic will quickly ruin a two lane road with no shoulder and cause danger and loss of quality of life to those living within a huge radius of the project. Who will restore the infrastructure? This is a rural residential area. How will they contend with all of the noise, dust and congestion which will occur on the one narrow road which has no shoulders? 51-1 51-2 51-3

In the Record Searchlight a couple of weeks ago was a piece by someone representing the developers of the county. It was stated that this gravel pit was essential for any continued development in Shasta County. There will have to be some other area developed to serve the building trades. It would be wrong to approve this project because of the DEIR, but also because all the people living in the region would have their quality of life diminished and their property values decreased. The only plus for this project is the profit for Tullis Inc. 51-4

Sincerely,

Sandra DuBose

Sandra DuBose
5810 Parkville Road
Anderson, Ca. 96007
530-365-8403

Letter 51

Sandra DuBose, August 10, 2006

Response 51-1: The commenter states they would be directly affected by noise from the project site. See Response 10-1.

Response 51-2: No new environmental issues are raised. No further response is necessary.

Response 51-3: The comment refers to a list of impacts that have been addressed in the DEIR. No new environmental issues are raised.

Response 51-4: Comment noted. The commenter does not raise any new environmental issues. No further response is necessary.

Letter 52

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED

AUG 0 9 2006

PLANNING/BUILDING DIVISIONS

8-2-'06

Attention: Bill Walker,

We are writing to let you know we DO NOT want the purposed plant going in behind our home. **52-1**

We moved to the country for the clean air and peace and quiet to raise our children. I have respiratory problems as do some of my neighbors----especially when the wind blows. This questions the air quality if this plant goes in. **52-2**

Mr. Tullis has said he would be running this plant six days a week maybe seven---- from seven A.M until closing. Doesn't sound like a whole lot of peace and quiet to me!!!

He has also said he would be digging 30 foot holds to get the rock. This would lower our water table for that area is lower than our place. Without water our place is without value. Everyone on Balls Ferry Rd. is on a well I believe. And this would be going on for 30 to 40 years!!!!! **52-3**

Balls Ferry Rd. is a country road. I don't believe it was ever meant to be a main thoroughfare. It is adequate for the traffic now using it. A big gravel truck every 5 minutes would make it a freeway!!! You say logging trucks regularly used Balls Ferry--- I have seen one maybe two on this road in the 33 years we have lived here. But there are slow moving farm equipment, propane trucks, garbage trucks, and School buses stopping and going on this road with a double yellow line and a speed limit!!! **52-4**

Years ago didn't Kimberly Clark dump a lot of toxic material in the ground where they are wanting to dig? Won't this affect the wildlife and fish if disturbed --- not to mention Us?!!! **52-5**

Isn't there a dispute over the fact that the State may actually own this land since the river bed has changed over the years? How has this been addressed? **52-6**

Why hasn't the local Indian Tribes weighed in on this matter? Surely some of them lived along this river and left artifacts . Maybe some were even buried there, as in the Wal-Mart building site. **52-7**

Sincerely,

Clarence & Shirley Pettis

Clarence & Shirley Pettis
22301 Ramona Ct.
Anderson, Ca. 96007

Letter 52

Clarence and Shirley Pettis, August 9, 2006

Response 52-1: The commenters express opposition to the project. No new environmental issues are raised.

Response 52-2: See Response 24-1 concerning air quality.

Response 52-3: The commenter asserts that the project would lower the water table, but does not provide documentation to support the claim and to rebut the analysis provided under Impact 4.9-2 in the DEIR. The proposed project will result in a minimal amount of impervious surfaces, and will have virtually no impact on recharge rates.

Response 52-4: The comment addresses the limitations of Balls Ferry Road for the proposed volume of truck traffic. See Response 1-1.

Response 52-5: The commenter asserts that project activities could release toxins into the river and harm fish. See Response M-2, S-2, and 15-1.

Response 52-6: See Response S-6.

Response 52-7: See Response D-1 and F-1. As described in Section 4.6 of the DEIR, tribal consultation is discussed in the Archeological Inventory Survey Report (Appendix 4.6-1 of the DEIR).

Letter 53

DEPARTMENT OF
RESOURCE MANAGEMENT
RECEIVED
AUG 18 2006
PLANNING/BUILDING
DIVISIONS

August 16 2006

Regarding: Shasta Ranch Mining and Reclamation Project

Dear Mr. Bill Walker,

We have lived on Balls Ferry Rd for 30 years. We moved here to raise our six children, in the country away from the pollution that was growing in Ventura County. It was scary there and leaving was hard. My husbands parents, grandparents and great grandparents had farmed there, but the ranch was sold and farm land covered in house to pay death taxes.

Our older children grew up here and because of their experiences living in the country four of the six are in agriculture. Three work to produce food for this country and one is in water management. We have talked to her and are very aware of the dangers posed by this project. 53-1

We now have six younger children, we have adopted. They are all medically involved, one on a Ventilator at night. This project poses a very serious threat to their health.

The planning commission exist to listen to residence concerns, not dismiss those concerns for big money investers. To interrupt speakers who have concerns of any kind shows your disapproval, for the citizens of this country and a we will do what we please attitude. No government insatitu has a right to refuse to listen to legimate concerns. 53-2

There are so many reasons this project should not go forward. How does the wishes of one person and company out weigh the concerns of hundreds of people that will be effected by Shasta Ranch Mining and Reclamation.

Please vote NO on this project

Harry & Karen Bither (530) 365-8470

Letter 53

Harry and Karen Bither, August 18, 2006

Response 53-1: The commenter states they have children with medical conditions that could be affected by the project. As noted, in the DEIR, Section 4.12, Hazards and Hazardous Materials, an air toxics evaluation was conducted to estimate the potential non-cancer and cancer health risks associated with exposure to dioxin and furans that may become airborne during future quarry operations in Phase 3 of the proposed project. The Office of Environmental Health Hazard Assessment (OEHHA) guidelines for estimating potential exposure to chemical emissions were used to assess the potential human exposure to airborne chemicals from a variety of exposure pathways. The toxicity, exposure and risk assessment levels were all found below the levels that typically require emission controls by the California Air District. See Response 24-1 for more information regarding dust and fumes.

Response 53-2: The commenters express opposition to the project. No new environmental issues are raised.

Letter 54

Shasta Trinity Fly Fishers
P. O. Box 990002
Redding, CA 96099-0002

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
AUG 22 2006
PLANNING/BUILDING DIVISIONS

August 21, 2006

Shasta County Department of Resource management Planning Division
Attn: Bill Walker
1855 Place St. Suite 103
Redding, CA 96001

Ref: Shasta Ranch and Mining and Reclamation Project

Mr. Walker and County Supervisors:

Shasta Trinity Fly Fishers is an organization of 150 members interested in the furthering of fly fishing and the conservation or our resources. We are strongly opposed to the implantation of the Shasta Ranch and Mining Reclamation Project. **54-1**

The land used for many years as a paper mill, is heavily laced with heavy materials and Dioxins that will contaminate the Sacramento River and the endangered salmon and steelhead found in our local river waters. The fish, especially the small fry will be unable to withstand the influx of these and other chemicals created by the mining **54-2**

The traffic created along the Balls Ferry Road and other local Anderson roads will create not only congestion, pollution, but be a hazard to children and livestock. **54-3**

Our county is growing very fast, isn't it time to plan for the future with out destroying what we have? Please stop this ill-conceived project now.

William Lenheim
Conservation Director
Shasta Trinity Fly Fishers
530-223-6090
2825 Eastbrook Dr
Redding, CA 96002

Letter 54

William Lenheim, Conservation Director; Shasta Trinity Fly Fishers, August 22, 2006

Response 54-1: Commenter states they are opposed to project.

Response 54-2: The commenter asserts that project activities could release dioxins and other chemicals into the river and harm salmon and steelhead, but does not provide documentation to support the claim and rebut the analysis provided under Impact 4.5-6 in the DEIR. Please see Response M-2 and 15-1.

Response 54-3: The DEIR, Section 4.3, Transportation and Circulation, identifies capacity constraints on the transportation system and identifies measures to mitigate project impacts. Also, see Response 1-1.

Letter 55

August 21, 2006

REC'D AUG 21 2006

Shasta County Department of Resource Management,
Planning Division
1855 Placer Street, suite 103
Redding, California, 96001

Attention: Bill Walker, Senior Planner

I am writing to request an extension to the Thursday, August 31, deadline for submitting comments to the Draft EIR Use Permit 05-010 and Reclamation Plan 05-001, Shasta Ranch Mining and Reclamation Plan Project.

I site the following reasons for my request:

1. The document is long, cumbersome and technical.
2. A chronic knee condition makes it difficult to get out to the Libraries or your office to view.
3. I live in country; we do not have DSL offered by any providers out here. It takes me five hours to download sections 1.0 thru 3.0. I tie up the telephone for hours and get dropped off line frequently.
4. My personal learning and comprehension skills require me to have print copy to high light, make notations and cross-reference. Downloading and printing a copy was impossible for me.
5. I obtained a print copy of my own and am still wadding through it.
6. **Your document is incomplete**. Appendix 4.9-3 was only copied on one side. I have not gotten any further in reading the DEIR than this so don't know if this mistake was repeated anywhere else.
7. **HENCE: The DEIR made available to the public is incomplete. You need additional time to correct this error, load onto your web site and change in the Library and your office and we, the public needs additional time to read and respond to this mistake.**

55-1

Bill, many of my neighbors (8 within a few hundred yards of me) are in their late 70's and 80's. They spend summers in their RV's in a cooler climate, or don't have the mobility or skills to obtain this large document, let alone comprehend the impacts of not responding to it. These "Old Folks" depend on me to keep them informed and they depend on and trust you not to find them **less than significant**. Mitigated time for response: 60 days excellent, 45 days agreeable, and 30 days acceptable.

Sincerely,

Charles and Patsy Dunn
22359 Lone Tree Road
Anderson, CA. 96007

Letter 55

Charles and Patsy Dunn, August 21, 2006

Response 55-1: See Response 37-1. The County granted a 30-day extension of time for the public review period of the Draft Environmental Impact Report. At the start of the 30-day extension of time, a complete text of Appendix 4.9-3, *Phase 1 Environmental Site Assessment, Shasta Ranch, Anderson California by Geomatrix Consultant dated October 11, 2004,* was provided for recirculation.

Letter 56

DEPARTMENT OF ESOURCE MANAGEMENT RECEIVED
AUG 28 2006
PLANNING/BUILDING DIVISIONS

Linda Schreiber and Deon Pollett
5481 Balls Ferry Rd
Anderson, Ca 96007

Shasta County Department of Resource Management
Planning Division
1855 Placer St Ste. #103
Redding, CA 96001

Re: Proposed Shasta Ranch Mining and Reclamation Plan Project

We are residents on Balls Ferry Road in Anderson where the trucks will pass by. We are very sensitive to bad air and do not want the air to be polluted with all the diesel exhaust and dioxin dust. This site that will be mined was never cleaned up and the dioxin will just get spread around.

That is too many diesel trucks going by and will foul the air and surrounding life. We will not be able to live here and breathe without gas masks if you allow that many diesel trucks to pass by for the next 30 years. Our neighbor across the street raises calves. Do you know what dioxin does to animals and humans? It messes up their reproductive systems. The more chemicals like that we are exposed to, the more homosexual and hermaphrodite children will be born., only to be scorned by society for being polluted. 56-1

Ask anyone about asthma and they will tell you how deadly diesel fumes are to them. Small children and older people are especially in danger. Just picture them standing, waiting for the bus while they breathe the fumes from the trucks rushing by.

Do you want to fill our hospitals with more people in jeopardy because they cannot breathe? Sooner or later the air will get as bad as Los Angeles. This basin has all the earmarks of a potential smog trap, just like LA. Look at the topography. We don't even get the breezes from the ocean to clean the air here. It will get even worse.

Please stop this insanity. Protect ~~of~~ our air quality. The proposed mining project must not be approved. 56-2

By the way, I did not appreciate being told I could not talk in the open forum. That was not right. We had the right to speak out for up to 3 minutes and you know it. If you don't, you do not belong on the board. My group, Citizens for a Responsible Government, has been aroused. We will fight back.

Linda Schreiber Linda Schreiber

Deon Pollett Deon Pollett

Letter 56

Linda Schreiber and Deon Pollett, August 28, 2006

Response 56-1: The commenter is concerned with the air contaminants associated with the diesel exhaust and dioxin dust emissions near their home. As noted in the DEIR, Section 4.12, an air toxics evaluation was conducted to estimate the potential non-cancer and cancer health risks associated with exposure to dioxin and furans that may become airborne during future quarry operations in Phase 3 of the proposed project. The Office of Environmental Health Hazard Assessment (OEHHA) guidelines for estimating potential exposure to chemical emissions were used to assess the potential human exposure to airborne chemicals from a variety of exposure pathways. The toxicity, exposure and risk assessment levels were all found below the levels that typically require emission controls by the California Air District. The commenter did not submit information to support some of their claims. (i.e., the need for gas masks and the potential for increased births of homosexual and hermaphrodite children.) See Response 24-1 for more information regarding dust and fumes. The DEIR discloses potential impacts from diesel exhaust. See Impact 4.4-6.

Response 56-2: The commenter states opposition to the project.

Letter 57

August 22, 2006

Steve Ricards
1616 Whistling Dr.
Redding, CA 96003

Mr. Bill Walker
Shasta County Department of Resource Management
Planning Division
1855 Placer St.
Suite 103
Redding, CA 96001

Dear Mr. Walker:

I have read the EIR for the purposed Shasta Ranch Mining Project. I understand that no more than nine new jobs will be created as a result of this operation. There will be noise, dust, and chemical pollution - all for nine new jobs. What possible benefit is this to the county? Property values in the area of the mining operation will likely be effected. The air quality of Shasta County will further deteriorate and all for what - nine new jobs? Give us a break! The project will - in no way - benefit the citizens or economy of Shasta County, and should not be approved. 57-1

Sincerely,

Steve Ricards

Letter 57

Steve Ricards, August 22, 2006

Response 57-1: The commenter states the project will in no way benefit the citizens or economy of Shasta County and the DEIR does not address the social economic impact. In response, CEQA Section 15131(a) states, "*economic and social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on the physical changes*".

As the proposed project will not divide a community in such a manner that may lead to blight or otherwise have a significant effect on the physical environment, the project is not required to address the economic impacts under CEQA. The commenter may refer to Appendix 4.8-1, Mining and Classification Study, and the Shasta County General Plan Mineral Resources Element, for information on social economic impacts. Information provided to the County outside the scope of the EIR may be considered as "findings of fact" to support the County's decision for a statement of overriding considerations. For example, information provided in comment letter K and comment letter 98 may be useful references.

Otherwise, the comment does not raise any new environmental issues that have not already been addressed.

Letter 58

DEPARTMENT OF
RESOURCE MANAGEMENT
RECEIVED

AUG 2 8 2006

PLANNING/BUILDING
DIVISIONS

Winifred Maker
4820 Pheasant Drive
Anderson, California 96007
530 378 0339
August 10, 2006

RE: Shasta Ranch Mining and Reclamation Plan

Bill Wallker, Senior Planner
Shasta County Department of Resources Management, Planning Division
1855 Placer Street, Suite 103,
Redding, California 96001-1759

Dear Mr. Walker:

The proposed plan of the Shasta Ranch Mining and Reclamation Plan sounds like a real loser for people located in and near the site of their activities.

Some years ago my family suffered through a noisy construction fiasco that deprived us of peace, quiet, home, ranch, water rights, and our pleasant way of life. We never recovered...

My husband and I bought this property twelve years ago, putting everything we received for our former ranch-home into this place.(Not the one mentioned above, but a lesser place we scrimped to buy). I am in my eighties now, too old and decrepit to find other property and move again. We chose this property for, a quiet rural home with easy access, acreage, and available irrigation water, We fear what will happen if SRM&RP is allowed to go ahead with their plans for a gravel plant/. **58-1**

It is impossible to name all the negative effects SMR&RP will have - all the reasons why SRM&RP is bad for the area and its residents. There are so many .factors to be considered:

Noise generated by equipment, machinery, and trucks operating for the proposed ten or more hours a day will have a bad effect on both the physical and psychological well being of neighbors forced to hear the din.. **58-2**

Dust and air borne particles produced by the operation would affect people's health. Dust settling thickly on everything creates problems for home owners and housewives. **58-3** Further, it has been said that the company who formerly owned the property used the ranch to dump the toxic chemicals used in the manufacture of paper. That toxic dust could/would be a serious health hazard to people in the area. It has been shown in other areas that efforts to control emissions are often either neglected and/or are inadequate for the protection of people in the vicinity. There could also be hazards to the ground and to the river by the toxic chemicals, fuels and other materials on the property.and its operation. **58-4**

Numbers of large, heavily loaded trucks on narrow Balls Ferry Road will cause severe deterioration of the road surface, as well as create a traffic hazard for residents of the area. Balls Ferry Road is already known for many problems. The road is so narrow there isn't room for walkers, cyclists, or horseback riders to use it without having to get off the pavement, into the ditch, for passing vehicles. School buses stop in traffic to load **58-5**

Letter 58 Continued

and unload children. Undulations in the road makes for poor visibility, and its double yellow lines don't deter speeders and DUI drivers. The proposal calls for using just one lane for access of the trucks used to haul gravel, with up to 120 round trips a day. The trucks would be entering Balls Ferry Road in the area of the undulations, .creating more hazards. Even that doesn't preclude that they may decide to use any of the other streets, possibly including Riverside, Lone Tree, and Blue Jay, which would make problems even worse. **58-5 cont.**

Since the Ranch has water rights to the same source of water we buy from ACID, I wonder whether the water we use to irrigate our pastures, gardens, and orchards will be cut back, or taken for use by SRM&RP, depriving us of irrigation water. **58-6**

I played on my calculator with the figures given. Some 3.43 million cubic yards of soil and 6.06 million cubic yards of gravel are to be "excavated." Those are HUGE holes, .which will destroy a large part of the surface of the ranch. The proposal calls for "Reclamation," a term that sets alarm bells ringing in my mind. Reclamation - from what? Or is it Wreck-lamation? The alluvial top soil is to be "excavated." On inquiring, I was told that the top soil would be pushed into the holes for agricultural use. If multi-millions of cubic yards of rock and gravel are removed, it will leave huge holes. How about the holes into which it is proposed to put the. top soil?. This leaves unanswered questions to any thinking person, Two of the holes are to be ponds. Some of the plan calls for reclamation, "open space preserves," or "riparian use". It doesn't make sense. Reclamation? Of what? **58-7**

It seems criminal to take alluvial soil farm land and destroy it for today's profit. It took centuries of flooding rivers to build alluvial farm land, the best soil for growing food crops. Because of dams, levees, and other control projects, alluvial soil is being depleted and lost, without hope of restoration because rivers are not allowed to flood the banks, depositing more soil.. With growing populations there will come a time (not in my life, but eventually) when that soil will be needed to feed increasing populations. **58-8**

It makes sense that, when rock or gravel is needed, that the many tailing piles left by dredging operations in the past could be utilized rather then destroying good farm land. When I asked about this, I was told that "rocks in those piles lacked quality for gravel." (?)

There are many other reasons to be against the SRM&R Proposal. These will appear if the proposal is allowed to go through. Not the least of the problems is that, because of the noise, toxic dust, emissions, traffic, and other problems created by the gravel operation, neighbors would face greatly decreased quality of life. This would mean that properties of people in the area will be greatly devalued. They won't be able to sell the property for enough to buy equal property elsewhere. **58-9**

Whether SRM&RP is approved or rejected is up to the Environmental Impact Report, and the Shasta County Department of Resource Management, Planning Division, 1855 Placer Street, Suite 103 in Redding. Comments on this matter are still being accepted. Bill Walker, Senior Planner is the person to contact, at 530 225 5532, or at the above address.

I pray that common sense and right will prevail over greed.

Winifred Maker

Letter 58

Winifred Maker, August 28, 2006

Response 58-1: Comment noted. The commenter is opposed to the project. No further response is necessary as the comment does not raise any new environmental issues that have not already been addressed.

Response 58-2: Noise impacts have been addressed in the DEIR. See also Response 10-1.

Response 58-3: The commenter points out the same impacts that were evaluated in the DEIR related to air quality. See Response 24-1 for more information.

Response 58-4: In response to the site's historical uses and toxic materials, see Section 4.12 of the DEIR and Responses M-1, M-2, 15-1, and 16-2.

Response 58-5: See DEIR, Section 4.3, Transportation and Circulation, and Response 1-1.

Response 58-6: As noted in Section 3.0 of the DEIR water provided to the project will be provided by existing private wells located on site. The project does include the use of water from the ACID.

Response 58-7: The proposed project will be excavated in three phases over a period of 29 years. Reclamation activities will occur concurrently with mining and excavation activities. Reclamation is defined in Table 3.0-2 of the DEIR. See response to comment letter O, and Appendix 3.0-3, the amended Shasta Ranch Mining and Reclamation Plan of the FEIR.

Response 58-8: See Impacts 4.2.1 and 4.2.2 for a complete discussion of the impacts on the conversion of agricultural lands. The County's existing zoning designation for both Agricultural and Mineral Resource Extraction illustrates that the County previously identified and accepted the potential loss of agricultural lands during mineral resource extraction activities. In result, the Shasta County General Plan and CEQA review already addressed and accepted the mutually exclusive uses. See Response 50-1 for clarification of the amount and classification of agricultural land that is involved.

The type of aggregate at the proposed site is considered to be PCC-grade aggregate (Portland concrete cement grade). Crushed tailing rock does not have the same quality and suitability for use in many construction jobs.

Response 58-9: The commenter states they are opposed to the project. The comment does not raise any new environmental issues that have not already been addressed.

Letter 59

DEPARTMENT OF
RESOURCE MANAGEMENT
RECEIVED

SEP 01 2006

PLANNING/BUILDING
DIVISIONS

4443 Webb Road
Anderson, Ca 96007
Shasta County Department of Resource Management, Planning Division
1855 Placer Street Suite 103
Redding, CA 96001- 1759
Subject: Use permit 05-010 and Reclamation Plan 05-001 for the Shasta Ranch Project Mining and Reclamation Plan

Dear Mr. Walker:

As a resident of Anderson area for over fifty nine years and a Shasta County tax payer and voter, I am deeply disturbed by the proposed gravel mining project. It appears that the health and welfare of the local residents is not taken in to the concern of those in favor of this project. The fact that the exhaust fumes of the diesel, the air particulates, the contamination of drinking water, the unacceptable level of dioxin that will present a continuing health risk to every person is not important. The damage to wild life, the Sacramento River, the air quality will be detrimental not to mention the traffic hazards and contamination of farm lands and residents.

It is alarming that health of this community and how this project will effect future generations seems to be of no concern to those in control. Please consider the damage that will be done to the environment, to families that will be ravaged by cancer, traffic fatalities and on going health problems caused by the toxic chemicals on the proposed property . Are you willing to take the responsibility for this and leave it as a legacy for your family and others to remember? What if this was your home and that this was your family that this was going to be forced upon? 59-1

Please take a honest look at the reports and do the honorable thing, save peoples lives and homes.

Sincerely,

Diana J. Webb

Letter 59

Diana J. Webb, September 1, 2006

Response 59-1: The commenter expresses opposition to the project based on environmental issues addressed in the DEIR. No new environmental issues are raised. No further response is necessary.

Letter 60

LABORERS LOCAL 185
JUSTICE • HONOR STRENGTH
Serving 20 northern California counties

CONSTRUCTION AND GENERAL LABORERS' LOCAL 185
Affiliated with Laborers' International Union North America
DOYLE S. RADFORD
Business Manager/Secretary Treasurer

Jerry Morales
President
Ronald Slaven
Vice-President
Cedric Porter
Recording Secretary
Armando Calzada
Executive Board
Gary Sharette
Executive Board
Martin Skraber
Executive Board
Tom Clarke
Auditor
Robert Pernell
Auditor
Stan Swiger
Auditor
Johnnie Leggett
Sergeant-at-Arms

August 23, 2006

DEPARTMENT OF RESOURCE MANAGEMENT
RECEIVED
AUG 25 2006
BUILDING DIVISION

Bill Walker, Senior Planner
Shasta County Department of Resource
Management Planning Division
1855 Placer Street, Suite 103
Redding, Ca 96001

Regards, Shasta Ranch Mining and Reclamation Plan Project

Dear Bill:

Shasta County has been and is a rapidly growing community and with such growth comes a high demand for various types of materials, among those is aggregate. The Shasta Ranch Mining and Reclamation Plan Project (gravel pit) as stated will provide aggregate for 29 years to come and the land is already zoned for such enterprise.

The Shasta Ranch Mining and Reclamation Plan Project will play an important role in providing aggregate for the maintenance of existing infrastructure and the building of new infrastructure in Shasta County. **60-1**

The Construction & General Laborer's Local 185 are strongly in favor of this Project moving forward. We feel that this Project will be of value in the economical growth of Shasta County now and in the years to come.

Thank you for your time and allowing us to express our support for this Project.. If you have any question please feel free to contact me at 530-221-0961.

Sincerely,

Gary Sharette

Gary Sharette, Business Representative
Local 185

P.O. Box 492830 • Redding, CA 96049-2830 • PHONE (530) 221-0961 • FAX (530) 221-0964
www.laborerslocal185.com

Letter 60

Gary Sharette, Business Representative; Construction and General Laborers' Local 185, August 23, 2006

Response 60-1: The Construction and General Laborer's 185 are in favor of the project and believe the project will be of value in the economic growth of Shasta County. No new environmental issues are raised.

Letter 61

NORTHEASTERN CALIFORNIA
BUILDING and CONSTRUCTION TRADES COUNCIL
(AFL-CIO)
900 Locust Street, #5 Redding CA. 96001
Fx. (530) 243-3628

Dwight Evans
President
(530) 241-2468

Mel Breshears
Secretary/Treasurer
(415) 205-0612

August 28, 2006

Bill Walker, Senior Planner
Shasta County Department of Resource
Management Planning Division
1855 Placer Street, Suite 103
Redding, CA. 96001

RE: Proposed Shasta Ranch Mining & Reclamation site

Mr. Walker,

On behalf of the 17 Local Construction Unions affiliated with our council, I am writing this letter in support of the proposed Shasta Ranch site off Balls Ferry Road near Anderson, Ca. 61-1

This project is of particular interest to the Council as the vast majority of the building materials used are mined. Whether iron ore for steel, copper for electrical wiring, sand for fiberglass insulation and windows or, in this case, rock for road paving and concrete, it must come from the ground. Simple economics dictates you must have an adequate supply to meet the demand if you wish to keep the cost down. With the projects already in progress and those in the planning stage the demand for this resource is becoming greater each day. We cannot import this product from other areas without the added cost stifling the growth of our community. As taxpayers we all want our roads to be well maintained at a reasonable cost and expect our government officials to take the necessary steps to ensure both. We believe proceeding with this project will help achieve both goals. 61-2

We have reviewed all available documentation and listening to both sides of this argument. While we understand the concerns of those against this project and support their right to oppose it, we have concluded that the benefits of the reliable source of high-grade rock contained at the proposed site far outweigh any adverse conditions which may arise. Our concerns regarding children's safety and road use have been addressed openly and to our satisfaction by the Tullis Corporation. 61-3

Should you have questions or comments please contact me at the number listed above.

Respectfully,

Mel Breshears
Secretary/Treasurer

RECEIVED
AUG 28 2006
COUNTY OF SHASTA
BUILDING DIVISION

Letter 61

Mel Breshears, August 28, 2006

Response 61-1: The commenter states that 17 of the construction unions associated with their council support the proposed project. No new environmental issues are raised.

Response 61-2: The commenter states, with the number of projects already in progress, the demand for this resource is becoming greater each day. Importing this product from other areas would have added costs that could stifle community growth. In addition, the commenter notes as taxpayers we like to see our roads well maintained at reasonable costs and hope government officials will take the necessary steps to ensure both. The commenter believes the project will help achieve these goals. No new environmental issues are raised.

Response 61-3: The commenter states they understand the opposition and concerns against the project, however, they feel the benefits outweigh the adverse conditions that may arise. They feel the concerns of children's safety and road use have been adequately addressed and they are in support of the project. No new environmental issues are raised.

Letter 62

William and Henry Mitchell
5317 Riverland Dr.
Anderson, CA. 96007

Mark Cibula
1450 Court St.
Suite 308-B
Redding, CA 96001-1680

After reading as much of the EIR as I could understand, without the extension (the 33 appendices alone are more than 1000 pages), there are too many "significant and unavoidable" impacts on this community to let this project proceed, especially in the important areas of traffic, noise and air quality.
A traffic flow chart on page 4.3-23 shows a traffic increase on Balls Ferry Road of 30%. The data in that traffic chart and all the others in the Traffic and Circulation Section is flawed because a Honda Civic or other typical vehicle that travels along Balls Ferry Road is counted the same as an 18 wheel tractor/double trailer combination. If the study had counted the traffic flow per axle instead of per vehicle the traffic flow along Balls Ferry Road would increase by 100% not just 30%. But even 30% would increase the traffic flow rating from an A to a C level of service. According to the chart on page 4.3-13 , the "...operation of individual users becomes SIGNIFICANTLY affected...." by the additional traffic with level C. **62-1**
The traffic chart on page 4.3-29 shows all E and F levels of service, which, by definition, are at or beyond capacity levels, and yet the level of significance after mitigation shows "less than significant", the best rating for all Traffic and Circulation impacts.
In the Traffic and Circulation Section, is there any provision for future growth in the area? What is Balls Ferry Road going to like 29 years from now, even without the 120 round trips per day made by a double trailer filled with gravel?
In the Air Quality section, 6 of the 9 impacts show the level of significance after mitigation as "significant and unavoidable". That fact alone should stop this project.
In the Noise section, fully half of the impacts show the level of significance after mitigation as "significant and unavoidable". THAT fact alone should stop this project.
The Executive Summary states that this project will "not impact public services " (page 2.0-2), but the EIR study clearly states that Shasta County agencies will be responsible for enforcement/monitoring and implementation of 43 separate mitigation measures. Has anyone taken into account the cost of additional inspectors to monitor this project for the next 30 years? **62-2**
Finally, the EIR states that the proposed project "will not displace or divide any established community (no impact)." Well, the EIR finally got one thing right: this community is united against this project. Look around and listen, supervisors.

Undersigned

HENRY A. MITCHELL III

WILLIAM W. MITCHELL

Letter 62

Henry A. Mitchell III and William W. Mitchell

Response 62-1: This comment letter is identical to comment Letter 42. See Responses 42-1, 42-2 and 42-3.

Response 62-2: See Responses 42-4, 42-5, 42-6 and 42-7. Section 4.4, Air Quality, and Section 4.7, Noise, impacts are identified in the Draft EIR. In the DEIR the term "public services" refers to fire protection, police protection, schools and parks. These services are not expected to be significantly affected by the proposed project. The Planning Division costs of monitoring and inspection are charged to the gravel operator by fees established under the County Surface Mining and Reclamation Act regulatory program. Other County agencies may also collect monitoring and inspection fees.

Letter 63

Bill Walker, Senior Planner
Shasta County Dept. of Resource Management
Planning Division
1855 Placer St., Suite 103
Redding, Ca. 96001-1759

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
SEP 08 2006
PLANNING/BUILDING DIVISIONS

Sept. 1, 2006

RE: Proposed Project, Use Permit #05-010

Dear Mr. Walker,

I object strongly to the proposed rock quarry, know as, "Shasta Ranch Mining & Reclamation Plan."

My reasons are as follows:

1. 12 trucks per hour as quoted in the Record Searchlight is too much for our quite country neighborhood. Alarmingly that number is wrong. 120 truck round trips is 240 trucks going in & out. In 10-hour days that is 24 per hour maximum or one Or one truck coming or going every 2-½ minutes.

2. Trucks will be spilling gravel on the roadway as they go which in turn is thrown up by trucks and cars breaking windshields and trips up children's bikes.

3. The increased driving hazard is an unacceptable risk. The increased noise is unacceptable.

4. We do not want our legal right to the "quiet enjoyment" of our homes to be disrupted.

5. The conversion of agricultural land to non agricultural land use and the conversion of prime farmland to non use is unacceptable.

The fact that according to the Draft Environmental Impact Report states that the airborne concentrations of diesel exhaust particulate matter that would result in predicted cancer risk that would exceed applicable standards should be enough for you to decide that this is not a good thing.

I can not find one positive thing regarding this project in the DEIR. Everything stated will be a hazard to this community and once they have stripped the land it will take many years to regain what we have in this neighborhood now if it could ever be regained.

63-1

Letter 63 Continued

This is a residential and farming neighborhood. The quarry is heavy industry and not a good fit for this neighborhood. The hazard of gravel trucks going up and down a narrow country road such as Balls Ferry is not worth the risks to human lives.

Please do not let this industry break up the peacefulness of our neighborhood and quiet surroundings.

A. M. Terry
22021 Hermosa Drive
Anderson, Ca. 96007
A. M. Terry

Letter 63

A.M. Terry, September 4, 2006

Response 63-1: The commenter is opposed to the proposed project and provides objections based on traffic concerns and airborne concentrations of diesel exhaust and particulate matter as described in Section 4.4, Air Quality, of the DEIR. See Response 45-2 for traffic related concerns. In response to airborne concentrations related to diesel exhaust, see Response 24-1.

The commenter is correct in calculating the "maximum" number of trucks and estimated interval. The "average" numbers are 128 one-way trips (64 round trips). That equates to 12.8 per hour, so approximately one every 5 minutes.

The environmental impacts cited have been addressed in the DEIR. No new environmental issues are raised.

Letter 64

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
SEP 06 2006
PLANNING/BUILDING DIVISIONS

September 4, 2006

Shasta County Department of Resource Management
Planning Division
1855 Placer Street
Redding, CA 96001

Attention: Bill Walker, Senior Planner

Mr. Walker:

We live just off Balls Ferry Road and Adobe Road, and we would like you to **NOT APPROVE** the proposed Tullis, Inc. gravel pit project.

We have lived on our property since January 1969 and we love the quiet, clean air, and country feel of our home.

64-1

Even through my wife is collecting Social Security, she has recently taken up riding a motor driven cycle both into Cottonwood and to Wal Mart. During these five mile or so rides, she usually encounter three or four cars who pull around her or slow down until it is safe to pass. With the huge trucks trying to make as many hauls per day as possible and throwing out rocks from their trailers, her travel enjoyment (and terrific gas savings) will be a thing of the past.

Please consider how you would feel if these guys were driving past **YOUR** house day and night.

Hoping you will do the right thing for us,

Wayne McAndrews Betty McAndrews

Wayne & Betty McAndrews
4020 LaHoma Lane
Cottonwood, CA 96022
BLMcAndrews@aol.com

Letter 64

Wayne and Betty McAndrews, September 4, 2006

Response 64-1: The commenter states they are opposed to the project. The commenter expresses their concerns related to increased heavy truck traffic and safety along the roadway. See Response 1-1 related to traffic safety. No new environmental issues are raised.

Letter 65

DEPARTMENT OF
RESOURCE MANAGEMENT
RECEIVED
SEP 07 2006
PLANNING/BUILDING
DIVISIONS

Margot King
P.O. Box 1186 Anderson Ca 96007
(22920 Blue Jay Lane)
(530) 365-1020 **FAX (530) 365-6862**
Cell (530) 515-0800 Store (530)-365-5700

September 4, 2006

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, Cal 96001-1759

Re: Shasta ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

Attention Bill Walker, Senior Planner

I have written before but I want to be sure that you and the Supervisors and whoever else is involved with this project are aware of some very serious concerns. I cannot even believe that this project has continued after such large and serious problems have been brought to light. They ARE AVOIDABLE…Do not allow this project to happen. I know the developer has a lot of money, but what about the environment, our health, and the legacy left for our Children and Grandchildren. There are other sites that are not next to the Sacramento River, and so heavily populated. My concerns are as follows:

1) **Toxins** There are no question that dioxins and furans were dumped on this property for over 30 years. The testing for toxins should be more than a few inches…they will be going down much further than the few inches that were tested and found to be O.K. That was sort of a joke. The testing should go down just as far as they intent to dig up the gravel. I bet it would be a different story then. Digging up and washing gravel at this site would distribute these substances into the air and via the plume of turbidity created from washing the gravel, force these poisons into the aquifer from which a couple of hundred wells draw (mine included and I'm downhill and on the Sacramento river) I am very concerned about drinking the water and the possible cancer causing affects project this will cause. I will have my well tested thoroughly, if this goes through and I will proceed legally if it turns out that my well has been poisoned. I will not be able to continue to live in this property if I have no water. Nor would I be able to sell it if I need to move closer to hospitals in town. I am sure right now the property is not even worth what I owe on it. I have been financially put in a very awkward position and it is really not fair that a big time developer is able to impact the rest of us as he is doing, to further his financial gains. He certainly is going to impact the rest of us "little guys". It really is not fair.. I am very concerned. Seepage from gravel washing will also end up in the Sacramento River. How can this even be considered? This will create a further hazard for the fish and those that consume them. **65-1**

Continued on reverse

Letter 65 Continued

Continued

2) **Dust & Fumes:** The air borne dust created by this gravel process will undoubtedly contain dioxins and furans which are laying doormat at this time. This problem together with the diesel fumes (a known carcinogen) from the fleet of gravel trucks and gravel projects equipment will adversely affect those of us in a great area surrounding the proposed gravel pit. (I live ½ a mile away) I am very concerned regarding my health. I will not even be able to invite my Grandchildren to visit as they may be harmed by the toxins in the water and the air. 65-2

Traffic: Balls Ferry road is not a very wide road…when a bicyclist or a pedestrian is on the shoulder…it is a very dangerous situation. If possible, motorists move over to the other side of the road to avoid almost hitting the person in the shoulder lane. There are a lot of ups and downs and it is not safe to pass slower vehicles and farm equipment now. However, there are those who do anyway. Add to this problem loaded large gravel trucks trying to make time so they can get back and get another load of gravel. As we understand it..there will be loaded gravel trucks every four to seven and a half minutes and empty trucks returning for further loads as well. There is going to be a horrible congestion of very big trucks, school buses, farm equipment, garbage trucks, impatient drivers and me….I'm not excited about that prospect at all. The older I get the more cautious I become and this gravel project is obviously going to last longer than I do. I do not want to be afraid to leave my home because of the dangerous traffic situation I will have to face if I do so. This is just about me…how about the school buses and the children? I am very concerned. I feel that the areas safety is going to be threatened by this project. Why is it even being considered, once the impact was made clear? There are other locations that are less heavily populated and don't have the Sacramento River right next to them. Isn't our Sacramento River important to us anymore? 65-3

In the event that this bad idea does get approved..There are a number of provisions that need to be in place.

Cement/Asphalt Plants: I also request that a provision in any future EIR or permit states in writing that there will be no cement or asphalt operation allowed on this property EVER.

Hours of operation: There needs to be some kind of rules on the hours of operation for the plant and for the gravel trucks. The plant should not be allowed to operate other than during normal business working hours. It should not be allowed to operate after 5:00 p.m. or start before 8:00 a.m. It should not be operating on week-ends or Holidays. If it isn't operating then the trucks would not be as well. To have constant noise in our peaceful country setting is just not acceptable. These rules need to have very hefty fines if broken, not a slap on the wrist. Maybe suspension of operation for a period of time or something of that nature would get their attention. 65-4

All in all, I am very concerned regarding this project and it needs to be stopped. Your help in really looking at this instead of going along with it..would be the responsible thing to do. Isn't that why you have the job that you do? Please look at this project as if you lived near it, as we do. However…it will affect everyone—not just us.

Sincerely,

Margot King

Letter 65

Margot King, September 4, 2006

Response 65-1: The commenter states they are opposed to the project and that no impacts are "significant and unavoidable" because they can be avoided by not allowing the project. The commenter is concerned with toxins, fumes, and traffic. In response to toxins please refer to Response 13-1 and M-2; concerning impacts to groundwater, see Response 30-2; concerning impacts to the Sacramento River, see Response 30-7.

Response 65-2: See Response 24-1 concerning diesel fumes. As noted in the DEIR, Section 4.12, Hazards and Hazardous Materials, an air toxics evaluation was conducted to estimate the potential non-cancer and cancer health risks associated with exposure to dioxin and furans that may become airborne during future quarry operations in Phase 3 of the proposed project. The Office of Environmental Health Hazard Assessment (OEHHA) guidelines for estimating potential exposure to chemical emissions were used to assess the potential human exposure to airborne chemicals from a variety of exposure pathways. The toxicity, exposure and risk assessment levels were all found below the levels that typically require emission controls by the California Air District. (Refer to Appendix 4.12-4 of the DEIR).

Response 65-3: In response to traffic-related comments, please refer to Response 1-1. The commenter expresses additional concerns that do not raise any environmental issues.

Response 65-4: See Response 17-1 regarding comment on asphalt plants and Response 7-1 regarding hours of operation.

The commenter cites a number of projects impacts as reasons they object to the project. These impacts have been addressed in the DEIR. No new environmental issues are raised.

Letter 66

Bill Walker

From: Rich Barchus [rbarchus@ci.anderson.ca.us]
Sent: Thursday, September 07, 2006 11:57 AM
To: Bill Walker
Subject: FW: No gravel pit !

Bill,
I'm sure you have received quite a few of these communications from folks expressing their concerns about the proposed gravel plant already but I told the lady I would forward her email to you.
Thanks for your time,
Rich B.

-----Original Message-----
From: Rich Barchus [mailto:rbarchus@ci.anderson.ca.us]
Sent: Thursday, September 07, 2006 11:37 AM
To: Judy Darting
Subject: RE: No gravel pit !

Judy,
The project you are speaking of is not located within the City but lies in the County. I will forward your email to Shasta County for their consideration. If I may be of further help please feel free to contact my office.
Respectfully,
Richard Barchus

-----Original Message-----
From: Judy Darting [mailto:cjcg@sbcglobal.net]
Sent: Thursday, September 07, 2006 11:13 AM
To: rbarchus@ci.anderson.ca.us
Subject: No gravel pit !

Mr. Barchus,

The Balls Ferry area is beautiful. I road the school bus on that road for many years. The gravel pit will bring noise, dust, big trucks on a narrow rural road and a pit in the ground. **66-1**

I have two health conditions caused by pollution, I don't want to have to leave.

No one wants the gravel pit. NO ONE !

Judy Darting
79 Spruce Court
Anderson CA 96007
365-4743
cjcg@sbcglobal.net

For your security this Message has been checked for Viruses as a courtesy of Com-Pair Services!
For your security this Message has been checked for Viruses as a courtesy of Com-Pair Services!

09/07/2006

Letter 66

Judy Darting, September 7, 2006

Response 66-1: The commenter states they are opposed to project based on expected general environmental impacts. These impacts have been addressed in the DEIR. No new environmental issues are raised.

Letter 67

TONI DOYLE JEPSON
2245 Francis Way
Cottonwood, CA 96022
(530) 276-4617

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
SEP 18 2006
PLANNING/BUILDING DIVISIONS

September 10, 2006

Mr. Bill Walker, Senior Planner
Shasta County Department of Resources Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Dear Mr. Walker:

I am writing to comment on the Draft EIR, released July 14, 2006 regarding the Shasta Ranch Mining & Reclamation project, Use Permit 05-010, Reclamation Plan 05-001. I feel strongly that the following items have not been addressed sufficiently and **cannot be mitigated in any meaningful way**. I therefore object to the issuance of a Final EIR or any permit for said proposed project.

My objections are as follows:

1. **TRAFFIC**: The roads in the Balls Ferry area already have congestion and safety issues. Adding loaded gravel trucks every four to seven minutes would most certainly create havoc on the streets and roads – and especially for our school buses, mail carriers and garbage trucks. **This is a HUGE safety issue.** 67-1

2. **WIDEN ROADS**: The plan to widen Balls Ferry Road would be disastrous to the many residents of the area. Homes, wells and ACID ditches would be destroyed, lives would be uprooted and the widening the roads would not begin to resolve the traffic problems this proposed project would create. 67-2

3. **TOXINS**: It is well known that dioxins and furans were dumped on this property for over30 years. It is preposterous to think that the 67-3

Letter 67 Continued

County would allow any digging up and washing of gravel at this site. **Are our health and the health of our children of no concern to the County? There is no mitigation for this!**

4. **TESTING**: Testing of the proposed pit grounds should be done by an independent laboratory, in accordance with ERA standards, at different depths varying from two to forty feet. **The results of these tests (including checking for dioxins, furans and other toxic materials at all levels) MUST be made public.** 67-4

5. **NOISE**: The resulting noises from dredgers, rock crushers, rumbling trucks and other large machinery, is totally unacceptable and inconsistent with our **agricultural setting and way of life.** 67-5

6. **UTILITIES**: Public utilities are already strained to the maximum during high-use times, and yet there seems to be no provisions to provide these services for the proposed project outside of the normal grid. 67-6

PEASE DO NOT DISRUPT OUR PEACE AND TRANQUILTY BY ISSUING A FINAL EIR ON THIS ILL-CONCEIVED PROJECT.

Toni Doyle Jepson, Resident
22245 Francis Way
Cottonwood, CA 96022
Phone: (530) 276-4617

Letter 67

Toni Doyle Jepson, September 10, 2006

Response 67-1: Commenter does not feel the DEIR adequately addresses the impacts identified and cannot be mitigated in a meaningful way. The commenter objects to the issuance of the FEIR and approval of a permit for the project. The commenter expresses concerns of traffic safety along Balls Ferry Road. See Response 1-1 and 45-2.

Response 67-2: Commenter is opposed to the widening of the road. See Response 1-1.

Response 67-3: The commenter asks if the health and the health of their children are of no concern to the County in response to 30 years of toxins being dumped. It is the County's responsibility under the California Environmental Quality Act (CEQA) as a local agency to prepare an environmental impact analysis and to make decisions based on those studies' findings regarding the environmental effect of the proposed action. The purpose is to disclose to the decision makers and the public the significant environmental effects of those proposed activities and require agencies to avoid or reduce the environmental effects by implementing feasible alternatives or mitigation measures. (Public Resource Code Secs. 21000-21004) The toxicity of the material on the site has been evaluated. For more discussion regarding the level of testing and results on dioxin and furan toxins, see Response M-2 and 13-1.

Response 67-4: The commenter would like the proposed pits to be tested by an independent laboratory, in accordance with EPA standards at varying depths. Please refer to response to comments M-1, M-2 and 16-2 for more information on site testing and agency review of site contamination. As stated in the DEIR, no treated paper mill effluent was applied to proposed Phase 1 or Phase 2 mining areas. All information on the site relative to the past use of treated effluent has been disclosed. The Phase 3 area has been sampled to determine the extent of dioxin concentrations in the soil profile at variable depths greater than 6 to 12 inches. Refer to Section 4.12 of the DEIR for results in comparison to regulatory standards. The levels of dioxin and related compounds detected at the site are below levels determined by regulatory agencies to be protective of human health and the environment.

Initially under federal authority, EPA conducted a screening evaluation at the site and determined that no further action, under federal status and regulation for the protection of human health and the environment, was required.

Within California, the Department of Toxics Substances Control (DTSC) or, when appropriate, the California Regional Water Quality Board (RWQCB), is the state agency with responsibility for ensuring that a required action in response to a hazardous substance release, or threatened release, at a site is carried out in compliance with the procedures, standards, and other requirements of the California Health and Safety Code and related statutes as appropriate. Recent monitoring activities were conducted under the

review and oversight of the RWQCB. A work plan was submitted to, and approved by, the RWQCB for the monitoring conducted by Shasta Ranch at the request of the RWQCB in 2005-2006. That monitoring has been completed, and no additional groundwater monitoring is required at the site.

Response 67-5: Noise impacts have been evaluated in the DEIR. See Response 10-1 for noise impacts.

Response 67-6: PG&E would provide power to the project and has not expressed concerns with its ability to serve the project. See Section 4.11 of the DEIR for discussion of the public utility services provided to the proposed project site. Please refer to Impact 4.11-6, which addresses the impacts the project would have on public services/utilities.

Letter 68

6412 Clear View Drive
Anderson, CA 96007
(530) 365-5852
bmadgic@charter.net
www.bobmadgic.com

Shasta County Department of Resources
Attn: Bill Walker

Sept. 12, 2006

Dear County officials,

The most valuable and treasured natural asset of Shasta County is the Sacramento River and it rich fishery and birdlife. I find it unimaginable that the County would proceed with a project such as the quarry that is being considered for Anderson and which would inflict harm to this asset and the public trust. 68-1

I urge the County to reject this project. The potential for harm is too great for it to go forward. We cannot afford any damages to our wondrous Sacramento River and its denizens, and all of the citizens who benefit from it.

Sincerely,

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
SEP 14 2006
PLANNING/BUILDING DIVISIONS

Bob Madgic, author, *A Guide to California Freshwater Fishes.*

Letter 68

Bob Madgic, September 12, 2006

Response 68-1: The commenter expresses concern regarding the impacts of the project on the Sacramento River and related fish and birdlife and urges rejection of the project by the County. In response, Section 4.5, Biological Resources, of the DEIR addresses the impacts and provides adequate mitigation to reduce the impacts to less than significant. See Response letters O and S, and 40-1, 40-2, and 45-3 for more information.

Letter 69

Rose Welsch
PO Box 246
Lewiston, CA 96052
September 13, 2006

DEPARTMENT OF
RESOURCE MANAGEMENT
RECEIVED

SEP 18 2006

PLANNING/BUILDING
DIVISIONS

Shasta County Planning Division
1855 Placer Street, Suite 103
Redding, California 96001

Dear Members,

I heard on the news today about how many citizens are opposed to the creation of a gravel pit in the Anderson area. I sincerely hope you will listen to them. I also hope you will come to a former gravel pit in the county where I live, Trinity County.

I remember what the area used to look like before the gravel pit was approved. It was a beautiful tract of land adjacent to the Trinity River, and was covered with many beautiful trees. On super hot summer days, those trees held in the cool air coming from the river and made the place a great respite from the heat. The land also had many interesting plants and rocks, as well as an abudance of wildlife such as chipmunks, hares, woodpeckers, squirrels, deer, and foxes. As a child, my family and I bonded together a lot and stayed healthy by taking evening walks frequently in that area. I felt really happy to be an American, thinking that the government was keeping such beautiful places intact for all citizens to enjoy freely.

Then, the sound of bulldozers suddenly appeared one morning. Almost every morning, starting at around 6:30 a.m., bulldozers started operating in that tract of land. The sound was incredibly disruptive, but the way the landscape came to be completely altered and marred was the worst part. Within a few years, that beautiful and diverse tract of land was turned into a barren clearing dotted with nothing but heaps of gravel. 69-1

Had everyone in the town benefited from this destruction, or had it provided great, lasting jobs to many people, perhaps I could have accepted the presence of the pit more easily. However, the owner of the pit found his business wasn't profitable, and simply abandoned it. Equipment and all--it just rusted there for years. Apparently, he had no sense of self-imposed responsibility to try to restore the land to even a fraction of what it had been like before, and no other town or county bodies held him accountable either. That was more than 15 years ago, and the landscape remains scarred and devastated. All Californians lost yet another beautiful and remarkable piece of this beautiful state as a result. ..no, all Americans did. Please listen to the citizens in your county who oppose the gravel pit--their voices echo throughout the nation.

Sincerely,

Rose Welsch

c.c. KRCR News

Letter 69

Rose Welsch, September 13, 2006

Response 69-1: The commenter describes the conditions of quarry operation that took place in Trinity County over 15 years ago and expresses opposition to the proposed project. The comment does not raise any new environmental issues that have not already been evaluated in the DEIR. No further response is necessary.

Letter 70

September 13, 2006

Shasta County Department of Resourse Management
Planning Division
1855 Placer Street , Suite 103
Redding, California 96001

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
SEP 18 2006
PLANNING/BUILDING DIVISIONS

Attn: Bill Walker, Senior Planner
RE: Use Permit 05-010 Shasta Ranch Mining

Dear Sir,

I feel that I need to submit my voice and opinion on the Anderson gravel pit proposal. I am against this project on a number of points.

1. I have lived on the corner of Balls Ferry Road and Riverland Drive for over 28 years and I flat don't think this area is the right place for this type of operation. **70-1**

2. They are calling for 120 round trips up and down Balls Ferry Road. This road in not adequate for this type of truck traffic. The road should be at least 15 foot wider, not 4 foot as they suggested, to handle this type of traffic. With the existing road I have tried to walk for exercise but have found it to be too dangerous even without the added truck traffic. Plus, at the corners of Balls Ferry and Riverland, and Balls Ferry and Deschutes Road, there have been numerous traffic accidents caused by people pulling out in front of oncoming traffic. With the higher profile trucks this could increase the number of accidents.

3. I am also concerned about the quality of our well water. One of our neighbors worked for Simpson Paper Co., and even then there was a concern of Dioxins and other chemicals being dumped onto this property. If they disturb that site, will it enter into our well water? I can remember some years ago, the Dioxin levels in the Sacramento River were high just below this property, possibly due to the water they were putting into the river. **70-2**

4. I feel that with with Mr Tullis being the low bidder at auction of a defunct Shasta Paper Company at a bargain price, that does not give him the right to put such a facility of this magnitude in a non industrial area that I live in. I believe that this agricultural and residential land is not where this quarry should be located. **70-3**

Letter 70 Continued

5. In the past, Simpson Paper Co used Riverland Drive to access this property What would keep the trucks from using Riverland Drive also, to come in and out? If they did, what could be done? Or, what will be done to stop them? **70-3**

THERE MUST BE MANY OTHER LOCATIONS FOR A QUARRY THAT WOULD NOT HAVE SUCH A NEGATIVE IMPACT ON PEOPLES LIVES, HEALTH AND SAFETY.

William Bankson

WILLIAM BANKSON
5267 RIVERLAND DRIVE
ANDERSON, CALIFORNIA 96007

Letter 70

William Bankson, September 13, 2006

Response 70-1: The commenter states they are opposed to the project. The commenter states the roadway is not wide enough to accommodate the project truck traffic. See Response 1-1.

Response 70-2: See response to comments S-2 and 13-1 for information on dioxins and well monitoring. Please refer to Impact 4.12.2 for further discussion on the potential transport of dioxins to groundwater and contamination of private wells found in Section 4.12 of the Draft EIR.

Response 70-3: The commenter states they do not agree with the proposed use in an agricultural and residential area. According to the Land Use designation and zoning the proposed project is a permitted use with an approved Conditional Use Permit under Shasta County Municipal Code Section 17.88.020. See Section 4.2, Land Use for further information.

The commenter also states their concern that the project may eventually use Riverland Drive. The use permit requested by the applicant is based on the project description as described in Section 3.0 of the Draft EIR. The truck route access identified in the project description includes one point of access, a private road that ties directly into Balls Ferry Road. Riverland Drive is not part of the proposed gravel operation; however, access from Riverland Drive is not prohibited from other such uses as farming and residential access. In the event the Riverland Drive was proposed for transport of gravel materials, the County would need to approve the amendment of the use permit.

Letter 71

RECEIVED
SEP 19 2006
BOARD OF SUPERVISORS
SHASTA COUNTY

5688 Riverland Drive
Anderson, Calif
Sept 13, 2006

Dear Mark Cibula:

Proposed Shasta Ranch Mining and Reclamation Project comments.
Use permit 05-010 and 05-001
The applicant is Tullis Inc.

According to the Public Notice I have received the DEIR report list some Very negative environmental impacts on the surrounding area and probably to the city of Anderson.

This is a rural farming area and an idyllic area to live. We do not need polluted air and cancer causing particles to breathe.

The approval of this permit would destroy hundreds of acres of the best farm land in the area. This land can not be replaced.

The emission of NOx and PM10 exceeding State and Federal standards and diesel exhaust exceeding cancer risk thresholds should require this permit be denied. 71-1

The noise levels of the operation and the dust created will be Daily for 30 years. This air and noise pollution will never be adaptable with this quiet rural area. If we can hear the Anderson Fair races on Saturday night here in the country, then the city of Anderson will hear this operation daily and the dust will permeate Anderson also.

Balls Ferry Road is a rural road with many homes adjoining it. It came into being as a road to get to your farm and now our homes. It was NOT designed to handle 100 huge gravel trucks per day. The polluting diesel fumes will be extreme cancer causing for the residents of this road plus the noise.

This permit should be denied. The DEIR report should be evidence enough already and approval of the permit will RUIN a rural way of life for the Anderson area.

Please do not Approve.

Leonard Smith

Letter 71

Leonard Smith, September 13, 2006

Response 71-1: Comment noted. This letter is identical to comment Letter 47. Please see Response on Letter 47.

Letter 72

DEPARTMENT OF
RESOURCE MANAGEMENT
RECEIVED

SEP 19 2006

PLANNING/BUILDING
DIVISIONS

September 17, 2006

Bill Walker, Senior Planner
Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, California 96001-1759

Mr. Walker,

I am writing in regards to the proposed Shasta Ranch Project Mining and Reclamation Plan, Use Permit 005-010. I am responding to the Public Notice regarding the Draft Environmental Impact Report.

It is amazing to me after reading through the findings in the DEIR, that there would be any further discussion as to the inappropriate use of this farmland as a gravel pit. The issues raised, even down to the loss of "prime farmland, farmland of statewide importance, and unique farmland", should be enough to force some serious questioning. The issues related to "predicted cancer risks" and emissions of N0x and PM10 that exceed acceptable levels should squelch the gravel pit idea completely. As to the property not being listed as a hazardous waste disposal, than why has the land been fenced and gated for the 15 years I have lived in the area?? It would only take a bit more questioning of past employees of the paper mills to get more accurate information related to the toxic dumping that occurred on this location.

These issues do not even begin to address the quality of life aspect that would be ruined if the proposed gravel pit were allowed to open. Balls Ferry happens to be a long, straight road. This does not mean that we are not a neighborhood. If a gravel pit wanted to open adjacent to any of the prestigious, traditional neighborhoods in Redding and direct the truck traffic through their streets, the idea would never even make it to a discussion stage! When in fact the streets in a traditional neighborhood may be better suited for it as they are wider and have sidewalks to allow for pedestrian usage. 72-1

My family has lived along Balls Ferry Road for 15 years. The increased traffic over these years has been significant. More hazardous has been the increased speed drivers insist on traveling with total disregard to the posted speed limits. Over these 15 years, I have only observed law enforcement monitoring speeds along this road on 5 or 6 occasions, moat during the last 12 months. This narrow road already carries significant truck traffic from Zamora Sod farm, as well as cattle trucks, chip trucks, fishing boats and other various, commercial traffic. Approximately 10 years ago, the County re-paved Balls Ferry and made it significantly narrower as the asphalt was not distributed clear to the previous existing edge. I have heard rumor of the street being widened, but traffic will only be encouraged to drive at increased rates of speed as enforcement is minimal.

This is an agricultural, residential area. Anyone traveling along the section of Balls Ferry Road traveling north from Kimberly Road would note how close many of the homes sit to this country road. There are cows and horses in many of the pastures. We are one of the fortunate ones who do not sit right against the road. I hate to imagine what 64 – 120 trucks, one passing every 5 minutes, would do to the poor homeowners who sit along the road and already deal with so much traffic.

When my family first located along Balls Ferry, we often went for walks along the road. I am a jogger, and regularly jogged along the road. Tractors, bike riders and people riding horses used

Letter 72 Continued

to be a regular sight on the road, especially in the summer months. These activities are no longer safe on this road. The increase in truck traffic would magnify this significantly.

I am not opposed to this property being developed in the proposed manner. However, the truck traffic, noise levels of the gravel pit, increased toxins and loss of quality of life, does not coincide with the life style of the residents in this area. It would be a detriment to the property values of homes in this area as well as increase dangers on the road for our children, our pets and our livestock. The Balls Ferry Road area should not be utilized in this manner. Maybe Mr. Tullis could build it in his backyard! **72-1 cont.**

Sincerely,

Kellie Dunham

Kellie Dunham
5332 Balls Ferry Road
Anderson, CA 96007
(530) 378-1934

Letter 72

Kellie Dunham, September 17, 2006

Response 72-1: The commenter states they are opposed to the project and cites several environmental issues. These issues have been evaluated in the DEIR. In response to the loss of farmland, Impact 4.2.1 addresses the conversion of prime agricultural farmland. Additional information has been added to the FEIR to represent the total area of impact. Please see Response 50-1 and Section 3.0, Revisions to the DEIR, for revisions made to Impact 4.2.1 in the FEIR document.

In response to the comment of increased traffic and safety concerns, see Response 1-1. No new environmental issues are raised.

Letter 73

September 17, 2006

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
SEP 19 2006
PLANNING/BUILDING DIVISIONS

Mr. Bill Walker
Shasta Co. Dept of Resource Management, Planning Division
1855 Placer St, Ste 103
Redding, CA 96001

Dear Mr. Walker:

First, I want to point out, not only were there missing pages in the DEIR (which were addressed), but the appendices that are referenced in the Hazardous Materials Section 4.12, are completely wrong, which makes the document confusing and frustrating. The appendix 4.9-2 is neither the reference document for the Geomatrix investigation nor the Vestra results. I believe there are other errors in this section. As others in this community, my computer is not powerful enough to search through 33 appendices to find the correct document, in a reasonable amount time....that is if my computer doesn't crash first. One document took over a ½ hr to download and then it was wrongly referenced in the document. **73-1**

How are we, the impacted residents, reasonably expected to search through hundreds of pages of data and give meaningful input, when the document is not supported by the specific referenced data? I believe this right is afforded to us under Title 14 of the California Code of Regulations & the Environmental Justice Act. **I respectfully request that an extension be granted, so that at least we are given the opportunity to respond to a correctly referenced document.** I'm sure there must be errors in other sections. This is an extremely important issue for us and we will have to live with the decisions that others will make, for **30 years**; so extending the final comment period again, is a reasonable request. **73-2**

We are not experts in the various fields listed in the DEIR and an incorrect document makes it confusing and difficult to follow. I feel that it should not be our responsibility to search through the DEIR to find the correct supporting documentation. Please keep in mind that we are home owners desperately trying to go through the document after work and on weekends to make thoughtful and constructive comments. This is not just a matter of insignificant "clerical errors"; this is a matter of presenting a document for public review that is correctly organized, referenced and understandable, as the decisions based on this document can have **major negative environmental impacts** on our community and our lives. If this project is approved, the negative impacts will change our quality of life, health, safety, investments and the expectations that we had when we purchased our home. I have become very disappointed in the lack of public support and those that have succumbed to the political pressures, at our expense.

Respectfully,

Linda & Jim Garner
21902 Cherokee Drive
Anderson, CA 96007

Letter 73

Linda and Jim Garner, September 17, 2006

Response 73-1: The commenter states not only were there missing pages from the Appendices, but the Appendices referenced in Section 4.12 are incorrect. In response, the County addressed and distributed the inadvertently missing pages from Appendices 4.9-3. As for the appendices referenced in Section 4.12, Hazards and Hazardous Materials, the information has been identified and corrected in Section 3.0, Revisions to the DEIR, in the FEIR document. We apologize for the errors. The following amendments were made:

Page 4.12-11, paragraph three, first sentence, the following revisions were made.

Dioxin TEQ results from the Geomatrix investigation are presented in ~~Appendix 4.9-2~~ *Appendix 4.8-2*.

On page 4.12-11, paragraph five, first sentence was amended to reflect the correct reference.

The Vestra results are presented in ~~Appendix 4.9-2~~, *Appendix 4.12.-2* and the results are compared to current regulatory levels in Table 4.12-2**.**

Page 4.9-12, second paragraph following the first sentence the reference is amended as:

(See ~~Appendix 4.9-2~~ *Appendix 4.9-1*)

Response 73-2: The commenter requests an extension of time. In response, the County granted a 30-day extension of time for the public review period of the Draft Environmental Impact Report.

Letter 74

Sept. 19 - 2006

Dear Bill Walker

Concerning the use permit for the Shasta Ranch Mining and Reclamation Project UP05-010 RP05-001 Tillis

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED SEP 20 2006 PLANNING/BUILDING DIVISIONS

We adamently oppose this project. By allowing 120 round trips or 240 single trips of double gravel trucks up and down Balls Ferry Rd from Cottonwood to Mischutes and onto Shelby Lane would jeprodize our whole community's safety, health and every day life by horrific traffic in residential and agriculture farms and homes. Added to this is the adverse effects of pollution, diesal emissions, dust and noise that would affect our crop's, bee's, animals and our life's. 74-1

We have owned and operated a 30 acre walnut orchard and custom walnut harvesting and farming business here since 1978 and realize the damage that can be done to the agriculture industry and financial stability of those who live and work in this community.

This is prime agriculture property and cannot be replaced. This whole community will be put to great devastation.

We know there are many-many area's in Shasta County available for gravel pit operations that would not devastate prime agriculture and residential property. 74-2

We would ask each of you to think how you would feel if this happened where you live and travel before you decide to say yes to this project.

We do ask you to say no to this project and respect the rights and live's of the majority of people who live here.

Doug Lewallen Marilyn Lewallen

Mr. & Mrs. Douglas Lewallen
5486 Riverland Dr
Anderson, CA 96007-8380

Letter 74

Doug and Marilyn Lewallen, September 19, 2006

Response 74-1: The commenters state they are adamantly opposed to the project because of a variety of significant environmental impacts. In response to the increase in traffic, the DEIR states that Balls Ferry should be improved to meet current County standard (such that all modes of traffic could be accommodated). See Response 1-1 for more information on the traffic impacts.

In response to the loss of agriculture, Impact 4.2.1 in the DEIR addresses the conversion of prime agricultural farmland. Please see Response 50-1 or Section 3.0, Revisions to the DEIR for revisions made to Impact 4.2.1 in the FEIR document to clarify the amount of agricultural land that would be lost.

As noted in Section 4.4, Air Quality of the DEIR, uncontrolled localized concentrations of fugitive dust on plants can affect photosynthesis and promote the increased development of some parasites. As a result, the DEIR concluded that the project would have a potentially significant impact to nearby agricultural crops and mitigation measures were incorporated to reduce this impact. Based on the modeling conducted and assuming implementation of proposed mitigation measures, predicted offsite concentrations of fugitive dust at the nearest orchards would not exceed the national secondary (welfare-based) annual ambient air quality standards for PM_{10}. As discussed in the DEIR, these secondary standards have been established for the purpose of protecting human welfare, which includes damage to agricultural crops (EPA 2006(a)). With mitigation, localized impacts to agricultural crops would be considered less than significant.

Response 74-2: The commenter opines that there are many areas available within Shasta County available for gravel pit operations that would not impact prime agriculture and residential property. The commenter does not provide documentation to rebut the analysis provided in Section 4.2 in the Draft EIR. According to the Mineral Land Classification Study of 1997 (i.e., *Mineral Land Classification of Alluvial Sand and Gravel, Crushed Stone, Volcanic Cinders, Limestone, and Diatomite Within Shasta County, California*), mining operations with approved use permits and reclamation plans were expected (at that time) to only supply Portland concrete cement grade (PCC-grade) alluvial sand and gravel material for approximately 17 years. (California Department of Conservation, 1997) In recognition of this conclusion, the study involved a thorough evaluation and classification of potential mineral resource sites within Shasta County. The aggregate resources in Shasta County were mapped consistent with Section 2761(a) and (b) and 2790 of the Surface Mining and Reclamation Act (SMARA). In short, there are virtually no sites where PCC-grade aggregate has been deposited that can be extracted and hauled without impacts to agricultural and/or surrounding land uses.

Letter 75

Milton Siefken
2933 Balaton Ave.
Redding, CA 96001-5055

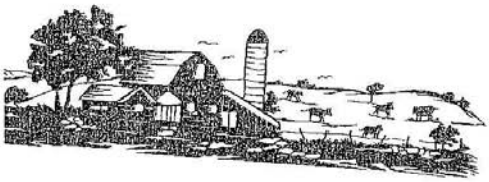
I am firmly opposed to gravel plant in Anderson.

Milton Siefken

DEPARTMENT OF
RESOURCE MANAGEMENT
RECEIVED

SEP 21 2006

PLANNING/BUILDING
DIVISIONS



Letter 75

Milton Siefken, September 21, 2006

Response 75-1: Commenter states he is firmly opposed to project. No new environmental issues are raised.

Letter 76

Mrs. Margaret Siefken
2933 Balaton Ave.
Redding, CA 96001-5055

I am firmly opposed to Gravel Plant operation in Anderson

Margaret Siefken

DEPARTMENT OF
RESOURCE MANAGEMENT
RECEIVED

SEP 21 2006

PLANNING/BUILDING
DIVISION

2005 Member of
Audubon Society of the United States

Letter 76

Margaret Siefken, September 21, 2006

Response 76-1: Commenter states she is firmly opposed to project. No new environmental issues are raised.

Letter 77

9/22/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, Ca. 96001-1759
Attention: **Bill Walker, Senior Planner**

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

Dear Mr. Walker:

This letter is in response to the Draft EIR on the above project. I do not feel that the **DIESEL EXHAUST** issue has been correctly addressed.

The emissions for this project were not correctly calculated pursuant to the Omni-means Technical Memorandum dated 6/14/05 prepared for Shasta Ranch Gravel and the indicated additional increase in truck traffic. Therefore, the emission factor could not have been correctly calculated. **77-1**

Note: There are homes 20' - 40' from the existing road. Your DEIR says 60' is closest house.

Elaine Rutkowski
21881 Tranquil Lane
Anderson, Ca. 96007
SCCHE

Letter 77

Elaine Rutkowski, September 22, 2006

Response 77-1: The commenter claims the diesel exhaust issue has not been correctly addressed in the DEIR. The commenter feels the emissions were not calculated correctly pursuant to the Omni-Means Technical Memorandum dated June 16, 2005. To clarify one misrepresentation, the Omni-Means Technical Memorandum report was not used to evaluate the impacts associated with the proposed project traffic impacts. A separate traffic analysis was completed by Fehr & Peer for the proposed Shasta Ranch project. The traffic counts used in the traffic study included recent counts taken by Fehr & Peers, Omni-Means, and/or Caltrans. All traffic projections for the site were developed by Fehr & Peers. Calculations used to identify traffic and circulation impacts found in Section 4.3, Transportation and Circulation of the DEIR are the same calculations used for the air quality modeling and impact analysis in Section 4.4 of the DEIR.

Concerning the distance of homes to the existing road (i.e. Balls Ferry Road), the DEIR states, "the nearest residential dwellings are located within approximately 60 feet of the roadway edge." (page 4.4-40 of the DEIR). It does not state, as claimed, that the closest house is 60 feet.

Letter 78

9/22/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, Ca. 96001-1759
Attention: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

Dear Mr. Walker:

This letter is in response to the Draft EIR on the above project. I do not feel that the NOISE issue has been correctly addressed.

The increase in traffic for this project was not correctly calculated pursuant to the Omni-means Technical Memorandum dated 6/14/05 prepared for Shasta Ranch Gravel. Therefore, the noise factor could not have been correctly calculated. **78-1**

Additionally, there are homes 20' - 40' from the existing road. Your DEIR says 60' is closest house.

Elaine Rutkowski
21881 Tranquil Lane
Anderson, Ca. 96007
SCCHE

Letter 78

Elaine Rutkowski, September 22, 2006

Response 78-1: The commenter feels the noise impacts were not calculated correctly pursuant to the Omni-Means Technical Memorandum dated June 16, 2005. Noise calculations were based on the trip generation information completed by Fehr & Peers, not the Omni-Means technical memorandum. All traffic projections for the site were developed by Fehr & Peers. These calculations were used to evaluate noise impacts associated with the proposed project-related traffic.

Letter 79

9/22/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, Ca. 96001-1759
Attention: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

Dear Mr. Walker:

This letter is in response to the Draft EIR on the above project. I do not feel that the **BALLS FERRY roadway** issue has been adequately addressed as follows:

According to the DEIR, with approval of this project, the applicant can elect to have Deschutes and Balls Ferry designated as truck routes and that subsequently *"would require that the roadways providing access to the proposed project be brought up to CURRENT design standards"*. In speaking with Public Works, I am told that *current design standards* in this area means a total lane width of 16' plus a 4' shoulder in each direction. This is a rather hidden way to indicate the road will be widened beyond just the shoulder as indicated in the DEIR. **79-1**

With regard to the road being widened to bring the traffic and exhaust even closer to people's homes, in my conversation with you in July I asked you what these people were expected to do, move? You told me that "maybe that would be what they should do". That response makes it appear that whatever the EIR finds is absolutely irrelevant, and that this project is already unofficially approved. **79-2**

Elaine Rutkowski
21881 Tranquil Lane
Anderson, Ca. 96007

REC'D SEP 26 2006

Letter 79

Elaine Rutkowski, September 22, 2006

Response 79-1: See Response 1-1. As stated in the EIR, Mitigation measure MM 4.3-1 would improve the roadway to current County design standards. The point is misrepresented that "the applicant can elect to have Deschutes and Balls Ferry designations as truck routes …" The issue is that the roads (especially Balls Ferry) are already substandard per the County's criteria. If the County decides to approve the proposed project, the County would need to decide if the current condition of the road is acceptable for the proposed amount of truck loads, or is it necessary to require that the road be improved.

Response 79-2: The commenter asks what the people are supposed to do if the road is widened. Please refer to response to comments 1-1 and 34-4. In response to the comment of the project being unofficially approved, it is the County's responsibility under the California Environmental Quality Act (CEQA) as a local agency to prepare an environmental impact analysis and to make decisions based on the findings of those studies regarding the environmental effects of the proposed action. The purpose is to disclose to the decision makers and the public the significant environmental effects of those proposed activities and require agencies to avoid or reduce the environmental effects by implementing feasible alternatives or mitigation measures. (Public Resource Code Secs. 21000-21004) CEQA does not require technical perfection in an EIR, but rather adequacy, completeness, and a good faith effort at full disclosure. CEQA Guidelines Section 15003(i). Whether or not the project is approved, there will be an on going issue concerning the need to upgrade the roads in this area and the fact that many homes have been built close to the roadway.

Letter 80

9/25/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, Ca. 96001-1759
Attention: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

Dear Mr. Walker:

This letter is in response to the Draft EIR . I feel that the TRAFFIC INCREASE issue has not been correctly calculated for the following reasons:

Some information that was readily available does not appear to have been considered by and is not included in the DEIR, i.e., the attached Omni-*means Technical Memorandum prepared for Shasta Ranch Gravel and dated June 14, 2005.* According to this report, the calculated 128 daily truck trips figure used in the DEIR is based solely on trips originating from Shasta Ranch. Pg 13 of this report charts a total of 341 *Daily Truck Trips!* The DEIR fails to take into account the "whole action involved" in that it in no way analyzes trips originating elsewhere including the ancillary sites referenced in the Omni-means report. Additionally, the sub-contracted haul trucks would originate at a location other than Shasta Ranch. **80-1**

Also, "Per Tullis, Inc. the *build out* of the proposed project would occur following either abandonment or depletion of gravel at two of the three existing gravel sites". Therefore, the DEIR is also not based upon the build out level of traffic.

The Planning Department's Initial Study instructions, page 5, Evaluation of Environmental Impacts (2) reads "**All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.**"

According to the 1.0 INTRODUCTION of the DEIR "If the County finds that the FEIR is 'adequate and complete', the Shasta County Board of Supervisors may certify the FEIR. The rule of adequacy generally holds that **the EIR can be certified if: 1) it shows a good faith effort at full disclosure of environmental information, and 2) provides sufficient analysis to allow decisions to be made regarding the project in contemplation of environmental considerations.**" **80-2**

Therefore, this incomplete traffic count would change the overall impact of all testing regarding, but not limited to, Traffic & Circulation, Air Quality, Noise.

Elaine Rutkowski
21881 Tranquil Lane
Anderson, Ca. 96007
SCCHE

c: All County Supervisors (with report)

RECD SEP 26 2006

Letter 80

Elaine Rutkowski, September 25, 2006

Response 80-1: The truck trip generation estimates used in the DEIR are consistent with those referenced in the Omni-Means report. However, as described in the EIR, a passenger car equivalent of 3.0 (i.e., one truck equals three passenger vehicles) was applied to the estimated truck traffic for operations analysis (consistent with industry state of the practice). Therefore, the trucks actually account for 384 daily passenger car trips on the adjacent roadway.

Response 80-2: The commenter is correct in regards to the CEQA requirements. The trip generation information was calculated assuming full use of the site based on aggregate yield information expected on a daily and peak hour basis. Therefore, the traffic analysis is adequate and meets the CEQA requirements.

Letter 81

9/22/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, Ca. 96001-1759
Attention: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

Dear Mr. Walker:

This letter is in response to the Draft EIR on the above project. I do not feel that the **AIR QUALITY/DUST** issue has been correctly addressed.

The Air Quality/Dust issue for this project were not correctly calculated pursuant to the Omni-means Technical Memorandum dated 6/14/05 prepared for Shasta Ranch Gravel and the indicated additional increase in truck traffic. Therefore, the air quality/dust factor could not have been correctly calculated. **81-1**

The DEIR offered three choices to the haul trucks regarding dust: wetting the material, covering the material or filling the trucks to within 6" of the top. This is in error as any truck hauling gravel on any road is **required** to be covered. Source: California Air Quality Board.

Note: There are homes 20' - 40' from the existing road. Your DEIR says 60' is closest house.

Elaine Rutkowski
21881 Tranquil Lane
Anderson, Ca. 96007
SCCHE

REC'D SEP 26 2006

Letter 81

Elaine Rutkowski, September 22, 2006

Response 81-1: In response, the emissions estimates presented in the DEIR were calculated based on emission factors recommended by the U.S. Environmental Protection Agency and data obtained from the existing Permit to Operate, issued by the Tehama County Air Pollution Control District (TCAPCD) for the Cottonwood Creek Sand and Gravel Plant. The emissions estimates include off-road equipment travel on unpaved surfaces, haul truck travel on paved and unpaved surfaces, material storage, and on-site material handling activities. As noted in the DEIR, predicted daily emissions would vary, by phase, depending on distance haul trucks would need to travel from the processing area. Estimated uncontrolled operational emissions are presented in Table 4.4-8 of the DEIR. It is important to note, however, that the emissions estimates presented in Table 4.4-8 of the DEIR represent maximum daily on-site emissions, assuming that reclamation, excavation, and processing activities are to occur simultaneously.

Implementation of mitigation measures are summarized in Table 4.4-9 of the DEIR. The commenter is correct, haul trucks shall be covered. California Vehicle Code section 23114 specifies that no vehicle may be driven or moved on any highway unless the vehicle is so constructed, covered, or loaded as to prevent any of its contents or load from dropping, sifting, blowing, spilling, or otherwise escaping from the vehicle. Acceptable methods currently identified for controlling off-site transport emissions of fugitive dust from on-road vehicles include requirements that the material be sufficiently wetted, loaded with sufficient freeboard, or tarped. As noted in the DEIR and in accordance with California Vehicle Code section 23114, Mitigation Measure 4.4.1(a) would require that "when materials are transported offsite, all material shall be covered and effectively wetted to limit visible dust emissions, or at least 6 inches of freeboard space from the top of the container shall be maintained. The proposed mitigation measures incorporated into the DEIR include all measures determined by the AQMD to be feasible and practical for the reduction of project-generated emissions, as well as measures intended to ensure compliance with existing regulatory requirements.

See Response 77-1 concerning the distance of homes from the roadway.

Letter 82

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
SEP 27 2006
PLANNING/BUILDING DIVISIONS

Shasta County Board of Supervisors
1450 Court Street
Redding, CA 96001

September 23, 2006

Dear Supervisors,

I have been following with interest the project named Shasta Ranch Mining and Reclamation, Use Permit #05-010, and have a number of concerns, thus this letter. After an extensive review of the Draft EIR, I have concerns in four general areas: Hazardous Chemical, Environmental Impact, the number of trucks per day, and the noise and diesel pollution. Overriding all of this, though, is my opinion that not enough questions have been asked and certainly there have not been adequate answers. My letter is to encourage you to evaluate this project much more thoroughly than what has been done so far, in my opinion, for you have the future of this entire south county area now within your decision making capability.

1. Hazardous Chemicals: According to the State Water Quality Control Board, the gravel that is projected to be mined is coming from an area that has contained Dioxins and Furans. These are toxic chemicals that can cause human poisoning for generations to come. Do you want to be responsible for this poisoning of your constituents, especially in view of the fact that the amounts of these poisonous chemicals on this site are not known to you due to the inconclusive testing and monitoring? Extensive testing is needed, without further discussion. **82-1**
2. The Environmental Impact is another entire area of concern. Not only will the Sacramento River be affected, but what detrimental impact will this kind of industrial giant have on the Salmon, the Coleman Fish Hatchery, and the multitude of birds and animals that now call this general area home. What about the endangered species that have been identified living in this area? Have you looked into this subject to see what will be the specific effects of both the poisons and ecological disturbances from this project? Are you willing to take on this responsibility? **82-2**
3. The Truck Traffic impact alone makes this project worthy of significant review. And, the reality of the project will not be limited to Balls Ferry Road. Deschutes Road, in its entirety, will be affected, for Deschutes is the main corridor from the proposed gravel pit to Highway 44, Highway 299, and Burney. Can you assure me that trucks will not be traveling in this direction? This is to say that, the EIR does not clearly address the truck traffic impact. In fact, I have been told that there was a study done by Omni Means Engineering some one year before the DEIR that clearly established a much more realistic traffic result…one that is considerable worse than the DEIR. What is the real truth here, and do you want to be responsible for these trucks going in front of Junction School, Foothill High School, and Bella Vista Elementary? Where is the truth about the truck traffic impact? **82-3**
4. Noise and Diesel is a huge concern, for this is part of every industrial project of this kind. What effect will just the diesel exhaust have on the area? Do you know enough about this to rule on this subject? And, this will never go away, for noise **82-4**

Letter 82 Continued

and diesel effects will be there for the life of the project. Are you prepared to say this will not impact Shasta County environmentally? **82-4 cont.**

As a member of the Redding Planning Commission in 2002, a matter of a use permit renewal for the Sand and Gravel operation on Clear Creek Road came up. Over the years since the initial use permit, the operation had changed considerably, and now the neighbors who live just south of the project off of Canyon Road have been significantly impacted (noise, dust, fumes, etc) from this much larger project. The users were still within the general intent of the use permit, but were "stretching the use" to the limit. Not much can be done now, because the damage was done some years before. What we faced was a situation that forever changed the environment of that area. A situation that changed the quality of life for hundreds of citizens; and that changed forever the nature and environment along Clear Creek. Is this what you want to create for current and future citizens of the south county? **82-5**

For me, if I were in your situation, the decision would be easy…."I need to know a lot more about this project". As a citizen, and a taxpayer, and one who votes, I am asking that you ask just this same question. The truth should be known now….not come out in the years to come after the damage has been done. No project of this magnitude should be looked at hastily or without getting all of the possible data from all sources…both in the county and the state, and even nationally, for this project has that kind of ramifications. Let's not say in the years to come "we should have done that…or asked that". Let's do it now while we can still make the right decisions for the county and its people. This is not a matter of 10 jobs and a business venture…this is about changing lives and changing our environment negatively…changes that will be with us for our kids and grandkids to live with.

I urge you to ask questions, get answers, and look for potential problems…problems that could forever change our great Shasta County.

Thank you,

Ron Largent
7077 Garth Drive
Anderson, CA 96007

Cc: Supervisors
Kelly Brewer, Record Searchlight
Anderson City Council
Shasta County Planning Office

Letter 82

Ron Largent, September 23, 2006

Response 82-1: Commenter is concerned about mining on a site that contains dioxin and furans. Please refer to Responses M, N, and 13-1 for information pertaining to analysis and the Regional Water Quality Control Board. See Response 15-1 and 16-2 for more information on dioxin and furan impacts.

Response 82-2: The commenter expresses concern regarding the impacts to fish and other wildlife which was addressed in Section 4.5, Biological Resources, of the DEIR. See response to comments O-2, S-2, 8-1, and 12-1. A protocol-level floristic survey, comprehensive wildlife habitat characterization, and protocol-level survey for valley elderberry longhorn beetle were conducted within the project site. Based on these studies, the DEIR identified potentially significant impacts to the following special-status species: fox sedge, Sacramento River winter-run ESU Chinook salmon, Central Valley spring-run ESU Chinook salmon, Central Valley ESU steelhead, southern DPS green sturgeon, valley elderberry longhorn beetle, bald eagle, California red-legged frog, northwestern pond turtle, Cooper's hawk, osprey, white-tailed kite, purple martin, tricolored blackbird, California yellow warbler, yellow-breasted chat, loggerhead shrike, pallid bat, Townsend's big-eared bat, and ringtail cat. Impacts to both special-status wildlife species such as bald eagle and osprey, as well as resident wildlife species with no special-status are evaluated in Section 4.5, Biological Resources. Mitigation measures that reduce these impacts to a less-than-significant level are provided in Section 4.5, Biological Resources, of the DEIR.

Specifically, potential effects on listed salmonids, including spawning gravels, are discussed under Impact 4.5-6 of the DEIR. Effects to resident wildlife are included in the analysis provided under Impact 4.5-17 (fish and wildlife migration/travel corridors).

Response 82-3: The commenter questions the analysis of truck traffic, but is not specific as to why they claim it is inadequate. Truck traffic will be added to Balls Ferry Road and Deschutes Road, as shown on "with Project" figures in the DEIR. Capacity impacts associated with the addition of project traffic to area roadways and intersections were assessed and documented in the DEIR concerning the Omni-Means information, see Response 77-1. See Response 1-1 regarding traffic on roadways that do not meet current County design standards.

Response 82-4: In response to comments concerning noise impacts, refer to Responses 10-1 and 24-1. The commenter asks what effect the diesel exhaust will have on the area. Emissions estimates presented in the DEIR were calculated based on emission factors recommended by the U.S. Environmental Protection Agency and data obtained from the existing Permit to Operate issued by the TCAPCD for the Cottonwood Creek Sand and Gravel Plant. The emissions estimates include off-road equipment travel on unpaved surfaces, haul truck travel on paved and unpaved surfaces, material storage, and on-site material handling activities. As noted in the DEIR, predicted daily emissions would vary,

by phase, depending on distance haul trucks would need to travel from the processing area. Estimated uncontrolled operational emissions are presented in Table 4.4-8 of the DEIR. It is important to note, however, that the emissions estimates presented in Table 4.4-8 of the DEIR represent maximum daily on-site emissions, assuming that reclamation, excavation, and processing activities are to occur simultaneously.

As noted in the DEIR, predicted concentrations of diesel-exhaust particulate matter (DEPM) along the haul route were modeled assuming an average of 64 haul truck trips (128 one-way trips), based on data obtained from the traffic analysis prepared for this project. Based on the analysis conducted, the project contributions to localized concentrations of DEPM along area roadways and near the project site were considered significant. See Impact 4.4-6 of the DEIR for discussion of predicted airborne concentrations of DEPM. Implementation of the proposed mitigation measures, as well as compliance with ARB's ongoing diesel exhaust emissions reduction programs and rules would result in substantial reductions in DEPM emissions. Mitigation Measure 4.4-2(b) alone would achieve an approximate 85-90 percent reduction. However, predicted concentrations at the nearest receptors would still be anticipated to exceed applicable standards. As a result, exposures to localized concentrations of DEPM were considered significant and unavoidable.

Response 82-5: Comment noted. The commenter does not raise any new environmental issues that have been addressed in the DEIR.

The commenter states that more information is needed about the project. The DEIR, with the clarification of issues and impacts provided in the FEIR, fulfills the intent of the California Environmental Quality Act and is an adequate analysis of the potential environmental impacts of the project.

Letter 83

Michael Hoffman

22130 Duck Lane, Anderson California, 96007

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED

SEP 28 2006

PLANNING/BUILDING DIVISIONS

September 25, 2006

Mr. Bill Walker
Shasta County Department of Resource Management, Planning Department
1855 Placer Street
Redding, California 96001

Dear Mr. Walker:

Upon review of the Shasta Ranch Mining and Reclamation Plan Project Draft Environmental Impact Report, I would like to comment that 1) the project description is inadequate resulting in the environmental studies (biological resources, cultural resources, noise, geology and soils, hydrology and water quality, aesthetics and visual resources, and hazards and hazardous materials) as inadequate; 2) air quality, noise and traffic and circulation studies are inadequate based on the project description; and 3) the proposed mitigation measures are inadequate to mitigate the proposed impacts to air quality and noise.

Project Description is Inadequate. Mitigation Measure 4.3.1 states "The owner, applicant, or successor of interest, shall improve the shoulder width from Deschutes Road and Balls Ferry Road intersection southeast along Balls Ferry Road to 4th Street, Locust Road from Deschutes Road to Kimberly Road, and Kimberly Road from Locust Road to Balls Ferry Road."

The project area description as shown in Figure 3.0.2 does not include widening of the above described roads in the project area. Biological resources (including waters of the United States), cultural resources, noise, geology and soils, hydrology and water quality, aesthetics and visual resources, and hazards and hazardous materials also need to be studied in the areas not included in the defined project area but are required by the proponent to widen. **83-1**

As a result of road widening, there is the potential that very large, old, native and ornamental trees to be removed. This will adversely affect the owner of that tree, in that, the tree provides aesthetics to their property and shade from the summer sun. The owner should be compensated appraised value of the tree, appraised by a certified arborist.

Air Quality, Noise, and Traffic Studies are Inadequate. On page 4.3-16, the average number of haul truck loads (64) is based on the description provided by the project proponent "regarding the amount of gravel that will be extracted and processed per day. Project trip generation numbers were calculated consistent with other aggregate mining operations in Northern California." The calculation of this value is not defined and is inconsistent with the estimated truck loads identified in the project description. The project description (page 3.0-10) states that the gravel mine will generate 60-120 haul truck round trips for 250-300 days per year. Based on the average number of haul truck trips (90) and the average operating days (275), the average number of truck over a 365 day period is 68. That is 1,460 more truckloads per year that is unaccounted for in the study. **83-2**

Mitigation Measures are Inadequate.

Several significant and unavoidable impacts were identified in the DEIR for the Shasta Ranch Mining and Reclamation Project. In general, this project will have significant and unavoidable impacts on: 1) air quality including PM10, NOx, ozone precursors, and diesel exhaust particulate matter emissions resulting in predicted cancer risks that will exceed state and federal standards and 2) noise impacts **83-3**

Letter 83 Continued

• Page 2 September 25, 2006

including increases in ambient noise during inversions and windy days and traffic noise along haul routes increases that will exceed County standards; and cumulative traffic noise impacts. Mitigation measures have been applied to each of these impacts but the end result remains significant and unavoidable. Therefore, these mitigation measures are inadequate. As with the biological resources, the human resource shall also be protected from harmful environmental factors that may affect the health and livelihood of humans living in the vicinity of the project and its associated haul routes. The purpose of mitigation measures is to reduce the impacts on the environment. If mitigation measures presented are not sufficient to reduce to a less than significant level, the project should not be implemented. **83-3 cont.**

As a part of CEQA, the county must write a statement of overriding considerations to justify permitting a project. I am interested in how the County proposes to justify the impacts, direct, indirect and cumulative, that this project will have on the environment once implemented.

Sincerely,

Michael Hoffman
Concerned Resident

Letter 83

Michael Hoffman, September 25, 2006

Response 83-1: The commenter generally claims the DEIR is inadequate in terms of project description, various impacts, and proposed mitigation measures, primarily because the project description did not include the proposal to widen local roads. The commenter states that the project description as shown in Figure 3.0-2 does not include widening of the roads in the project area. In response, the widening of the roadway is a proposed mitigation measure and is not part of the proposed project. Therefore it would not have appeared in the project description. The DEIR also recognizes additional wetland mitigation may be required under Impact 4.5-3, contingent upon acceptance by the County. The DEIR does not portray itself as being the CEQA document for the road projects addressed in mitigation measure MM 4.3.1. The widening of the roads, if determined to be necessary, will require project specific CEQA analysis.

Response 83-2: The project trip generation information is based on the average truck trips per day based on expected aggregate yields. This average is 64 round truck trips per day, or 128 new truck trips per day (64 inbound/64 outbound). This is common for traffic impact assessment as a typical day is usually evaluated. There will be days (e.g. Sunday) when there would be no trucks. An example would be an impact assessment for a new shopping center; average trip generation characteristics are used, not trip generation characteristics that exist during peak shopping periods, such as the day after Thanksgiving.)

Response 83-3: The commenter observes that there are several significant and unavoidable impacts identified in the DEIR and concludes that the DEIR is inadequate because mitigation measures did not successfully reduce the impacts to less than significant levels.

In response, the California Environmental Quality Act recognizes that, after the identification of reasonable mitigation measures, some impacts of a project may still be classified as significant. The Lead Agency must not approve a project if the project will have a significant effect on the environment, after imposition of feasible mitigation measures, unless the agency finds that the benefits of the project outweigh the unavoidable adverse environmental impacts. CEQA Guidelines, 15092, 15096(h). However, as noted in the comment, when approving a project with unavoidable significant environmental effects, the Lead Agency is required by CEQA to prepare a Statement of Overriding Considerations. The Statement of Overriding Considerations is a written statement explaining why the agency is willing to accept each significant effect. In this way, CEQA requires the agency to explain why it is balancing the benefits of a proposed project (e.g., social, economic, etc.) against unavoidable environmental risks.

Letter 84

Mr. Bill Walker Senior Planner
Shasta County Dept. of Resources Management
1855 Placer Street
Redding California 96001

Sept 26 2006

Re. Shasta Ranch Project Mining and Use Permits DEIR
05 010 -05 001

Please refer to the Calif. Dept' of Fish and Game's comments to you regarding the above project in letters to you dtd. May 26 05,Nov.29 05 and Sept. 26 06..We share all of the concerns and issues raised in these letters and adopt them as our own.
We agree with the Department of Fish and Game that the DEIR does not adequately mitigate the issues that have been raised regarding the projects impacts on federally listed endangered Winter and Spring run Chinook Salmon.
In addition to the specific issues raised by the Department of Fish and Game and adopted by us, we believe the DEIR has failed to adequately consider the cumulative impacts of all existing gravel mining operations and the proposed project , on current efforts to restore federally listed Winter and Spring Chinook Salmon.over the life of the project. Good gravel recruitment is a vital component of any salmon restoration plan. This project does nothing to mitigate for the potential loss of spawning gravel over the life of the project . As a bare minimum the applicant should be required to set aside a stock of spawning sized gravel amounting to no less than 10% of the total gravel mined each year and transport it to sites determined by the Dept. of Fish and Game ,at the applicants expense **84-1**

It is our belief that this project should not be approved until the specific issues raised in the Departments comment letter of Sept. 26 2006 have been properly addressed.

Sincerely

W.B. Scott Ferris

W.B. Scott Ferris Sr.
Nor Cal Fishing Guides @Sportsmans
Assn. P.O. 1403 Anderson. Ca. 96007
530 347 3082 FX 3828

Letter 84

W.B. Scott Ferris, Sr., September 26, 2006

Response 84-1: The commenter is in agreement with the concerns addressed in the California Department of Fish and Game letters dated May 26, 2005, Nov. 29, 2005, and September 26, 2006. The commenter further asserts that the DEIR has failed to adequately consider the cumulative impacts to Chinook salmon. The commenter states the project should not be approved until the issues as stated by the Department of Fish and Game comment letters have been properly addressed.

See response to Fish and Game comments S1 through S6, and response to Office of Mine Reclamation comment letter O-2 regarding impacts to fish. For review of the amended Shasta Ranch Mining and Reclamation Plan, as directed by Fish and Game and the Office of Mine Reclamation, see Appendix 3.0-3 in the FEIR. All related revisions to the DEIR are included in Section 3.0, of the FEIR.

Letter 85

September 27, 2006

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
SEP 29 2006
PLANNING/BUILDING DIVISIONS

Mr. Bill Walker
Shasta County Dept of Resource Management
1855 Placer St, Suite 103
Redding, CA 96001

Dear Mr. Walker:

My husband and I live less than a mile from this proposed project. The impacts of this pit will greatly effect our quality of life and change the character of our community, There are just too many negative impacts that will adversely effect hundred's of families. According to your own department (Dept of Resource Mgt), there is enough gravel to supply Shasta County for the next 18 years. This project does not belong in this neighborhood and the developer has plenty of time and opportunity to find a more suitable location. From the statements that the developer has made, his sense of urgency is based more on business, than concern for the residents here. We believe that the developer's close working relationships, both past and present, has influence those in support of his project. The health and welfare of the community should be top priority, period. There are also problems with the data presented in the DEIR and appendices referenced are wrong in some sections. The mitigation measures in many of the sections are impractical and are based on the assumption that the developer will follow every single recommendation. It is very doubtful that all the requirements will be meet or even adequately monitored and enforced. Also, the DEIR stated that during the 45 review period, a public hearing would be conducted; I don't believe this occurred. **85-1**

4.2 Land Use
The project will convert prime farmland, which is highly valued in California, to mining. Once again, the character of this community will be adversely impacted. I read that the permit for mining would be an "interim" permit; however, 30 years is a life time. **85-2**

4.3 Traffic & Circulation
The roads are not safe for the amount of truck traffic and the amount of trips on our country roads. I understand that the study was only concentrating on the amount of trucks & drivers that the developer said would be used for this project. However, the impacts do not account for the trucks that the developer will be utilizing from his other gravel pits or other companies. To determine the impacts to this neighborhood, all the traffic that will be associated with this project, should be considered. The narrow roads are a safety hazard to the children, pedestrians, farm equipment and animals that commonly travel the roads. Also, the speed zones are low & we don't believe the drivers will abide by the speed limits. The trucks will greatly impede timely response from **85-3**

Letter 85 Continued

Service vehicles during emergencies. Almost all of the roads off of Balls Ferry Rd are not through streets; the increased traffic will cause greater safety risks.

4.4.1 Air Quality
Truck emissions will exceed State and Federal standard levels. This is a health issue and the mitigation will be difficult to enforce, unless an air quality official is there around the clock. We get a lot of wind during the spring and fall, who will be here to say "stop", when the wind exceeds 20mph? As the ground is being exclavated, the chemicals that are buried in the soil will be dispersed to nearby residents. **85-4**

4.7 Noise
One of the reasons we purchased our property was because it is quiet here. We both enjoying working in our yard and the project noise from 7am to 7pm everyday (except Sundays & holidays), will be a nuisance and will interfere with the enjoyment of our property and life activities. **85-5**

4.5 Biological Resources
The Endangered Species Act or even the classification of "species of concern" should be enforced according to the State & Federal guidelines established. Disturbing the sensitive environments and wetlands will decrease these species' habitat, which is direct violation of the Endangered Species Act. If this project is approved, constant monitoring will be difficult, thus enforcement will be impossible. The mitigation measures are impracticable. The workers are not biologists and will not be able to identify species of concern; so stating that the workers are to stop work if a particular nest, bird, beetle or other species is spotted is unrealistic. **85-6**

Hydrology
We are very worried about project activities drawing down the water table, decreasing our water pressure and volume. We are also concerned about the flooding. During the winter we always have some flooding & building levees will change the natural drainage pattern of the water system, diverting more water to our property. We recently received a notice from FEMA; quite a coincidence isn't it? There is also a high possibility that the chemicals will contaminate the water table. I know that Dioxin is not readily water soluable, but chemicals can enter via soil particles. The risks are too great. **85-7**

4.12 Toxic Hazardous Materials
The Shasta Ranch had been identified as a potential hazardous waste site and entered into the CERCLIS in 1981. The Expanded Site Inspection completed by the EPA determined that no further remedial site assessment was required under CERCLA; however, this determination was based on the recommendation that Simpson Paper Company continue to monitor groundwater for chemical "contamination". The DEIR reports that the RCWQB suspended water monitoring of the Sacramento River in May 1993, during the wood pulp mill shutdown. However, the paper mill continued to produce effluent, discharging into the Sacramento River and the Anderson Creek on the Shasta Ranch property. **85-8**

Letter 85 Continued

The result of the January 2004 interviews with the RWQCB staff in the Phase I Site Assessment Report and the more current site assessment reports in the DEIR, categorically concludes that data was lacking and unreliable. According to the more "in depth" Expanded Site Inspection report, a letter written by the EPA to Shasta Ranch, notified them that the collection, handling, and testing of the toxic chemicals was not meeting the regulatory requirements. Dioxin requires specific testing methodology. **85-8 cont.**

The toxicity and the potential health risks of TCDDs & TCDFs are not adequately stressed in the DEIR. Failure to mention that as of 2001, 2,3,7,8 TCDD was a "known human carcinogen", classified by the US National Toxicology Program, is a gross omission in the DEIR. In addition, in 2003 researchers have re-analyzed the cancer risk from dioxins and have reaffirmed that there is no "threshold" below which dioxin will not cause cancer; i.e. **no** safe dose that will not cause cancer. Dioxins can not and should not be treated like a casual by-product. Dioxin 2,3,7,8, TCDD is the most toxic of the Dioxins and is so toxic that it has been used in "Agent Orange". Dioxin 2,3,7,8, TCDD is so toxic that it is used as the "measuring stick" for the toxicity of the other dioxins. One of the unique characteristics of dioxins is that it persists and bioaccumulates and the half life can exist in the soil for decades! Dioxin not only causes cancer, but it also affects the immune system, (among a number of other diseases), but young children and pregnant woman are especially susceptible to the effects of dioxin exposure. The families in this community deserve better. Our health should be top priority over any business venture and regardless of any political influence. I believe the mitigation measurements in the DEIR for the dioxins and furans are greatly lacking, for such a serious health risk. **85-9**

Also, not one word has been mentioned about the possible contamination to the ACID ditch, which transverses the property. The ditch carries water (and particles) to the pastures of cattle, sheep, and vegetable gardens. Flooding is a common winter occurrence in this area. Has anyone even considered what testing the ditch? This particular feature has not been adequately addressed since it is a source of irrigation for the residents in our community for livestock and crops. **85-10**

We strongly urge you to deny the use permit and reclamation plan for this project.

Sincerely,

Linda & Jim Garner
21902 Cherokee Dr
Anderson, CA 96007

Letter 85

Linda and Jim Garner, September 27, 2006

Response 85-1: The commenter expresses their concerns in opposition to the project related to the identified impacts associated with the project. The commenter asserts there are problems in the data presented in the DEIR but does not provide specific details for further response. Appendices that were not referenced correctly have been corrected in the appropriate sections of the DEIR. In response to enforcement of the mitigation and monitoring program, it is the County's responsibility as required under the Surface Mining and Reclamation Act regulatory requirements. The Planning Division costs of monitoring and inspection are charged to the gravel operator by fees established under the Surface Mining and Reclamation Act regulatory program. Other County agencies may also collect monitoring and inspection fees. For more information on the role of the County and SMARA, see Response 42-6. Lastly, the commenter is correct; a public hearing was not held by the County during the DEIR review period. However, a public hearing is required prior to the County's consideration of project approval.

Response 85-2: See Response 47-1.

Response 85-3: Please see Response 1-1 relating to roadway improvements to bring local roadways up to current County design standards. The DEIR considered the cumulative impacts of traffic on the impacted roads. The trip generation estimates are based on the aggregate yield estimates of the site plus other traffic that would access the site. Other trucks not originating from or destined to the project site are accounted for in the existing count data.

Response 85-4: In response, the Shasta County Air Quality Management District (AQMD) and Department of Resource Management would be responsible for the enforcement and monitoring of the proposed mitigation measures incorporated in the DEIR. With implementation of proposed mitigation measures and required emissions offsets, the project's contribution to regional air quality conditions is considered less than significant. The DEIR recognizes, however, that localized air quality impacts may still occur and, in some cases, the impacts would be significant and unavoidable. However, concerning the comment about chemicals that are buried in the soil, analysis indicates that the potential impacts are less than significant. See Response 24-1.

Response 85-5: Comment noted. See Responses 10-1 and 11-2.

Response 85-6: The commenter asserts that the Endangered Species Act should be enforced according to State and Federal guidelines. The project as proposed has been designed to avoid impacts to federal and state listed wildlife species. Should pre-construction indicate that potential take of federal or state listed species at the project site will occur, consultation with the appropriate agency (U.S. Fish and Wildlife Service, National Marine Fisheries Service, and/or California Department of Fish and Game) will be required before the project can proceed.

The commenter further asserts that the mitigation measures provided in Section 4.5 are impractical. The mitigation measures provided in Section 4.5 are standard measures that are routinely applied to projects in Shasta County, and they have been deemed acceptable by the appropriate governing agencies. See Section 3.0, Revisions to the DEIR in the FEIR, document for revisions made to Section 4.5 Biological Resources.

Response 85-7: The commenter is concerned about groundwater levels and recharge. In response, groundwater in the vicinity of the site moves towards and parallel with the Sacramento River (Hydmet, 2005). The fields that received treated papermill effluent for irrigation intended for gravel extraction are located down-gradient from private wells in the vicinity of the site (Phase 3 only). Impact 4.9.2 of the DEIR concludes the project will have minimal impacts on surrounding wells, impervious surfaces, and no impact on recharge rates.

In response to flooding concerns, the project includes the construction of levees in the floodway fringe area of the Sacramento River. There are no project features that extend out into the Sacramento River that would cause a change in the natural drainage pattern of the river. During major flood events, the Sacramento River will overtop its banks and spill into adjacent areas within the floodplain. The proposed project levees will locally (within the site) prevent flow from entering pit operations but will not divert flow onto other properties or increase water surface elevations for the river by more than 0.1 foot (a negligible increase). See Impact 4.9.3 in the DEIR. Implementation of mitigation measures 4.9.3(a-c) would reduce flood impacts to less than significant. For more information on levees, see Response O-2 and S-2.

Response 85-8: The commenter is correct the EPA stated the testing was not adequate to meet the current regulatory requirements. In result, additional testing has been conducted to meet the EPA regulatory standards and protocol. The commenter's reference to the RWQCB comments in the Phase 1 Site Assessment is noted. Please refer to Response letters M-1, M-2, 13-1, 15-1, and 16-2 for more information on site testing and agency review of site contamination. Initially under federal authority, EPA conducted a screening evaluation at the site and determined that no further action, under federal status and regulation for the protection of human health and the environment, was required.

Within California, the Department of Toxics Substances Control (DTSC) or, when appropriate, the California Regional Water Quality Board, is the state agency with responsibility for ensuring that a required action in response to a hazardous substance release, or threatened release, at a site is carried out in compliance with the procedures, standards, and other requirements of the California Health and Safety Code and related statutes as appropriate. Recent monitoring activities were conducted under the review and oversight of the RWQCB. A work plan was submitted to, and approved by, the RWQCB for the monitoring conducted by Shasta Ranch at the request of the RWQCB in 2005-2006. That monitoring has been completed. No additional groundwater monitoring is required at the site. The levels of dioxin and related compounds detected at the site are below levels determined by regulatory

agencies to be protective of human health and the environment. Refer to Table 4.12-3, Regulatory Screening Level Comparison for Soil and Groundwater TEQ Results and the discussion under Impact 4.12.3 in the DEIR.

Response 85-9: The commenter comments on the chemicals TCDD and TCDF, dioxin and furans found on the project site. As stated under the California Public Records Act, governmental records shall be disclosed to the public upon request, unless there is a specific reason not to do so. Therefore, testing and results conducted under a federal investigation is a matter of public record which contradicts any attempt to "cover up" the results of the EPA screening investigation. As presented in the DEIR, treated effluent was only applied to the proposed Phase 3 area. Samples obtained from the Phase 3 area shows that the levels of dioxin compounds are near or at background levels found in the environment, and well below human health screening level values. Screening level values are usually set conservatively to ensure that sites are evaluated than may pose a risk to human health. Actual cleanup standards approved by EPA for the protection of human health and the environment are generally an order of magnitude higher than screening levels values – please see DEIR Appendices Section 4.12 for more discussion of screening level values used at the site.

As noted in the DEIR, dioxin compounds are generated through a variety of sources, including natural sources such as forest fires and volcanoes. Dioxin emissions from industrial sources in the US have declined steadily over the past several decades. As emissions from these sources are further curtailed through regulation and technology, forest fires will continue to be viewed as a major source of dioxins to the environment. Dioxins from forest fires released to the atmosphere from uncontrolled industries, are deposited via air onto soil and water resulting in "background" concentrations of dioxin throughout the environment.

The screening levels presented in the DEIR do not represent threshold values and they were not calculated using the "threshold" approach. Although the definition for specific screening levels may vary depending on the agency that has developed or adopted the levels, they are commonly based on the determination of an acceptable risk, current toxicity data, and conservative exposure assumptions. For example, Preliminary Remediation Goals published by EPA Region 9 are based on "... current EPA toxicity values with "standard" exposure factors to estimate contaminant concentrations in environmental media that the agency considers protective of humans (including sensitive group), over a lifetime". Typically, the acceptable risk level is identified as 1 in a million risk, or the likelihood that up to one person, out of one million equally exposed people, would contract cancer if exposed continuously to the specific concentration for a lifetime of 70 year. It is important to note that there may still be an increased risk associated with concentrations below the screening levels. However, this risk calculated using current toxicity values and conservative exposure assumptions would be less than the risk of 1 in a million.

The dioxin "threshold" controversy has to do with a hypothesis that the toxic effects of a chemical or compound (in this case, dioxin) are insignificant

below a threshold value. In other words, the risk associated with dioxin levels below this threshold value would be insignificant. Threshold values and screening levels should not be confused.

The commenter expresses the correlation between dioxins found on the site to dioxin used in Agent Orange dioxins and associated health effects. This comment does not address the adequacy of the Draft EIR. In response, as noted in related responses, screening level values for Dioxin for residential exposure are 3.9 ppt and industrial exposure 16 ppt. Agent Orange was a defoliant, generally the herbicide 2,4,5-T, used during the Vietnam War; 2,3,7,8-TCDD is a contaminant of 2,4,5-T. The levels of TCDD found in any given lot of 2,4,5-T depend on the manufacturing process (Young et al., 1976), and different manufacturers produced 2,4,5-T with various concentrations of TCDD. (IOM, 1994.)

Of all the herbicides used in South Vietnam, only Agent Orange was formulated differently from the materials for commercial application that were readily available in the United States (Young et al., 1978). TCDD concentrations in individual shipments were not recorded, and levels of TCDD varied in sampled inventories of herbicides containing 2, 4, 5-T. Analysis of the TCDD concentration in stocks of Agent Orange remaining after the conflict, which had either been returned from South Vietnam or had been produced but not shipped, ranged from less than 0.05 ppm to almost 50 ppm, averaging 1.98 ppm and 2.99 ppm. (NAS, 1974; Young et al., 197). Comparable manufacturing standards for domestic use of 2,4,5-T in 1974 required that TCDD levels be less than 0.05 ppm (NAS, 1974). Therefore, depending on which stocks were sampled, the level of dioxin contamination in Agent Orange could have been up to 1,000 times higher than the level of dioxin found in phenoxy herbicides domestically available at the time (IOM 1994).

Based on the five investigative studies conducted and the regulatory agencies determinations, the potential risk associated with dioxin contaminates located on the Shasta Ranch project site is considered less than significant. See the discussion under Impact 4.12.3 in the Draft EIR.

Response 85-10: The commenter asserts the DEIR has not addressed possible contamination to the ACID canal that runs adjacent to the property. As noted in response to comments M-1, M-2, 13-1, 15-1 and 16-2, five separate investigations implemented since 1996 and additional site testing (2005-2006) as requested by the RWQCB indicate no further action is required. In conclusion, the commenter has cited various environmental impacts that need to be considered, asserting that the project should be denied because of the significance of the impacts. The impacts have been addressed in the DEIR. No new environmental issues are raised.

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Letter 86

VICKY HARRIS
P.O. BOX 798
ANDERSON, CA 96007
Phone/Fax 530-365-5777

September 27, 2006

Mr. Bill Walker
Dept. of Resource Mgmt
Planning Division
1855 Placer St. Ste 103
Redding, CA 96001

Ref: Shasta Ranch Mining Operation, Use Permit 05-010

Dear Mr. Walker,

I am writing to respond to the DEIR on the proposed Shasta Ranch Mining operation. I have been reviewing the Hydrology and Water Quality section 4.9 and have many concerns listed below; plus I have found many inconsistencies.

1) The report states on page 4.9-4 that there was limited floodplain information available for the Sacramento River and Anderson Creek at the project site. Estimates were used based on Keswick and the Big Bend watershed. While drainage areas may be similar, the amount of pervious soil is not. Also the City of Anderson will continue to grow and it will leave behind more impervious soil and the runoff will increase. There is more development expected in the project region in the way of housing developments, hotels and retail stores. There is already usage of Anderson Creek for winter storm runoff which runs through the project site. As development progresses so will the winter storm runoff. In the last 3 years I have noticed first hand that Anderson Creek has overflowed its banks yearly. I live close by and it used to be every three to four year. Last year it had overflowed on MORE than one occasion. This project will last for 30 years and development will be great over this time frame. What reason does the Planning Commission have for not including future development in Anderson in regards to future flooding of the proposed site? **86-1**

2) The report states on page 4.9-9 that there has been extensive testing of the ground water. However it limited its review to just five of the many test wells and not one of these wells is located on the proposed pit sites or near the supposed pond they will be using for their operation. The map of these wells located on 4.9-11 shows where there are other wells with historic data. The map is not accurate, but probably irrelevant; however the other historical data from these other test wells should have been included in the DEIR. What reason does the Planning Commission have for excluding the test results from these other wells? **86-2**

3) The report states on page 4.9-12 that during a major flood event the water from the Sacramento River will rise above the fish exclusion levees filling the pit areas within a few minutes. This will happen at least every ten years as the levees are only going to be constructed to the 10 year flood level. The report does not state which direction the spur dike will redirect the flood waters; only that the spur dike constructed along the South border will prevent excess overflow from the pit areas from continuing South, thereby redirecting the flood water back to where? **86-3**

   Also as these pits fill with flood water they will also collect fish. The estimated annual quantity of fish caught from the Sacramento River between Redding and Red Bluff is

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140,000 lbs. See Attachment #1. How many thousands of lbs. of fish will be caught in the flooded pits and how will they be disposed of? What will the impact be on fish production in the future? **86-3 cont.**

I say disposed of as these pits will be contaminated with dioxins and furans. See Attachment #2 & 3. The test results for these chemicals done of sludge samples by Bechtel in 1995, showed elevated concentrations of dioxins and furans including 2,3,.7.8-tetra-PCDD. These pits will be dug in areas where secondary sludge was dispersed and close to areas where primary sludge was dumped. The soil was found to be contaminated as also stated in a report by McCulley, Frick & Gilman, Inc. (MFG) in a 1994 sample testing. See Attachment #4. However according to MFG the mobility of dioxins and furans in groundwater is low, mainly to high affinity for sorption onto SOIL ORGANIC MATTER. See Attachment #5. And Bechtel, Inc. states that the direct human contact with hazardous materials appears low due to the heavy vegetation and difficulty of access to the site. See Attachment #6. MFG also states that dioxin STRONGLY SORBS TO AND PERSISTS IN SOIL and is slow to biotransformation. See attachment #7. So this leaves only one issue that has not been addressed...airborne. The primary sludge trenches are still there and unlined and noted in Bechtel's report that the deposits of this sludge was to depths of 12 to 15 ft. and that they may be partially inundated with groundwater. See attachment #8. Bechtel further states there have been no sample results documenting a release of hazardous materials to the air. See attachment #9. In view of the fact that the primary sludge trenches and secondary landfills still exist; and as recent as 1995 there were still contaminates not only in the sludge but also in the soil and it appears to be a very long term binding with the SOIL ORGANIC MATTER as MFG states, should the DEIR address the issue of this soil, sludge mixture being disturbed, crushed and washed thereby releasing these contaminates into the AIR OR WATER being recycled to a pond closely associated with the wetland/riparian habitat and Anderson Creek? Does the Planning Commission plan on asking for a review of this potential toxic situation, not only for the employees since there will be no difficulty entering the site, but for the fish caught in the pits during flooding and concerns of storm water runoff from open areas that have been disturbed due to site grading? **86-4**

4) The report also state that the purpose of this spur dike is to prevent extraction areas from altering the course of the river, whereas the spur dike is directly doing so itself. The report also states that studies performed by Hydmet, Inc. indicated that the results of their study was based on water levels in the Sacramento River and ACID irrigation system. Since ACID water is seasonal in the summer and winter storm runoff is unpredictable, did Hydmet, Inc. take this into consideration when they did their study? ACID has this last year lost one third of their irrigation water when their permit was granted according to Stan Wumburg, General Manager of the ACID district. This could have a significant impact on the ground water level during drought years when there will be little or no storm water runoff. I feel this study is out dated and needs to been done again. Does the Planning Commission intend to ask for a review of this study due to updated facts and if not, why? **86-5**

5) The report also states that the proposed development will produce MINOR increases in Impervious surfaces (page 4.9-12), but on page 4.9-20 it states that the project would result in SUBSTANTIAL re-grading of the site and alter existing drainage patterns. Which is it....minor or Substantial? If the existing drainage will be altered, so does the impervious surfaces change. How does the Planning Commissions plan to question how these alterations will affect this ten year flood event ? **86-6**

6) The report states on 4.9-21 that surface runoff would be prevented from discharging into the river, but does not state how this will be prevented. It also talks about pond levees. Is this in addition to the fish levees? The surface runoff will be supposedly **86-7**

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recaptured in the Riparian/Wetland areas. These wetland areas are located adjacent to Anderson Creek. Will there be overflow to this creek? **86-7 cont.**

7) On page 4.9-20 the report states that re-grading could result in local storm drainage being discharged to off-site areas. But again on 4.9-14 & 15 it states the project will not result in any off-site discharges of water. Which is it? On page 4.9-14, the State Water Resources Control Board states a letter was sent to the applicant on 5/23/05 indicating that a Notice of Intent (for a storm water permit) or a Notice of Non-Applicability (if no storm water is discharged off-site) must be submitted. Has the Planning Commissions followed up on this Notice? Is it available for public viewing?

How does the Planning Commissions intend on making sure the spur dike will not redirect the overflow from the flooded pits back into the river or off-site anywhere? **86-8**

Also on page 4.9-21 the reports states that the project is up for review by Regional Water Quality Control Board and will be required to prepare a Storm Water Pollution Prevention Plan (SWPPP) which will include Best Management Practices to ensure Water quality. Has this plan been prepared? Will the public be able to view it?

8) On page 4.9-13 the report states that the National Pollution Discharge Elimination System (NPDES) Program, Section 402(p) requires that storm water associated with industrial activities that discharge either directly to surface water (POND, WETLANDS, etc) or indirectly through municipal separate storm sewers must be regulated by an NPDES permit. Does the Planning Commission plan on making sure this permit has been obtained?

9) On page 4.9-13 the reports states that the water needed for the operation will be stored and recycled in an existing pond north of Phase 1. This pond is not a natural pond and the main source of water comes from irrigation water from the ACID district. Speaking with Stan Wumburg, General Manager of the ACID district, he states that irrigation water cannot be used for a gravel mining operation. The project site is however located at the end of the existing irrigation canal and does accept what is called tail water. The tail water would be a poor source of continual water due to the fact that the district has been cut by one third its amount of permitted water pulled from the Sacramento River for irrigation purposes says Stan Wumburg. There are customers who depend on this tail water and complaints have been made that there is now not any of this sort of water available. Also as the project uses up its farmland for gravel mining, there will be less and less land that needs irrigation water, therefore no runoff. This leaves only winter runoff to supply the project with water that has either evaporated or been used in the washing and dust control spraying. This is also unreliable when there are drought years and there is little or no winter runoff. The 50,000 gallons needed by the proposed project could very well dry up if not replaced by either ground water or from pumping from the river. The pond would have to be lined to prevent the sledge or silt contaminating the existing ground water, thereby leaving the pond with no source of refill from ground water seepage. There appears to be NO stable source of water for this operation. Will there be a permit to use the water from the Sacramento River or from the existing ground water? **86-9**

10) On page 4.9-19 the report states the toxins 2,3,7,8 TCDD and 2,3,7,8 TCDF are insoluble in water, therefore the disturbance of soils on the site is not expected to increase toxic concentration in the ground water. Is this an admission of toxins in the soil? What about the air when this material is disturbed. Have there been studies of these toxins being disturbed and becoming airborne? And if they are insoluble in water does that mean they float or what? People and other living things will still be consuming them even by air and then at that point they do become soluble in our fat, leading to cancer. This argument does not address the situation of toxins in the soil correctly. How does the Planning Commission plan to make sure these insoluble **86-10**

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toxins are disposed of? Also refer to Statement #3, paragraph 3.

10) On page 4.9-16, section D1-c under dam failure and inundation, the report states that Shasta County should consider developing a system which assures that both small and large privately constructed dams meet all county and state requirements, including grading. Has this been done? Page 4.9-23 state that construction plans, specs and monitoring systems plan shall be prepared by a registered professional engineer and submitted to the County for the proposed spur dike on the south boundary prior to the acquisition of a Conditional Use Permit. Has this been done? Also it appears that the enforcement and monitoring will be done by the Shasta County Department of Public Works. Who pays for this? Seeing as how the levee at Anderson River Park has been breached thereby losing about one third of its levee and it has not been fixed....who monitors the Shasta County Dept. of Public Works to see that they do their work? There is NO guarantee that the levee will be monitored and no guarantee that Shasta County will develop a system to assure this levee will be safe. Will the Planning Commission see to it that Shasta County develops a system to assure this levee will meet federal and state standards and will the Planning Commission mandate the taxpayers pay for the monitoring and enforcement of the proposed project construction plans, spec and maintenance by using the Shasta County Dept of Public Works? **86-11**

12) On page 4.9-21 the report states that the project spur dike will extend to a depth of eight feet beneath existing grade. However, the report states that potentially liquefiable soils are present at the site and extend to depths as deep as about thirteen feet, leaving approximately five feet of potentially liquefiable material beneath the bottom of the levee. The report stated there is seismically induced settlement expected at the site and it is necessary to reduce the potential for liquefaction affecting the integrity of the levee. The report does not say how this is to be done. Will the Planning Commission pursue this recommendation by Hydmet, Inc. and how will it be done? **86-12**

I recommend the Planning Commission view the Anderson River Park levee when in the middle 1990's there was flooding enough for the water to overflow the top and remove about one third of this levee along with the asphalt topping. To date it has not been repaired and more is being lost every flood year. The reports states that "seiche impacts would be limited to short-term and localized sloshing that may occur during a seismic event..... " the sentence is left unfinished, however I know from personal experience that the sloshing of ground water under this area in an earthquake is great and last several minutes. Levees are known not to hold up in the long run under normal conditions and proof of that is seen all over the country.
I feel this portion of the project due to the potential threat to neighbors should be reviewed by more than one professional engineer and reviewed by the Army Corp of Engineers. Hydmet, Inc has already recommended certain actions. Will the Planning Commission ask for assistance in the review of the proposed 100 year flood levee and from the Army Corp of Engineers or from more than one professional engineer? **86-13**

13) Starting on page 4.9-17 in the section on Standards of Significance, there is found to be 5 out of the 10 criteria will have a significant impact on hydrology and water quality.

1- Substantially alter the existing drainage, including the course of a river, i.e. levee, resulting in siltation on or off site i.e. ten year flooding of pits releasing silt on or off site (See #3 above). **86-14**

2- Substantially increase the rate of amount of surface runoff in a manner which would result in flooding on or off site, i.e. re-grading of the site (See #5 above).

3- Place within a 100 year flood hazard area structures which would impede or redirect flood flows, i.e. levee (See # 3 above).

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4 & 5- Expose people or structures to a significant risk of loss, injury or death as a result of the failure of a levee and inundation by seiche (See #12 above).

There are two that are maybe. 1 – Substantially deplete ground water supplies or interfere with ground water recharge, i.e. replenishing pond water for operations hasn't been addressed (See #9 above). **86-14 cont.**

2- Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems haven't been addressed, (See #7 & 8 above).

14) There is roughly 100,000 lbs of fish produced within 15 miles of the project site area, see attachment #1. It is a known fact the vibration of the crushing machines and other machines plus truck traffic will have an affect on the riverbed. The vibrations will travel through the ground water causing the gravel and rocks in the riverbed to settle leaving the silt and sediment on top. The fish will lose their spawning grounds once this happens. This happened at the Russian River from several gravel pits operating there and the fish population has been completely decimated. The Sacramento River provides this county with an extensive fishing tourist trade. There is approximately 140,000 lbs. of fish caught between Redding and Red Bluff, see attachment #1. The river is known for having the largest Rainbow Trout in the nation and people come from all over the nation to fish this river. The Chinooks Salmon and the Bald Eagle are two endangered species that may be impacted by the project site, see attachment #9. The site is just four miles north of Battle Creek which is the entrance to Coleman Fish Hatchery. What affect will this have on the Salmon run. Has there been a study on the Sacramento River bed adjacent to the site? Is it a critical spawning ground? Will it lose the gravel and rock necessary for spawning? Will the Planning Commission ask for a review of the Sacramento River bed surrounding the proposed site? **86-15**

There was a proposed fishing lodge that was going to be built on this site a few years back. It was an outfit out of Las Vegas. When the airline that ran from Redding to Las Vegas pulled out, the project fell through. This is a good testimony to the tourist trade here for fishing this river.

15) There was mention by Tullis that there is no sand and gravel any where else in Shasta County. Are we to believe that without this site this is the last of the sand and gravel anywhere in Shasta County? Ron Rogers from the Bureau of Land Management states there are maps provided by the State of California to the counties to use as guide lines for zoning. These maps, called The Mineral Land Classification Report, shows where the alluvial sand and gravel, crushed stone, limestone, etc are located. Ron further states there is sand and gravel available on BLM land in Shasta County. They do not know where, what kind or how much, it is up to the individual to find and then ask for a mining permit. Does the Planning Commission know for a fact that there is no more sand and gravel in Shasta County except this location? Are these maps available to the public and to Tullis? **86-16**

Speaking with Bill Walker on 9/15 he stated there are 21 existing sand and gravel pits operating in Shasta County; 13 of them are alluvial sand operations. There are 3 other permits in process right now, all for alluvial sand and gravel totaling approximately 50 years of combined operations. Does the citizens of this county need Shasta Ranch adding another 29 years to the already existing mines. How much of this alluvial sand will stay in Shasta County? Does the Planning Commission plan on making Shasta County a concrete jungle?

Signed: _____
Vivian "Vicky" Harris

Letter 86

Vivian "Vicky" Harris, September 27, 2006

Response 86-1: In response to the statement on page 4.9-4 noted by the commenter, additional technical evaluations were provided by Hydmet Inc. and included as Appendix 4.9-5 for the Final EIR. The studies completed and documented in DEIR Section 4.9 are considered adequate to determine the potential floodplain impacts relative to the project. Evaluating all future impervious surfaces associated with future growth is speculative, just as it would be speculative to consider future upstream stormwater detention projects. The California Environmental Quality Act (CEQA) encourages the protection of all aspects of the environment by requiring the County to prepare an environmental impact analysis and to make decisions based on the studies' findings regarding the environmental effects of the proposed action. CEQA does not require undue speculation or technical perfection in an EIR, but rather adequacy, completeness, and a good faith effort at full disclosure. Guidelines section 15003(i).

Response 86-2: The commenter is correct in that the monitoring well locations are not located within the proposed mining phases. The commenter also points out the map is not accurate. Please refer to Figure 4.12.3 in the DEIR for the most current well monitoring locations as Figure 4.9-11 does not include all seven well monitoring locations. In addition the commenter states other historical data from the other test wells identified in Figure 4.9-11 should have been included.

In response, groundwater occurs at depths of approximately 10 to 15 feet below ground surface and flows northeast toward the Sacramento River. There are approximately 70 groundwater wells on the Shasta Ranch, 17 of which have been used to monitor water quality. The wells are typically 2 inches in diameter. These wells were installed to monitor hydrologic conditions when the fields were irrigated. In addition, a total of three water supply wells are located on-site: near the laboratory, ranch house, and chemical storage shed (Geomatrix 2004).

The Regional Water Quality Control Board (RWQCB) requested the new property owners, Shasta Ranch LLC, to undertake groundwater monitoring abandoned by the Shasta Paper Company. Geomatrix submitted a monitoring and reporting program to the RWQCB in January 2005. The objective of the work was to collect additional groundwater and surface water data to further evaluate concentrations of dioxins/furans in groundwater and to assess the potential for groundwater containing dioxins/furans to migrate to the Sacramento River. The scope was developed in coordination with the RWQCB. In part, the program included collecting quarterly groundwater samples for dioxin analyses from seven of the site monitoring wells on a quarterly basis for 1 year. The RWQCB approved the program in March 2005. As outlined in the approved monitoring program, quarterly groundwater samples were collected from the seven on-site monitoring wells during 2005. The data results achieved from the seven wells is

considered adequate in the DEIR and no further analysis was necessary. No changes are required to the DEIR.

Response 86-3: The following revisions were made to the DEIR regarding the 10-year fish exclusion levees.

On page 4.9-10, under the heading "Proposed Project", the first paragraph has been modified for consistency with the remainder of the document. In addition, modifications were made as requested by the California Department of Fish and Game criteria for the fish exclusion levees.

These levees are intended to prevent overbank flows of the Sacramento River from causing fish entrapment during selected major storm events. The fish exclusion *levees will be constructed to a height equivalent to the elevation of the 50-year flood in the Sacramento River, plus freeboard.* ~~adjacent to the Phase 1 extraction and reclamation area was originally proposed to be constructed to the elevation of the 25-year flood. The fish exclusion levees adjacent to the Phase 2 and Phase 3 extraction areas were originally proposed to be constructed to the elevation of the 50-year flood. It was eventually decided that all fish exclusion levees would be constructed to the elevation of the 10-year flood.~~

Page 4.9-12, continuation of the last paragraph on Page 4.9-10, was revised as shown below:

This flood control levee will be constructed to a height that *is equivalent to the elevation of the 100-year flood in the Sacramento River, plus freeboard.* ~~exceeds the elevation of the 100 year flood for the Sacramento River.~~

In response to which direction the spur dike will redirect the flood waters, the spur dike will create a barrier that prevents excess river flow that spills into the site from continuing southward during a major flood and will cause this excess flow to be redirected back to the river. Downstream of the site, the Sacramento River may still exceed its banks and inundate adjacent lands during a major flood after project implementation, but in essentially the same manner as it would for the pre-project condition.

In response to comments about the levees and fish entrapment, please refer to response to comment O-2, S-1, and S-2.

Response 86-4: The commenter claims there is one issue that has not been addressed in response to dioxin and furan contaminants and that is airborne contamination. In response, discussion provided on page 4.12-15, "Dioxin Emission in Air" was addressed in Section 4.12 of the DEIR. See Appendix 4.12-4 by Geomatrix Inc. for more information. Please refer to response to comments S-1 and S-2 regarding fish contamination.

A Storm Water Pollution Prevention Plan (SWPPP) has been prepared for the proposed project (VESTRA Resources, Inc., 2006) and is included as Appendix

4.9-7 in the Final EIR document. The SWPPP is required under the State Water Resources Control Board General Order No. 97-03-DWQ pertaining to industrial activities. The SWPPP identifies and evaluates sources of pollutants associated with the project that may affect the quality of storm water discharges and authorized non-storm water discharges from the facility and identifies Best Management Practices (BMPs) that will be implemented to reduce or prevent pollutants from being introduced to storm water discharges.

Response 86-5: In response, the spur dike will create a barrier that prevents excess river flow that spills into the site from continuing southward during a major flood and will cause this excess flow to be redirected back to the river. Downstream of the site, the Sacramento River may still exceed its banks and inundate adjacent lands during a major flood after project implementation, but in essentially the same manner as it would for the pre-project condition.

The project site is located adjacent to the Sacramento River and groundwater will remain shallow in the future due to the influence of the river. The ACID lateral may also contribute to a local, shallow condition for groundwater in the future. In any case, the Hydmet report has concluded that the pits will very quickly be filled with water if the Sacramento River rises above the fish levee elevations due to the tremendous rates and volumes of water associated with such a flood event. There are no "updated facts" that would substantially affect the findings of the report relative to the proposed project.

Response 86-6: Impervious surfaces consist of ground cover that is substantially impervious to infiltration and percolation. These surfaces cause more rain water to become surface runoff as the natural ability of the soil to absorb water is lost. Examples include the covering of soils with paving, concrete, and/or buildings. Grading and excavation operations, alone, will not increase impervious surfaces. As stated in the DEIR, the proposed development of the project site may produce minor increases in impervious surfaces associated with paving the access road, and with the aggregate processing and storage areas. However, post-project runoff rates will be reduced as a result of site development when compared against existing conditions as storm runoff will be retained onsite within the Oak Woodland/Riparian/Wetland Reserve and within extraction areas. There will not be an overflow from these areas to Anderson Creek.

The project will result in substantial re-grading of the site. This is identified as a potentially significant impact in the DEIR that will be mitigated by the implementation of the measures specified therein. As discussed in Response 86-4, a SWPPP has also been prepared for the project by VESTRA Resources, Inc. as referenced in the DEIR.

Response 86-7: In response, the surface water runoff is addressed in the SWPPP prepared by Vestra Resources inc. as referenced in the DEIR as Appendix 4.9-7. The pond levees and fish levees are one in the same.

Response 86-8: Please refer to response to comment 86-6 regarding local storm drainage discharge. A Notice of Intent (NOI) was submitted to the State Water Resources Control Board (SWRCB) on April 26, 2006, and a Storm Water Pollution Prevention Plan (SWPPP), included as Appendix 4.9-7 in the FEIR, was completed for the site in March 2006. Yes, the NOI is available for the public to review. A copy of the NOI is included in Attachment 4 of the FEIR. A Spill Prevention Control and Countermeasure Plan (SPCCC) addressing on-site fuel storage was also completed in May 2006 and submitted to the RWQCB.

The commenter is concerned with making sure the spur dike will not redirect the overflow. This concern has already been addressed in the DEIR. Please refer to MM 4.9-3(a-c) on page 4.9-22 and 4.9-23.

Please refer to comment M-4 regarding the preparation of a SWPPP. Compliance with the SWRCB to obtain a permit under the NPDES is regulated by the RWQCB.

Response 86-9: The commenter claims the proposed project would utilize irrigation water from the Anderson Cottonwood Irrigation District to support the project. In response the project does not propose to use ACID water. The pond will be required to meet federal, state and local regulatory standards. There are three existing private onsite wells. The applicant has indicated the source of water will be provided by on-site wells. This is described in the DEIR on page 3.0-17.

Response 86-10: The commenter claims page 4.9-19 does not address the situation of toxins in the soil correctly. The commenter should refer to Section 4.12 of the DEIR for a complete discussion on the history of dioxin and furan toxins associated with the project site. The DEIR states there are toxins in the soil, but in concentrations that are less than significant. Please refer to page 4.12-15 titled, "Dioxin Emissions in Air" for more information on dioxins and airborne contaminants or see Appendix 4.12-4 in the DEIR. In regards to the disposal of toxins, Phase 3 was the only area that received effluent material containing dioxin and furan contaminants. The Phase 3 overburden is not suitable for aggregate and will be stockpiled on-site and used for site restoration. Please see response to comment M-2.

Response 86-11: The commenter asks if Shasta County General Plan policy D1-c has been done. The proposed project does not include the construction of dams, therefore, policy D1-c is not relevant to the project. Concerning the levees, however, the levees will be constructed to meet both local and state requirements. All grading activities are regulated under SMARA and monitored by the County. MM 4.9.3(c), referenced by the commenter on page 4.9-23, is a mitigation measure included in the Mitigation Monitoring Program that would be a condition of the use permit. Currently preliminary plans have been prepared by the applicant's engineer and will require further review by the Shasta County Department of Public Works Department prior to the acquisition of the conditional use permit.

The commenter claims there is no guarantee that the levees will be monitored and no guarantee that the County will develop a system to assure

this levee will be safe. However, as required under SMARA, the mine operator is required to provide the County with an annually updated itemized estimate for the cost of reclamation and also with a financial assurance instrument such as a bond, certificate of deposit, or irrevocable letter of credit, to cover the cost of reclamation in case the operator is unable to complete the reclamation. As a condition of permitting, the operator will be required to maintain the project features that serve to mitigate environmental impacts. If these features are not maintained or repaired if damaged, the project will be subject to revocation. The County holds the financial assurance instrument until the operator has completed all of the required reclamation. If the operator does not complete the reclamation, or in the event the levees are in disrepair, the County may choose to use the financial assurance funds to pay for reclamation of the site and make the necessary repairs.

The costs of monitoring and inspections are charged to the gravel operator by fees established under the County Surface Mining and Reclamation Act regulatory program. Other County agencies may also collect monitoring and inspection fees. See Response 95-1 for more information.

Response 86-12: The commenter claims the report does not adequately address the potential liquefiable soils that may extend beneath the levee structures with reference to page 4.9-21 under Impact 4.9.3. In response, MM 4.9.3(c) (on page 4.9-23 in the DEIR) adequately addresses the construction of the levees. A geotechnical report completed by Kleinfelder Inc. was prepared and included in the DEIR as Appendix 4.8-3. This report provides further information on the design and construction parameters.

Response 86-13: The commenter would like to see the levee designs reviewed by more than one engineer, including the Army Corps of Engieers. In response, the design of the levees have been reviewed by various federal and state agencies including the California Department of Fish and Game (CDFG), Office of Mine Reclamation (OMR), the Regional Water Quality Control Board and the Department of Water Resources. The National Marine Fisheries Service also reviewed the original levee designs. Since the public release of the DEIR, the levee designs have been revised in accordance with the recommendations provided by the CDFG and OMR. The Army Corps of Engineers does not have jurisdiction concerning these levees.

Response 86-14: The commenter states on page 4.9-17 that there are 5 of the 10 criteria found under the "Standards of Significance" in Section 4.9 of the DEIR that will have a significant impact on hydrology and water quality. In response, the commenter has already presented these concerns in the previous comments. See response to comments 86-3, 86-6, 86-12, 86-9, and 86-8. For more information please refer to Section 4.9.5 Impact Analysis and Mitigation Measures on page 4.9-18 in the DEIR which adequately addressed these impacts.

Response 86-15: The commenter makes assumptions about what are "known facts, as well as all of the factors that have contributed to the decline of fish populations in the Russian River. The commenter expresses concern about the effects of vibration resulting from the proposed project on salmon and their

spawning habitat. Gravel processing (e.g., crushing, grading, washing, stockpiling) will be restricted to a site roughly at the center of the proposed project area (See Figure 3.0-5, Process and Storage Area). This processing site is located more than 1,600 lineal feet from the river bank and more than 1/3 of a mile (>2,000 feet) from any riverine habitat in the vicinity of the project area that may be suitable for spawning salmon. A buffer distance of 600 feet to protect incubating salmon eggs and larvae is typically applied to projects requiring in-water piling driving, an activity generating far greater seismic vibration and risk of barotraumas to fish eggs than the proposed gravel processing activity. Therefore, the distance of the proposed gravel processing area from potential spawning habitat is considered to be more than sufficient to protect fish and fish eggs in the river gravels from any adverse barotraumas related to ground vibration originating from gravel crushing equipment and truck traffic.

Similarly, seismic vibration, originating from the proposed gravel processing activities, of the magnitude necessary to cause in-river sorting of streambed gravels and degradation of fish spawning habitat, is not anticipated to occur as a result of the proposed project because of the distance between the processing area and the river.

Soil erosion and the potential for discharge of sediment runoff to the river from the proposed project site, which could create adverse conditions for fishes inhabiting the river, will be strictly controlled through slope, grading, and drainage design elements and implementation of best management practices for erosion control at the site.

In general, see response to Fish and Game comments S-1 and S-5.

Response 86-16: The commenter appears to be misquoting the applicant. Obviously, there are sand and gravel deposits elsewhere in Shasta County. The issue is the quality of available aggregate (i.e., is it PCC-grade aggregate?), the quantity of those deposits, and the accessibility to commercially extract that material. In response to information the commenter received from the Bureau of Land Management, yes, there are maps at the County that have been provided by the State. The Shasta County General Plan Mineral Resources Element references these maps which are associated with the Mineral Land Classification Study completed by the Department of Conservation in 1997 for the Shasta County region. This is a public document available through the County and is provided in the DEIR under Appendix 4.8-1 (excluding maps). In response to the number of existing and proposed sand and gravel operations in the County, a list of surface mine operators has been provided by the County for reference. See Attachment 6 in the FEIR. As for how much alluvial sand will stay in Shasta County, this pertains to the economic market and demands of the product, which is not an environmental impact evaluated under CEQA in the DEIR.

Letter 87

9/22/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, Ca. 96001-1759
Attention: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

Dear Mr. Walker:

This letter is in response to the Draft EIR on the above project. I do not feel that the following issues have been sufficiently addressed.

1. **PERMIT.** The DEIR indicates throughout that the permit would be for 29 years. However, there is also reference to it not being limited to 29 years if there was remaining aggregate. **If this project goes forward, it should be absolutely, unconditionally limited to 29 years.**

2. **RECLAMATION.** According to the DEIR, applicant has ten years from the date of last extraction in which to complete reclamation. However, I note there is nothing in the DEIR to indicate that there is a bond to guarantee the reclamation.

3. The DEIR has indicated throughout that the mining would be done as Phase I, Phase 2 and Phase 3, in that order. However, it then states that the order of the excavation can be changed. It has not sufficiently been shown that the toxins in the soil, particularly Phase 3, are at a "safe" level.

87-1

4. **DIOXIN.**

1) The proposed project site had residential testing done to levels of 6", 10" and a couple at 18". This site is for mining, not residential. The toxicity level in the first 18" has been diminished and is not an accurate representation of toxic chemical levels in this area as the first 18" has been diluted over time by percolation and cultivation. The percolation has allowed the toxins to sink into the ground while the cultivation results in a diminishing of toxins as the plants would draw the same from that particular soil. This was apparent to the cultivators as they had warnings regarding not using the corn, pumpkins and hay into the food chain. Testing needs to be deeper than 18".
2) Insufficient number of testings for such a large area. No vertical testing was done for Dioxin. The Vestra samples were much deeper, but were to examine material to be mined, not testing for toxins.

87-2

Elaine Rutkowski
21881 Tranquil Lane
Anderson, Ca. 96007
SCCHE

Letter 87

Elaine Rutkowski, September 22, 2006

Response 87-1: Under 1) the commenter states the permit should not be extended beyond the limit of 29 years. An operating time is required for each mining use permit. The 29-year limit is consistent with the Shasta County Zoning Ordinance. The process for extensions beyond the permit expiration are set forth in Shasta County Zoning Ordinance 17.88.020(F).

In response to 2) the mine operator is required to provide the County with an annually updated itemized estimate for the cost of reclamation and also with a financial assurance instrument such as a bond, certificate of deposit, or irrevocable letter of credit, to cover the cost of reclamation in case the operator is unable to complete the reclamation. The County holds the financial assurance instrument until the operator has completed all of the required reclamation. If the operator does not complete the reclamation, the County may choose to use the financial assurance funds to pay for reclamation of the site.

The Planning Division costs of monitoring and inspections are in result charged to the gravel operator by fees established under the County Surface Mining and Reclamation Act regulatory program. Other County agencies may also collect monitoring and inspection fees. Non-compliance of these requirements could lead to removal of the operator's permit to operate. See Response 95-1 for more information.

Response 87-2: In response to 3) and 4) concerning dioxin, additional testing was conducted. Please see Response M-2 and 85-8 for more information including description of tests at depths of 4 feet and 8 feet. The tests evaluated for dioxin. See Section 4.12, Hazards and Hazardous Materials, of the DEIR for more information on testing and results in reference to EPA screening levels for water, soil, and air. The analysis that has been completed is adequate to conclude that the potential related impacts are less than significant.

Letter 88

Sept. 27, 2006

To whom it may concern;

I am writing to state my opposition to the Shasta Ranch Mining Project. With all the potential negative environmental impact, why is this project even being considered? Lots of money for a few investors who don't need the money anyway. Potential property value losses, health, noise and safety issues for many people within miles of the project. 88-1

After reviewing the D.E.I.R. I can't imagine not having lawsuits against the county and anyone involved in such a foolhardy venture.

As Shasta Co. residents living on Balls Ferry Rd. since 1989 we firmly oppose this project.

Sincerely, Robert A Thomas + family

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED

SEP 28 2006

PLANNING/BUILDING DIVISIONS

Robert Thomas + family
5225 Balls Ferry Rd.
Anderson, CA. 96007

Letter 88

Robert Thomas, September 27, 2006

Response 88-1: The commenters are opposed to the project. In response to the commenters question, "Why is this project even being considered" it is because the applicant has applied for a use permit through Shasta County and it is the County's responsibility under the California Environmental Quality Act (CEQA) to prepare an environmental impact analysis. The County must make decisions based on the findings regarding the environmental effect of the proposed action. The purpose is to disclose to the decision makers and the public the potential significant environmental effects of those proposed activities and require agencies to avoid or reduce the environmental effects by implementing feasible alternatives or mitigation measures. (Public Resource Code Secs. 21000-21004) CEQA does not require technical perfection in an EIR, but rather adequacy, completeness, and a good faith effort at full disclosure. Guidelines section 15003(i).

In response to the remaining comments, no new environmental issues are raised, No further responses are necessary.

Letter 89

September 28, 2006
Robert Moore
21964 Whispering Waters Lane
Anderson, CA 96007

Shasta County Department of Resource Management
Planning Division
1855 Placer Street
Redding, CA 96001

Att: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

According to the soil sampling as stated in the EIR, (Geomatrix Analytical Results, figure 3) samplings were taken at 0.5. This sampling for the Shasta Ranch Mining Project is insufficient for the magnitude of this gravel pit. Core samples of 20 feet or more should be taken in the proposed areas of excavation. These 6" samples show insignificant for toxins and pollutants. Yet, a letter from Dept. of Conservation Office of Mine Reclamation dated June 17, 2005, states, " 3. Shasta Ranch has been designated as a Superfund Site with toxic contaminants in the subsurface. Accordingly, some of the aggregate may be contaminated and the water quality of the proposed ponds may be undesirable. " Where did the pollutants go? Could it be they need to go deeper with the testing? 89-1

Please take into consideration the latest report for RWQCB. A new well has been drilled, GMX-1. A core sample was taken at 20 feet and no toxins were

Letter 89 Continued

Robert Moore
Page 2

found. GMX -1 well was by the river, nowhere near where they are going to dig. This sample was taken in an area where no toxins were dumped. No wonder no toxins were found. That same core test needs to be done in the 3 spots where they are going to dig. I'm sure you will find toxins. The toxins were dumped where they are purposing to dig, not where the current well is. R2 soil sample had a significant toxin level and no toxins where dumped there. Why is this? Could the aqua flow be taking it there from the Shasta Ranch Project? **89-1 cont.**

Concerned Citizen,

Robert Moore

Robert Moore

Letter 89

Robert Moore, September 28, 2006

Response 89-1: In response to the comments concerning depths and levels of testing conducted on the site, please refer to Responses M-1, M-2, and O. The purpose of the GMX-1 well testing is based on the existing water movement from the site moving in a down gradient slope to the Sacramento river. The well monitoring reports are included in Appendices 4.9-1. Please refer to the final summary report that has been provided by the RWQCB, included in the FEIR as Appendix 4.9-1(G). In response to the question "where did the pollutants go," refer to the explanation of dioxins in Response M-2.

Dale & Sally Sapp (916) 729-4652 p.2

Letter 90

September 28,2006

Shasta County Department of Resource Management, Planning Division
1855 Placer Street, Suite 103
Redding, California 96001

ATT: Bill Walker, Senior Planner

Dear Mr. Walker:

I realize this letter is in response to the Draft EIR, but before I respond to it, I would like to comment on another matter of importance.

It has come to our attention that Mr. Tullis has written a letter stating to the effect that there will not really be any problems for the community if the gravel plant is built. I highly dispute his comments.

Our lives have already been effected with far reaching results. Only a wire fence separates our property from the proposed gravel plant property. We have many concerns about this project. First and foremost, our property was in escrow in November 2005, before property values started declining, for close to three-quarters of a million dollars. We lost the sale directly because of this project. We were going to use the proceeds from the sale of this property for our retirement and my brother and his wife were going to use it to move back to California. After the location of the gravel plant was known and our property fell out of escrow, we were offered $100,000 for it. So don't tell me the fact there might be a gravel plant hasn't had an adverse effect. We have suffered a tremendous financial loss because of the proposed grave plant, and I am sure there will be hundreds of other families living in the area that will also see their property devalued if it goes in. **90-1**

Our property is on the South side of the proposed gravel plant and the elevation of our property is lower. We are very concerned this project will cause serious flooding and destruction to our property.

We are also concerned there will be a danger of pollution to any wells (including future wells on our property) South of the project site. Another concern is the monitoring of the test wells on site. Who is doing the monitoring and how often will it be done? **90-2**

As you can see, any of these scenarios will devalue our property even more than it already has been by this proposed project. The first phase, as we understand it, will be directly next to our property. This has been an absolute nightmare, which we are not waking up from! **90-3**

Dale & Sally Sapp (916) 729-4652 p.3

Letter 90 Continued

Considering the property the gravel plant is to be built on is toxic and considering taking millions of tons of material out of this land so close to the Sacramento River, it boggles our minds that this project has gotten this far. How can this happen? What will happen to the riverbanks and the hundreds of people with homes on the river and in the surrounding areas? Their quality of life in a peaceful, safe, and serene setting is going to be gone when trucks are leaving and returning from the plant every 6 minutes to say nothing of the noise from the plant itself and the safety issue with all the traffic. **90-3**

We respectfully ask that this project will not go through, because again it will do far-reaching damage to the good citizens of Anderson who moved to this area for the very reasons that will be destroyed if the gravel plant is allowed to go forward.

Sincerely,

Sally Sapp

Sally Sapp
4407 Snaffle Bit Ct.
Antelope, CA 95843
(916) 729-4652

Letter 90

Sally Sapp, September 28, 2006

Response 90-1: The commenter is opposed to the project and addresses the concerns of property values. While the effort of a project on property values is a serious matter, it is not considered to be an "environmental" issue which is to be addressed in an environmental impact report. Therefore, no response is being made in this context. The County's decision makers, however, can consider the social and economic impacts in addition to the environmental information in the DEIR when they consider approval or denial of the project applications. In response to the commenter's reference to a gravel plant, please refer to Section 3.0, Project Description in the DEIR for a detailed description of the project. The County does not consider the project to be a "gravel plant." It is an "aggregate quarry."

Response 90-2: There is no indication based on project information that the project will result in flooding and destruction of adjacent property. n response to contamination of groundwater that may impact private wells, Impact 4.12.2 in the DEIR addresses this concern and concludes the impact is less than significant. All information pertaining to well testing and monitoring is included in Appendix 4.9-1 of the DEIR. In addition, a final summary report (Appendix 4.9-1(G)) has also been included in the FEIR for more information. Please see Response M-1, M-2, and 13-1 pertaining to groundwater and well testing.

Response 90-3: The site for the proposed project was selected near the Sacramento River because a substantial amount of valuable aggregate material has been deposited there. The claim that the project will threaten the river banks and hundreds of people with homes on the river is not substantiated. The commenter asks, "how can this happen?" In response it is the County's responsibility under the California Environmental Quality Act (CEQA) as a local agency to prepare an environmental impact analysis and to make decisions based on those studies' findings regarding the environmental effect of the proposed action. The purpose is to disclose to the decision makers and the public the significant environmental effects of those proposed activities and require agencies to avoid or reduce the environmental effects, when possible, by implementing feasible alternatives or mitigation measures. (Public Resource Code Secs. 21000-21004) CEQA does not require technical perfection in an EIR, but rather adequacy, completeness, and a good faith effort at full disclosure. Guidelines section 15003(i).

Please see Response 10-1 for noise related impacts and M-2, 15-1 and 16-2 on impacts of dioxins. Commenter restates opposition to the project.

Letter 91

Diaz Associates
Land Use and Environmental Planning

September 28, 2006

Mr. Bill Walker, Senior Planner
Shasta County Department of Resource Management, Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001

SUBJECT: SHASTA RANCH MINING AND RECLAMATION PLAN DRAFT EIR
SCH #2005102134

Dear Mr. Walker:

On behalf of the Shasta Alliance please accept this letter and comments on the Shasta Ranch Mining and Reclamation Plan Draft EIR (DEIR). Whereas the Alliance is supportive of the proposed project, questions and comments are presented regarding the DEIR. As you are aware, the DEIR is intended to inform decision makers and the public of the possible environmental impacts associated with implementation of the project, to determine whether these impacts could be significant, to identify methods whereby significant impacts could be reduced to less-than-significant levels, and to discuss potential alternatives to the proposed project. Presented in this letter are comments which should be addressed to ensure a complete, adequate, and defensible environmental impact report.

Section 3.0 Project Description

1. Page 3.0-6. 3.3 Project Objectives

Once the Final EIS/EIR is ready to be considered by the Board of Supervisors (Board), under CEQA the Board then chooses to approve or deny certification of the document and the local approvals required for the Project Action. If the Board chooses to certify the EIR, it must first adopt "CEQA Findings", addressing whether each significant effect of the Project Action has been mitigated, either through mitigation measures or through an alternative *(CEQA Guidelines*, Section 15091, subdivision (a)). If, after adopting such findings, there are still unmitigated significant effects, or the Board does not have control over the mitigation measures necessary to mitigate certain impacts, it must also adopt a "statement of overriding considerations" before it can approve the Project Action. The statement must set forth the economic, social, or other benefits of the Project Action that they believe outweigh its unmitigated significant environmental effects *(CEQA Guidelines*, Section 15093). The statement of overriding consideration must be supported by substantial evidence in the record. **91-1**

Whereas the DEIR is not the vehicle to provide the required substantial evidence, the DEIR could expand the project objectives to "supply the existing and future market demands", identifying existing and future market demands for the gravel.

4277 Pasatiempo Ct.
Redding, CA 96002
(530) 224-0811
FAX (530) 224-0832
ediaz@diazplanning.com

Letter 91 Continued

Mr. Bill Walker
September 28, 2006
Page 2

There are several studies that discuss the need for sand and gravel products. The Construction Materials Association of California published in December 2003 *An Economic Analysis of the Construction and Aggregate Industries in Shasta County* that presents the following summary information:

- The total economic impact from the aggregate and construction industries in Shasta County is $1.4 billion annually.
- Nearly $1 billion ($980 million) in direct output was contributed to the Shasta County economy by the aggregate and construction industries, or 14% of all Shasta County output. Combined, aggregate and construction rank as the third largest industry in Shasta County. Only services, finance, insurance, and real estate are larger.
- Almost $100 million ($91 million) of aggregate and construction's direct output was used by the county's major industries. The finance, insurance, and real estate sector, and the transportation, communications, and public utilities sector, each used $21 million of aggregate and construction products. Services followed at $13 million and manufacturing at $6.9 million.
- Nearly $400 million ($393 million) was contributed indirectly by the aggregate and construction industries to the Shasta County economy.
- The aggregate and construction industries employed over 7,400 people, 9% of all county employment.
- The aggregate industry's average total employee compensation was $59,687, over 3 times the county's per capita income.
- Aggregate accessibility and availability are crucial for building the infrastructure required for Shasta County's economic vitality, and for sustaining its outstanding quality of life.
- Shasta County's future depends upon land use decisions that ensure the availability of aggregates, and accessibility to permitted reserves.

91-1 cont.

In addition, the 1997 *California Department of Conservation Mineral Classification Study* provides additional supporting information. The study notes that the average per capita consumption of aggregates in Shasta County is 8.0 tons per person. This is higher than the state's average of 7 tons per person per year, and, due to projected growth, is unlikely to decrease in the near future.

In order to accommodate the projected growth identified in the general plans for the County, cities of Anderson, Redding, and Shasta Lake, sand and gravel is needed today and in the future.

Clearly, it would be advantageous for the project applicant to have the County commence preparation of the necessary supporting documentation to support the statement of overriding consideration. In addition, the project objectives should expand the discussion on supplying existing and future market demands.

Section 4.2 – Land Use

2. Page 4.2-21 – Impact 4.2-1. The impact is not quantified. What is the acreage of prime farmland, farmland of statewide importance, and unique farmland that would be converted to "non-agricultural uses"? It is understood that approximately 268 acres of the total 947 acres will be used for mining operations. However, how much of that land, based on the site specific surveys and not the NRCS survey, is "farmland of statewide importance" and "prime farmland"? It is general knowledge that NRCS soils surveys can be off by as much as 40-acres. 91-2

Letter 91 Continued

Mr. Bill Walker
September 28, 2006
Page 3

Once the acreage is determined, is the removal of that acreage truly "significant" per the CEQA Guidelines definition, whereby there is a "substantial, or potentially substantial, adverse change in the physical conditions within the area affected by the project"? Are there any social or economic changes related to the physical change? If so they should be considered in determining whether the physical change is significant per Section 15382 of the Guidelines. **91-2 cont.**

3. Page 4.2-22 – Impact 4.2-2. The amount of "wide range of rural land uses, including farmland, rural residential uses, recreation and open space common in the vicinity of the proposed project site" should be quantified (is this quote mark in the right place? Should it be after "project site"?)to truly ascertain whether or not the proposed project does not conflict with adjacent permitted, existing, or future land uses in the area. What is the acreage and number of "adjacent" parcels? **91-3**

Section 4.3 – Transportation and Circulation

3. Page 4.3-11. Under the heading "Freeway Ramp Merge, Diverge" the first bullet point notes that a "freeway ramp that deteriorates to a LOS D is unacceptable. Caltrans over the years has accepted a LOS D. This is the practice in many communities in the State. This District also accepted a LOS D. What has changed? When and why did Caltrans change its position?

4. Page 4.3-35 – Mitigation Measure MM 4.3.2(a). The measure calls for the restriction of the north bound off-ramp Bowman Road/I-5 intersection during the a.m. peak hours. How will this measure be enforced? Does the Shasta County Planning Division have enforcement rights in Tehama County? Or should Caltrans enforce the mitigation measure? **91-4**

5. Page 4.3-36 – Mitigation Measure MM 4.3.2(b). The measure calls for entering into an agreement with Tehama County to contribute a pro-rata share of the Bowman Road/I-5 north bound off-ramp improvements. The Tehama County does not currently have a program in place to accept any funds. In fact, the County has imposed a requirement on Bowman Road area development to undertake the necessary studies to establish a funding mechanism for the interchange improvements. This measure may not be valid.

6. Page 4.3-39 – Impact 4.3-7. Refer to Comment 3 regarding LOS D on freeway ramps.

Section 4.4 – Air Quality

7. Page 4.4-11. Second paragraph under "Sensitive Receptors": Quantify the number of single-family homes that are categorized as "sensitive receptors". Where is the nearest dwelling unit located approximately 100 feet from the project boundary. Is it downwind, upwind? How may single family homes are located along the proposed haul route and what are the "varying distances". Instead of referencing a noise figure which does not provide any meaningful information regarding the location of residences and distances, a new figure should be provided.

8. Page 4.4-21 – Mitigation Measure 4.4-1(a). The paving of existing gravel roads in the area could also be considered as another measure to offset PM_{10} impacts. **91-5**

9. Page 4.4-24 – Impact 4.4-2. See comment 7.

10. Page 4.4-33 – Impact 4.4-4. See comment 7. Would off-site paving of existing gravel roads reduce the impact to a "less than significant effect" instead of one that is "significant and unavoidable"?

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11. Page 4.4-33 – Impact 4.4-4. Quantify the number of "nearby sensitive receptors". What is their distance from the site? How many residences are adjacent to and south (downwind) of the project site that would be impacted by the "maximum PM_{10} concentrations". It should be known how many residences are truly impacted to determine if the impact is substantially adverse and, therefore, significant.

12. Page 4.4-35 – Impact 4.4-5. What are the agricultural production crops "adjacent to and downwind" of the proposed Phase 2 mining area? What is the acreage of the crop production? Is the operation commercial? What is the yield both in terms of tonnage or pounds and financial return? Regardless of mitigations, is the impact truly "potentially significant"? **91-5 cont.**

13. Page 4.4-36 – Impact 4.4-6. As previously noted, provide the number of sensitive receptors subject to impact. It appears that, regardless of whether the project is a gravel mining operation or not, the impact regarding diesel exhaust particulate matter is one that would appear to adversely impact the entire area, community, county, state, country, etc. Therefore, wherever there is diesel truck exhaust everyone along the truck routes, near truck stops, or truck delivery operations would be exposed to predicted cancer risks that would exceed applicable standards. Did the Simpson Paper Company utilize trucks as part of their operation? What about diesel trucks used as part of agricultural operations? The impact appears to one that is universal in nature.

14. Page 4.4-40 – Impact 4.4-7. Refer to Comment 13.

Section 4.5 – Biological Resources

15. Page 4.5-45. Figure 4.5-4 identifying impacts on waters of the United States, including wetlands is missing.

16. Page 4.5-53. Impact 4.5-10. Table 4.5-3 states that the California red-legged frog may be present and may occur. Isn't this speculative? It is either present or not. Deferring the assessment until later is not a mitigation, and is not permissible under CEQA, unless performance standards are provided. Therefore, potential mitigation measures should be identified if the frog is found. This approach was also used for Impact 4.5-11 regarding the northwestern pond turtle and other potentially impacted wildlife. **91-6**

Section 4.7 – Noise

17. Page 4.7-5. Reference is made to Figure 4.7-1 identifying the "nearest residential dwelling located within approximately 100 feet of the project site". According to the Figure, there are seven noise sensitive receptors within 100 feet. Is this accurate? The number of noise sensitive receptors and distances should be quantified to determine the significance of noise impacts.

18. Page 4.7-13. Impact 4.7-1. The impact states that "Construction activities may potentially occur during the more noise-sensitive evening and nighttime hours (7 p.m. to 7 a.m.)." Either the activities occur or not. What does the applicant propose? If the activities will occur, then mitigation is appropriate. However, if construction does not occur, then there is no impact and no mitigation is necessary. **91-7**

19. Page 4.7-24. Impact 4.7-3. Ambient noise levels would increase at nearby receptors during temperature inversions and windy conditions. However, the number of sensitive receptors that

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would be subject to impacts from windy conditions is dependent on the direction of the winds. It is not known how many receptors would be impacted based in the various wind directions. This should be quantified.

20. Page 4.7-26. Impact 4.7-4. The number of sensitive receptors that would be impacted along the haul roads need to be identified.

21. Page 4.7-27. Impact 4.7-5. The impact assumes that predictive impulsive noise levels are of additional concern, particularly those that occur during the noise sensitive evening and nighttime hours. It appears that the mining operations will occur between 7 a.m. and 7 p.m. Therefore, is this impact realistic? Based on Table 4.7-8 there are six residences that would be subject to impulsive noise levels at distances ranging from 1,000 to 2,700 feet. It is understood that if one does not have a direct line of sight to the noise source, then the noise is less perceptible. Furthermore, did the noise studies take into account structures, trees, and other man-made obstructions that would serve to reduce the noise impact levels? Often noise models do not take into account topography, man made structures, and vegetation which would reduce noise levels. **91-7 cont.**

Section 4.9 – Hydrology and Water Quality

22. Page 4.9-22. Mitigation Measure 4.9.3(a). What if the hydrologic and hydraulic analysis demonstrates that the proposed crossing modifications will impede or redirect flood flows? **91-8**

Section 6.2 – Growth-Inducing Impacts

23. Page 6.0-9. The discussion only states that "the product will be used to facilitate other development within Shasta County and region as a whole". There is no meaningful discussion regarding the amount of residential, commercial, and industrial development that could result as a result of the proposed project and of the impacts associated with that development. In addition the second to the last sentence makes a statement that has no relevance to a growth inducing discussion. The sentence states:

> "Due to surrounding residential development, is (sic) very unlikely that this project will encourage the establishment of additional quarries in the vicinity."

91-9

In accordance with the CEQA Guidelines §15126.2(d), the growth inducement section should discuss ways in which the Project "could foster economic and population growth or construction of additional housing, either directly or indirectly" in the region. Projects that would remove obstacles to population growth are of particular importance. The focus of the analysis should be on the physical changes. The discussion, therefore, should focus on the environmental effects that might reasonably be anticipated to occur as a result of the "economic and population growth" that could be induced by the proposed Project. The discussion presented does not adequately address the growth inducement issue per CEQA Guidelines.

Section 6.3 – Significant and Unavoidable Environmental Effects.

24. Page 6.0-10. Various comments have been raised in this letter questioning which impacts are truly "significant and unavoidable". It is felt that the impacts should be carefully re-evaluated.

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Thank you for providing us the opportunity to comment on the DEIR. Please place me on your notification list regarding the proposed project. Please also be advised that additional comments may be submitted based on the Response to Comments and the Mitigation Monitoring Program. We may also wish to testify before the Planning Commission and Board of Supervisors when this action is considered.

Please do not hesitate to contact us should you have any questions or comments regarding our comments.

Cordially,

Eihnard F. Diaz, AICP
Principal

Cc: Lance Frederiksen

Letter 91

Eihnard F. Diaz, AICP, September 28, 2006

Response 91-1: The comment is noted. The commenter is correct in stating the County Board of Supervisors will need to make separate findings to support a "statement of overriding considerations". The commenter also provides additional references, which if recognized by the County, could be used to support findings for a statement of overriding consideration. See response to comment 91-9 for reasons why the DEIR does not include an economic analysis on the existing and future market demands.

Response 91-2: In response to comments concerning loss of Agricultural land in Impact 4.2-1, information has been added to clarify how much prime agriculture, farmland of statewide importance, and unique farmland is located on the project site. Please refer to Response 50-1, or see Section 3.0, Revisions to the DEIR in the FEIR document, for revisions made to Impact 4.2.1. Figure 4.2-4, Agricultural Soils Map with Project Overlay, was added to identify where the agricultural soils are located in relation to the mining phases. As for Impact 4.2.1, the "significance" criteria per CEQA has been adequately addressed in the DEIR. Pursuant to CEQA, the net loss of prime agricultural lands is generally perceived as a significant impact.

Response 91-3: In response to quantifying the acreage of parcels by land use, the County's existing zoning designation for the project site is Agricultural and Mineral Resource Extraction. This designation illustrates that the County previously identified and accepted the rural residential areas and potential loss of agricultural lands during mineral resource extraction activities. In result, the Shasta County General Plan and CEQA review have already addressed and accepted the mutually exclusive uses. In addition, the project site is located within the Sacramento River Aggregate Resource Area (ARA) as identified in the California Department of Conservation Mineral Land Classification Study (MLCS) of 1997. According to the MLCS, lands that have compatible uses are defined as those that are non-urbanized or that have very low density residential development (one unit per 10 acres), land that does not have high cost improvements, and lands used for agriculture, silviculture, grazing or open space. Therefore, quantification of rural lands would not demonstrate any new information to justify the conclusion concerning Impact 4.2.2.

Response 91-4: Responses are provided for the following:

3) Based on Caltrans' traffic impact study guidelines, "Caltrans endeavors to maintain a target LOS (level of service) at the transition between LOS C and LOS D…" It should be noted that Caltrans does reserve the right to relax this standard on a case-by-case basis. Based on this statement, LOS C was used as the threshold for identifying acceptable operations.

4) MM 4.3.2(a) could be enforced with signage at the intersection (i.e. turn restrictions for heavy vehicles at the intersection during morning peak periods), or the County could conduct spot license plate surveys to determine if vehicles assessing the intersection are generated by the project.

In response to 5), the Bowman Road interchange will be included in the I-5 Fee Program Study which is just now being initiated in the region (coordinated by Shasta County Regional Transportation Planning Agency). As identified in the EIR, since Shasta County cannot guarantee implementation of improvements to the interchange (it is outside of their jurisdiction), the impact is considered significant and unavoidable. Shasta County remains the enforcing agency for the project. Shasta County will work with Tehama County to ensure this mitigation measure is followed.

6) See Response 91-4, number 3).

Response 91-5: See responses to Air Quality comments below:

7) The commenter states the number of single family units categorized as "sensitive receptors" should be quantified and asks where is the nearest dwelling unit located approximately 100 feet from the project boundary. In response, on page 4.7-6, Figure 4.7-1 in the DEIR accounts for seven dwelling units that are identified as the nearest residences. Table 4.7-6, Predicted Operational Noise Levels, includes a more detailed description of the distance between each "sensitive receptor", as identified in Figure 4.7-1, from the actual noise source (processing area). In addition, page 4.4-11, second paragraph of the DEIR, states, *"Sensitive receptors located along the proposed haul route also consist primarily of single-family residential dwellings located at varying distance from the roadway, the nearest of which are located within approximately 60 feet of the nearest travel lane. (Figure 4.7-1)"* This was considered adequate to determine the level of impact air emissions would have on the localized area, including sensitive receptors.

8) The commenter suggests MM 4.4-1(a) consider the paving of existing gravel roads in the area could also be considered as another measure to offset PM_{10} impacts. This measure was discussed with the Shasta County Air Quality Management District during the preparation of the DEIR and the county indicated this measure is typically included as a proposed mitigation in the construction dust mitigation plan. Therefore, the comment is noted and no further response is necessary.

9) See response to comment 91-5, number 7 above.

10) In response, the County has accepted the proposed alternative mitigation measure as an acceptable reduction in PM_{10} levels in previous projects for regional reductions of PM_{10}. However, to adequately reduce the localized air emission impacts generated from the project site, the proposed mitigation measure stated in the above comment 7 would have to be independently reviewed by the AQMD in the dust mitigation plan, but is not typically found to be the most effective measure in reducing PM_{10} emissions for sensitive receptors as identified in Table 4.7-6 of the DEIR adjacent to the project site.

11) Please refer to Response 91-5, number 7) above.

12) The information provided in Section 4.4 of the DEIR adequately addresses the concerns of offsite agricultural crops. The suggestion to quantify them would not present any new information that would affect the conclusion. As noted in the DEIR, uncontrolled localized concentrations of fugitive dust on plants can affect photosynthesis and promote the increased development of some parasites. As a result, the DEIR concluded that the project would have a potentially significant impact to nearby agricultural crops and mitigation measures were incorporated to reduce this impact. Based on the modeling conducted and assuming implementation of proposed mitigation measures, predicted offsite concentrations of fugitive dust at the nearest orchards would not exceed the national secondary (welfare-based) annual ambient air quality standards for PM_{10}. As discussed in the DEIR, these secondary standards have been established for the purpose of protecting human welfare, which includes damage to agricultural crops (EPA 2006(a)). With mitigation, localized impacts to agricultural crops, regardless of their current acreage or yield, etc., would be considered less than significant.

Although localized concentrations of PM_{10} would not exceed the national secondary standards, predicted localized concentrations of PM_{10} were found to exceed applicable primary standards, which have been established for the protection of human health. Mitigation measures were incorporated to reduce operational emissions. However, even with mitigation, predicted localized concentrations would still be anticipated to exceed ambient air quality standards for PM_{10} on some days. No additional measures have been identified that would reduce predicted localized concentrations of PM_{10} at nearby receptors to a less-than-significant level. As a result, this impact was considered significant and unavoidable. Please refer to Table 4.4-1 of the DEIR for a discussion of health-related impacts associated with airborne particulate matter.

13) Please refer to Response 7) above regarding the quantification of sensitive receptors. In response to diesel exhaust particulate matter, please refer to response to comment 24-1. In response to Simpson Paper Mill company's prior use of the area for the hauling of logs, that is no longer relevant to existing conditions or reasonably foreseeable conditions anticipated to occur at the time the proposed project would be implemented. As a result, these activities have not been included in the baseline condition.

14) Please refer to Response 13 above.

Response 91-6: The commenter asserts that page 4.5-45, Figure 4.5-4 is missing. This figure has been provided in Section 3.0-A, Revised Figures in the FEIR.

The commenter further asserts that the habitat assessment for the red-legged frog proposed under impact 4.5-10 is not permissible under CEQA as it defers mitigation. Therefore, the following mitigation measures have been added under Impact 4.5-10.

Impact 4.5.10 Implementation of the Shasta Ranch Mining and Reclamation Plan could result in direct or indirect impacts to the California

red-legged frog. This impact is considered *potentially significant subject to mitigation*. (PSM)

Freshwater emergent wetlands, riverine habitats, and associated uplands in the project area provide potentially suitable habitat for the California red-legged frog. Although no direct impacts to waters of the United States are expected to occur, impacts to California red-legged frogs could occur during site grading and levee construction. In upland habitats, "take" of individuals and/or loss of habitat could occur via the destruction of occupied aestivation habitat (*e.g.*, small mammal burrows, debris piles). During wet seasonal periods, California red-legged frogs might be present almost anywhere in the uplands and would be at risk of "take" caused by construction equipment and materials.

Mitigation Measures

MM 4.5.10 A California red-legged frog habitat assessment shall be conducted in accordance with guidelines provided by the USFWS (U.S. Fish and Wildlife Service 2005). This assessment shall be submitted to the USFWS who will make a determination as to whether protocol-level surveys will be required. If surveys are required by the USFWS, the applicant shall retain a qualified biologist to complete red-legged frog surveys per the USFWS protocol (U.S. Fish and Wildlife Service 2005). If it is determined that red-legged frogs may occur on the site, formal Section 10 consultation with the USFWS will be required to determine the mitigation measures that will be required. These measures will include, but are not limited to, the following:

1. Only USFWS-approved biologists will participate in activities associated with the capture, handling, and monitoring of California red-legged frogs.
2. Ground disturbance will not begin until written approval is received from the USFWS that the biologist is qualified to conduct work.
3. A USFWS-approved biologist will survey the project site 48 hours before the onset of work activities. If any life stage of the California red-legged frog is found and these individuals are likely to be killed or injured by work activities, the approved biologist will be allowed sufficient time to move them from the site before work activities begin. The USFWS-approved biologist will relocate the California red-legged frogs the shortest distance possible to a location that contains suitable habitat and will not be affected by activities associated with the proposed project.
4. Before any activities begin, a USFWS-approved biologist will conduct a training session for all construction personnel. At a minimum, the training will include a description of the California red-legged frog and its habitat, the specific measures that are being implemented to conserve the California red-legged frog, and the boundaries within which the project may be accomplished.
5. Compensatory mitigation for directly impacted California red-legged frog habitat will be provided at a ratio of not less than 1:1.

Timing/Implementation: Prior to initiating construction activities for each phase.

Enforcement/Monitoring: Shasta County ~~U.S. Fish and Wildlife Service~~

Response 91-7: 17) In response, on page 4.7-5, paragraph two, the section reads, "*Nearby residential dwellings are depicted in Figure 4.7-1. The nearest residential dwellings are located within approximately 100 feet of the project site boundary.*" This does not imply all of the structures identified in the figure but merely states some of structures identified in the figure are closer than others and as close as approximately 100 feet from the project site boundary. For actual distances from sensitive receptors to the processing area (source), see Table 4.7-6, Predicted Operational Noise Levels on page 4.7-22 of the DEIR.

18) In response to the comment concerning Impact 4.7.1 on page 4.7-13, the statement "construction activities may potentially occur during the more noise-sensitive evening and nighttime hours (7 p.m. to 7 a.m.)" was incorporated because the project description did not initially include hours of construction operations. To ensure the construction activities would not occur outside of the Shasta County's Noise standards as identified in the Shasta County General Plan Noise Element, MM 4.7.1(a) was provided.

19) The commenter states the number of sensitive receptors that would be subject to impacts from windy conditions is dependent on the direction of the winds and concludes the number of receptors should be quantified. The commenter is correct that the impact is influenced by weather and wind conditions. This information is provided in Section 4.7 of the DEIR. Page 4.7-6, Figure 4.7-1 of the DEIR, seven sensitive receptors were identified and page 4.7-22, Table 4.7-6, Predicted Operational Noise Levels of the DEIR includes the distance between each "sensitive receptor" from the actual noise source (processing area). Although weather conditions can vary, the analysis concluded inclement weather conditions can often increase noise impacts by as much as approximately 10dB. Although the extent of impact would very with changing conditions, ambient noise levels would nevertheless often exceed the County's noise level standards at the nearest sensitive receptors.

20) See response to comment 91-5, number 7.

21) The commenter asks if Impact 4.7-5 is realistic. In response, predicted maximum impulsive noise levels at residences located in the vicinity of the proposed project site were calculated based on the distance to the nearest mining phase, which is the nearest location at which material transfer activities and equipment use would be anticipated to occur. To be conservative, predicted noise levels were calculated assuming a maximum impulsive noise level of 90 dBA Lmax at 50 feet, based on levels typically associated with material handling activities, including material drops into trucks and back-up beepers. Predicted noise levels were measured at the property line of nearby noise-sensitive land uses and, to the extent applicable, took into account on-site intervening terrain and structures (e.g., proposed levees and berms) that would provide shielding from on-site noise sources. In terms of intervening vegetation (i.e., trees and brush),

approximately 100 feet of dense vegetation is generally required before a noticeable reduction in noise levels (i.e., 3 dBA or greater) would occur. To account for seasonal variations in foliage, any reduction in predicted noise levels associated with intervening vegetation would typically only be applied to dense, non-deciduous vegetation that exceeds 100 feet in depth. Given that such conditions are not prevalent in the vicinity of the proposed project site, noise reductions associated with intervening vegetation were not accounted for in the modeling.

The determination of impact significance was based on predicted increases in noise levels anticipated to occur during normal operational hours, as identified in the project description. The project description does not restrict normal operational hours to between the daytime hours of 7 a.m. and 7 p.m. This limitation on hours of operation to between the hours of 7 a.m. and 7 p.m., as identified by the commenter, is associated with proposed Mitigation Measure 4.7.2(b). As a result, the DEIR concluded that potential increases in intermittent noise levels would be anticipated to exceed applicable noise standards and could potentially result in increased levels of disturbance and sleep disruption to occupants of nearby residential dwellings. As noted in the DEIR, implementation of Mitigation Measure 4.7.2(b), as well as other recommended mitigation measures, would reduce this impact to a less-than-significant level.

Response 91-8: Mitigation measure MM 4.9.3(a) requires the hydrologic and hydraulic analysis of the plans to demonstrate that the proposed crossing modifications will not impede or redirect flood flows. This mitigation measure would ensure the designs are prepared by a registered engineer and submitted to the County for approval. If the analysis demonstrates that the design will impede or redirect flood flows, the plans will need to be redesigned and submitted for further analysis.

Response 91-9: The proposed project does not constitute the only quarry or source of aggregate in Shasta County or the region as a whole. Nor does the proposed project provide material to the only asphalt plant in the region. In this regard the proposed project does not constitute the removal of a substantial impediment to growth. Usually, raw materials such as aggregate are quarried to address the needs of an expanding and developing region. The growth associated with this expansion is addressed in General and Specific Plans of the appropriate jurisdiction. Project-specific environmental analysis is conducted for each application by that jurisdiction. It is well beyond the scope of this project EIR to speculate on all of the potential projects and locations where the product could be used or not used. As all future growth must be consistent with agency general plans, and all applications must address their own environmental impacts, this project EIR focused on the cumulative impacts of the development and operation of the quarry rather than speculating on potential growth in the region.

In response to the letter's comment 24, stating that impacts should be "carefully re-evaluated" to determine which impacts are truly "significant and unavoidable", it has not been demonstrated that a more expansive and expensive analysis will constructively modify the conclusions of the DEIR.

Letter 92

September 28, 2006

Debra Early
P.O. Box 2110
Cottonwood, CA 96022

Shasta County Department of Resource Management
Planning Division
1855 Placer Street Suite 103
Redding, CA 96001

Attn: Mr. Bill Walker, Senior Planner
Re: Use Permit 05-010 and Reclamation Plan 05-001

Dear Mr. Walker;

This letter is to express our concerns with several portions of the DEIR for this project.

1.) The overall size and scope of this project in not conducive to the Balls Ferry Area and our quality of life.

2.) There is no recourse action that will be immediately available to us for the inevitable issues that are going to arise. This is not acceptable.

3.) Speeding & disregard for safety of the residents and tourist using these roadways.

4.)Sand & Gravel truck operators are usually paid by the Load. It is well documented that Drivers paid by the load have a higher accident rate than hourly paid drivers. This is a rural area with many slow drivers, farm equipment, horseback riders, bicycles, runners, and walkers. Our quality of life is threatened by this proposed project.

5.) Speed Limits that are in place are not practical;
Current speed limits are not safe for a project of this size and scope. Taking into account the Current size and construction of the roadways. Even when considering the proposed widening of these roadways 45 to 55 MPH is not safe for a truck to be traveling with the type and amount of other traffic currently using these roadways. **92-1**

6.) Air Quality
It is documented that for over 20+ years Thousands of gallons of Toxic Dioxin have been dumped on this property. *Dioxins are horrible* , we have to avoid any activity that is going to subject Our Children, Our Parents, our Future Generations, Our Land, Stock, Wildlife and water to unmonitored/uncontrolled amounts of this substance.

7.) The Cottonwood School which abuts fourth street yes the same Fourth Street that is a proposed route you really want to expose these children to the known toxins and the pollutants from the truck emissions and load material. This scope of Truck Traffic is not suitable to the Cottonwood Area at all.

This property should just be left fallow with ongoing monitoring for the toxins and pollutants.

If it is going to be mined then daily monitoring for potential releases for Dioxin and other toxins and pollutants. The Following Test (at the very least) should be done prior to the start of any Mining, core sample tests, a "mass balance" Calculation to account for the Dioxins' dumped on the property. **92-2**
Soil samples should be the same if not more than the depth of the proposed mining.
Water sampling needs to be done on a regular basis both on the proposed site and neighboring sites .
These requests are minor to the applicant compared to the costs of litigation if this mining operation did release Dioxin and other toxins and pollutants into the air, surrounding properties, surface water and/or water table.

Letter 92 Continued

September 28, 2006 Debra Early Page 2

The size and scope of this proposed project is going to produce huge amounts of diesel emissions into south Shasta County. Shasta County already fails the annual Lung Action Report why add more pollutants into such a confined area.
At such time when the Applicant incorporates the Applicant's other plants into this site, we will then be dealing with (at a minimum) of 500 to 750+ truck trips a day. Our children & elderly will not be able to safely go outdoors & play. We will not be able to open our windows due to the pollutants, and noise levels and forget trying to safely pull out of our driveways.
Balls Ferry Road is a Designated route to a National place of interest upwards to 750 trucks does not create the ambience that was desired with the choice of this route. The Tourism trade to Shasta County is a major life line. **92-2 cont.**

Sincerely,

Debra Early

References:
An excerpt from the Dallas News 11pgs
Lung Action for Shasta County Report 1pg
Children's Environmental Health Protection Act Particulate Emissions 27 pgs
Ecology Center 3 pgs
Children's Environmental Health Protection Act Final Oct 2001 3 cover pgs an 58 pgs
20 years' previous experience

Letter 92

Debra Early, September 28, 2006

Response 92-1: The commenter has provided a list of concerns towards the project. The concerns have been addressed in the DEIR.

In response to 1), the County's existing zoning designation for the project site is Agricultural and Mineral Resource Extraction, which illustrates that the County previously identified the potential loss of agricultural land during mineral resource extraction activities. In result, the Shasta County General Plan and CEQA review already addressed and accepted the mutually exclusive uses. However, the Shasta County Use Permit process requires a separate environmental review for uses that require a Use Permit (i.e., Environmental Impact Report).

In response to 2), see Shasta County Zoning Ordinance 17.92.030- Variance and use permit appeals. The recourse is that the Planning Commission's actions can be appealed to the Board of Supervisors. Ultimately, people dissatisfied with a county's decisions on a project can pursue litigation. Therefore, there are several opportunities for recourse.

In response to statements 3-5) please refer to Section 4.3, Transportation and Circulation of the DEIR and Response 1-1 for more information on traffic impacts. See Response 48-1 regarding establishment of speed limits on area roadways. Implementation of Mitigation Measure MM 4.3-1 in the DEIR proposes to widen the roadway to current County design standards although Response 1-1 provides further comment on that proposal.

In response to 6), see Section 4.12, Hazards and Hazardous Materials, in the DEIR for information on dioxins disposed of on the project site. Appendices 4.12-1 through 4.12-4 of the DEIR also provide comprehensive data testing and results on the subject. For a brief overview, please see Responses M-1 and M-2 (RWQCB) for more information. As noted in the DEIR, Section 4.12, an air toxics evaluation was conducted to estimate the potential non-cancer and cancer health risks associated with exposure to dioxin and furans that may become airborne during future quarry operations in Phase 3 of the proposed project. The Office of Environmental Health Hazard Assessment (OEHHA) guidelines for estimating potential exposure to chemical emissions were used to assess the potential human exposure to airborne chemicals from a variety of exposure pathways. The toxicity, exposure and risk assessment levels were all found below the levels that typically require emission controls by the California Air District. See Response 24-1 for more information regarding dust and fumes.

In response to 7), please see Section 3.0, Revisions to the DEIR in the FEIR document. Under the "Alternatives" section, revisions have been made that discuss restricted hours of operation related to school aged children and school bus operations. Please see Section 4.3, Transportation and Circulation of the DEIR for a complete description of traffic impacts and future roadway improvements anticipated within the Cottonwood area.

Response 92-2: See Response 45-2 regarding trip generation for the proposed project. Please refer to Responses M-1 and M-2 in reference to the dioxin testing. Although there are several noise and air quality impacts that are recognized as being significant, the claim that children and elderly will not be able to safely go outdoors, or that people will not be able to open their windows due to pollutants and noise is exaggerated and unsubstantiated.

Letter 93

September, 29, 2006

Bill Walker, Senior Planner
Shasta County Dept. of Resource Management, Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001

RE: Comments on the Draft EIR for the Shasta Ranch Mining and Reclamation Plan

Dear Mr. Walker,

This project is very controversial in our neighborhood. In general, I think what is very disappointing is that, thus far, the planning process has not been used by staff to spread information and help to eliminate the concerns and fears shared by the residents near the proposed project. Community meetings that started out as honest fact-finding missions for the purpose of giving input to the project and improving the project have degenerated into snide comments about County staff and a total mistrust of any analyst working on the report. There are a group of people now fully planted in the idea that they need to stop this project.

After reading portions of the draft EIR for the proposed gravel plant, my two remaining primary concerns regarding environmental impacts of the proposed project are traffic hazards and dioxin/furan exposure.

Unavoidable and Significant Impacts

The Executive Summary should have a section added entitled "Significant and Unavoidable Impacts" wherein this information is given top status. This required section is instead buried in "Other Impacts." It should also be highlighted as it's own sub-section in Section 4.0. **93-1**

Traffic

Staff acknowledges that Balls Ferry Road is unsafe for the mix of traffic on page 4.3-34, under the impacts to roadways discussion. This information should be provided instead in the Access, Design and Parking section where a threshold of significance can be used as a basis for finding a significant impact by the project when it causes a substantial increase in hazards due to incompatible uses. This would provide the opening needed for further analyses of this potential impact. While Balls Ferry Road is already unsafe for use by any means other than in a vehicle, the gravel trucks will excacerbate this situation. This issue needs to be discussed fully, as it is the primary traffic problem. For example, apparently staff considered the mitigation measure of restricting truck traffic during the school bus routes in the morning. I know I read briefly about this somewhere, but I cannot find it again, now. I don't know why this mitigation was dropped; however, I feel strongly that it should be discussed in the report. Perhaps it could be modified to apply only during foggy mornings. **93-2**

Letter 93 Continued

Another reason why I think it is important to move this discussion to the section where it has an applicable threshold of significance, is because the existing road system, as measured by level of service, is adequate currently, with the project and cumulatively. The mitigation offered to address a concern about safety stated as an opinion of the traffic engineer is the widening of Balls Ferry Road to meet current standards (60 feet?). The deeded easement along our portion of Balls Ferry is in several pieces and is primarily 25 and 27 feet in width, and one portion of 50-foot width. If this is typical along the travel route of the gravel trucks, does this fact make the mitigation measure infeasible? If challenged, I want the County and project applicant to be responsible to an impact on safety, rather than level of service. **93-3**

Moreover, I would like to see a change to the design of Balls Ferry Road that would make this road safe to utilize by foot, bike, horse, etc. Rather than adding shoulders, I want staff to consider a separated path for non-vehicle users and keep the road narrower to help slow down traffic. Wide shoulders on either side of the road are just going to encourage drivers to continue breaking the speed limit and justify within themselves that they are the most important users of the road. We get the full range of driver attitudes when we stop traffic on Balls Ferry Road in order for our cows to cross over. If a full analysis on the safety issues of Balls Ferry Road and impacts by the project were completed and presented to the public with input from them, this community would be in a position to support the widening of Balls Ferry Road. **93-4**

I have a few other comments on this section.

- Table 4.3-9 states that the total daily trips from the project is 168. Current average daily traffic volumes given in Figure 4.3-5 for the corner of Balls Ferry Road where Ash Creek Road comes in (the corner that we happen to live on) is 370. Baseline plus project figures increase this to 494. The same comparison for Balls Ferry Road section going toward Deschutes goes from 730 to 1030. These are the only two directions given in the figures for the trucks to have taken. The increase with the project is a total of 424. Why is this number greater than the 168 trips generated by the project? **93-5**
- The road segments are split up such that, in Cottonwood, the trucks have the option of Fourth, First or around the back of town to Walnut, then Front and then onto Main. It is presented such that if the truck does not go down Fourth or First streets, it is added into the Main Street traffic count. So, when looking at the impact, the addition of trucks to Main Street seems quite small. However, the addition of the trucks to Walnut as it passes a very busy road section in front of the post office, may be significant. **93-6**

Dioxins and Furans

I have a short comment that I don't want to get lost in my longer comment below. The primary sludge landfill on the site should be delineated and fenced off to ensure that the soil is not disturbed. **93-7**

The main problem I have with this section of the report is that I cannot draw a conclusion for myself that it is safe to disturb the soil on the subject property. I cannot trust that the testing completed accurately portrays the conditions throughout the

Letter 93 Continued

extraction area, because the report has not explained why it is reasonable or even expected to have found non-detect or very low levels of these toxins in the soil on the site. It is not clear when effluent was spread on the site in the locations planned for extraction. It is not stated what the estimated dioxin and furan levels were in the effluent that was spread, or how much total toxins were deposited on the site. The report states that these toxins bind to soil. If these toxins were dumped on the site and they were not supposed to have left, where are they? Am I supposed to conclude that the effluent spread on the subject site contained very little dioxin or furans? The Waste Discharge Requirements order and the Fact Sheet developed by the State RWQCB state that their were significant levels of these toxins in the effluent. I don't know that I am accurately comparing these figures to the screening levels in the report, as they don't appear to be the same units. Are the figures given for the April, 1988, testing period a good measure of the levels of toxins in the effluent spread throughout the history of the site, pre-1988? Please show me why I do not have to be worried about living next to this gravel plant! I am raising children here! **93-7 cont.**

I want you to address the screening level used in the report. A study was published in "Environmental Health Perspectives,"which I think is a publication from the EPA, that showed there is no threshold effect for dioxin. At the very least, the results of the study were presented to the EPA Science Advisory Board's Dioxin Review Panel in November, 2000. I contacted World Health Organization to find out if they had considered this new study and updated their fact sheets on dioxin exposure to use this approach. They are the ones that told me that they thought the publication comes from the EPA, but they weren't sure. I haven't had time to research this any further. Are you aware of this study? What did the EPA do with the results? Since you are still using thresholds in the report, can you explain why you and the regulatory agencies are not using this information to stop using the threshold approach. Again, do I need to be worrying about this?

Sincerely,

Jessica Morris
4434 Balls Ferry Road
Cottonwood, CA 96022
530-378-0663 or 355-9942
shtkckrs@redding.net

P.S. I intended to email my comments on this project to Mr. Walker by 5 p.m. on September 29, 2006. According to Mr. Walker, the region's internet servers are down for at least the day. I cannot get a hard copy to the Cottonwood or Anderson post offices before they send their mail up to Redding. To make an extra trip to Redding with its associated inefficient use of gas and unwarranted emission of greenhouse gases is not responsible. I'm sure that you have similar concerns for our environment and will accept my comments that will be submitted as soon as the internet is operating again.

Letter 93

Jessica Morris, September 29, 2006

Response 93-1: Commenter requests that the Executive Summary have its own Section titled "Significant and Unavoidable Impacts" instead of being "buried" as "Other Impacts." Commenter's suggestion is noted. No changes were made as this is a typical format for an EIR. The County will emphasize consideration of impacts concluded to be "significant and unavoidable" as it considers findings for action on the project.

Response 93-2: The commenter states that "staff" acknowledges that Balls Ferry Road is unsafe on page 4.3-34. Actually, it is noted in the DEIR text that it is the opinion of the traffic engineer (i.e., the EIR traffic consultant) that the situation "creates a potentially unsafe roadway for the mix of traffic."

The commenter provides suggestions and states the Balls Ferry Road discussion on page 4.3-34, under the impacts to roadways discussion, should be provided in the Access, Design and Parking section to establish a threshold of significance as a basis for finding a significant impact by the project when it causes a substantial increase in hazards due to incompatible uses. The commenter also states the Balls Ferry Road is already unsafe for use by any means other than in a vehicle. In response, the EIR does identify a significant impact caused by the addition of heavy vehicles to roadway segments not designed to current County standards. The EIR also recommends that the developer improve the roadway to current County standards. See Response 1-1 for more information on this subject. No changes were made to the DEIR in response to the comment.

The commenter references that staff considered the mitigation measure of restricting truck traffic during the school bus routes in the morning and could not find this information again. The information was included in the Section 5.0, Alternatives, and has since been revised. For a complete discussion on the proposed restricted hours of operation, please refer to Alternatives in Section 3.0, Revisions to the DEIR located in the Final EIR document.

Response 93-3: The identified mitigation measure, as described in Response 1-1, is in response to the potentially unsafe condition of the roadway for the proposed mix of traffic. The mitigation measure, widening the roadway to current County standards, would mitigate this impact as design standards are created to ensure the safe and efficient transport for multiple modes of travel. However, the County may determine that it is not practical to require those improvements.

Response 93-4: The County design standards are in place to ensure the safe and efficient movement of different modes of travel. Additionally, the identified roadway cross sections would be required to allow safe and efficient movement of all modes, including trucks, on this roadway. The commenter's suggestions on roadway designs and safety attributes are noted. However, this matter is a decision that is being discussed further with the County. See Response 1-1.

Response 93-5: See Response L-3.

Response 93-6: There are 124 Passenger Car Equivalent trips per day expected to be added to these roadways on an average day, or approximately 40 truck trips per day. This level of traffic will not result in significant traffic capacity impacts to these roadways.

Response 93-7: The commenter notes the primary sludge landfill should be delineated and fenced off to ensure soils are not disturbed. In response MM 4.12.3(b) has been modified as such:

MM 4.12.3(b) Bright colored exclusionary fencing shall be placed around the primary sludge trenches (Figure 3.0-3 of the DEIR) and ~~in the setback area~~ between the stockpile trenches and Phase 3 mining pit (Figure 3.0-5 of the DEIR) to ensure the area remains undisturbed.

The Shasta Aggregates Phase 1 and Phase 2 operating areas did not receive treated effluent from the papermill; therefore, the issue regarding the release of dioxin compounds to surface soils from use of waste water for irrigation is only an issue on the proposed Phase 3 mining area. Figure 3.0-3, of the DEIR illustrates effluent material was used to irrigate crops located in the proposed Phase 3 area only.

Between 1964 to 1971 an estimated total of 38,000 tons of sludge was disposed of in the two trenches at the ranch site. From 1972 to 2002 all primary treatment sludge was disposed of at the Dersch Road Landfill or the Twin Bridges Landfill. Irrigation of effluent material was applied from 1976 to 2002 to select fields on the Shasta Ranch property. From the mid-1970's to 2002 the paper mill operated under the National Pollution Discharge Elimination System (NPDES) permit regulated by the Regional Water Quality Control Board. The NPDES required monitoring of the effluent from the wastewater treatment plant. For more information on dioxins please refer to response to comment M-1 and M-2. In addition Attachment 2 of the Final EIR provides an adequate summary of the Shasta Ranch site activities.

The commenter references the Waste Discharge Requirements Order (WDRO) and Fact Sheet by the SWRCB and notes, "the State RWQCB state that their were significant levels of these toxins in the effluent". This may be true but the commenter does not identify where this information is in the document. The commenter must also recognize this document applies to the Shasta Paper Mill Company located north of the Shasta Ranch property where actual mill operations took place and higher toxicities were identified. There is not enough information provided, therefore no further response is necessary.

Table 4.12-2, "Regulatory Screening Levels" provides two types of unit measurements (ng/kg or ppt) for soil and two types of unit measurements (pg/l or ppq) for groundwater. These units are consistent with those identified in the WDRO. The commenter does not refer to a specific table or calculation in the WDRO document therefore, no further comment is necessary.

In response to whether the testing conducted in 1988 is adequate through out the history of the site pre-1988 unfortunately, the early data collected used different laboratory procedures with higher detection limits than laboratory data collected more recently. For this reason the early data samples were not included in the recent analysis. Recent investigations using current laboratory procedures are summarized in response to comment M-2 and Attachment 2 of the Final EIR. These results are representative of baseline conditions at the ranch.

As for screening levels and thresholds used in the report all documentation was provided in the DEIR appendices including the current regulatory screening levels (See Appendix 4.12.2, page 2-6). The commenter is correct, thresholds are not provided for dioxins. Instead, preliminary remediation goals (PRG's) established by EPA Region 9 combine current human health toxicity values with standard exposure factors to estimate contaminant concentrations in environmental media (soil, air, and water) that are considered to be protective of human exposures over a lifetime. (Vestra, 2006) These human health based PRG's are the most stringent regulatory levels used to date and are updated by EPA Region 9 on a regular basis.

Letter 94

September 29, 2006

Mr. Bill Walker, Senior Planner
Shasta County Dept. of Resource Management
1855 Placer Street, Suite 103
Redding, CA 96001

Re: Permit Application 05-001 Shasta Ranch Mining, LLC

Mr. Walker,

Based on my study of the Draft EIR for the toxic gravel pit operation in southern Shasta County, I have four areas where I believe additional research and explanation needs to be done.

The first issue relates to the truck transportation volume. The use permit mentions the possibility of up to 120 round trips per day. The Omni Means preliminary study reveals that number may not be an accurate reflection of the true truck traffic volume because of additional trips that could be made by the gravel pit operator using its own corporate vehicles. In order to be fair to county residents and not allow the manipulation of the statistics and allowable truck traffic, it is incumbent upon our county personnel to demand a true truck count of what the actual traffic will be if this awful and destructive project is approved. Will you direct the compilers of the EIR to give a true count based on actual working hours without manipulating the traffic load by averaging traffic over a 24 hour period. I believe the study should also project future truck traffic volumes for the entire 30 year use permit period. **94-1**

The second issue is one of a scientific nature. Would you please find some firm or qualified professional who could determine where the toxins that have been deposited on the property have truly gone? Despite all the listed tests, how can we assured that the soil is truly safe at depths greater than 2 feet? How can we be assured that dioxins and furans will not be released into the air through the mining operations which will be operated by Shasta Ranch Mining and its successors? How can we assured that airborne dioxin and other chemicals will not be released when trucks drive through Cottonwood, Anderson and along the county's rural roadways? **94-2**

The third issue relates to a recent real estate transaction made by Shasta Ranch Estates which purchased a large adjacent parcel. The permit application is for the current 1000 acre parcel. Will Shasta Ranch be able to expand the scope of this project by moving its mining operations into the new property which abuts neighborhoods on the north side of the proposed toxic gravel pit. **94-3**

Letter 94 Continued

The fourth area relates to a trend in use permits that allows people to average sound emissions and traffic volumes over 24 hour periods and over 365 day periods that allow the permit holder to manipulate the process and which does not allow the county or other monitoring agencies to adequately enforce fairness and adherence to the parameters of the permit. What guarantees will residents have that the permittee will not average traffic volumes, hours of operation and noise emissions in order to work outside the spirit of the permit? Who will define the term peak summertime season? **94-4**

Thank you for your public stewardship,

Jeffrey L. Carl
5590 Pleasant View Drive
Anderson, CA 96007

Letter 94

Jeffrey L. Carr, September 29, 2006

Response 94-1: In response to the comments about truck traffic, Table 4.3-9, found in Section 4.3 of the DEIR, indicates the project is expected to generate 128 daily truck trips (64 round trips) and forty additional daily trips by employees (corporate vehicles, private vehicles, etc.). All of these trips are accounted for in the impact assessment. The truck trip generation estimates used in the DEIR are consistent with those referenced in the Omni-Means report. However, as described in the EIR, a passenger car equivalent of 3.0 (i.e., one truck equals three passenger vehicles) was applied to the estimated truck traffic for operations analysis (consistent with industry state of the practice). Therefore, the trucks actually account for 384 daily passenger car trips on the adjacent roadway. The trip generation information was calculated assuming full use of the site based on aggregate yield information expected on a daily and peak hour basis. Therefore, the traffic analysis is adequate and meets the CEQA requirements.

Response 94-2: See Response M for more information on dioxin testing. As noted in Section 4.12 of the DEIR, an air toxics evaluation was conducted by Geomatrix Inc. to estimate the potential non-cancer and cancer health risks associated with exposure to dioxin and furans that may become airborne during future quarry operations in Phase 3 of the proposed project. The Office of Environmental Health Hazard Assessment (OEHHA) guidelines for estimating potential exposure to chemical emissions were used to assess the potential human exposure to airborne chemicals from a variety of exposure pathways. The toxicity, exposure and risk assessment levels were all found below the levels that typically require emission controls by the California Air District. Please refer to Response 24-1 for more information.

Response 94-3: In response to the comment about adjacent property being purchased by Shasta Ranch Estates, the response is no, the current project does not include expansion of the project area as described in the DEIR. However, there is no basis in the context if this DEIR to state that the County will "never" consider an application for such use or expansion. If proposed, such applications will be subject to new and specific environmental analysis and permitting processes.

Response 94-4: In response to the comment about "averaging" sound and traffic impacts, the Shasta County Department of Management and Shasta County Air Quality Management District are the responsible agencies that would ensure that implementation of the Mitigation and Monitoring Program is adhered to. Regarding the definition of peak summertime season, there is no strict definition. It is typically the time when, due to construction activity (e.g. , road and highway work, subdivision development, etc.) the demand for aggregate is at its greatest. This is usually during the summer and fall months.

Letter 95

Shasta County Department of resource Management
Planning Division
1855 Placer Street, Suit 103
Redding, Ca 96001-1759

September 29, 2006

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

Dear Mr. Walker,

My name is Donna Pratt. My husband Gerald and I bought a home on Haller Lane ten years ago. My husband is a truck driver and wanted to live where he wouldn't hear traffic noise. It is peaceful and beautiful here. John and Laura Schoelkopf are our neighbors. Laura has reiterated some of the conversation she had with you regarding our health safety. Although you gave her some reassurance about this Shasta Ranch project. I would like to address some concerns: One the conversation of agricultural land, two the air quality and three, the noise and traffic.

First, Land Use: The three phases, what provisions is there to monitor the impact a project this size has on the environment? At what specific points during a phase is the Department scheduled to reassess this project to check for unforeseen excess impact on the environment. What assurance is there that a phase will be reclaimed in a timely and proper manner? Before phase two is allowed to proceed what is to happen with phase one? In the event that this properly is sold is there a written stipulation that the buyer assumes responsibility for all written and verbal agreements made by Tullis Inc. or by his representations regarding and all that pertains to it. **95-1**

Second, Air Quality: The report states emissions would be in excess of acceptable thresholds. The fact is stated time and time again. The North Valley is unique in that we have mountains on the west, north and east. We have prevailing winds from the south. Most of the valleys air pollution is trapped here, even some days, air as far away as the Bay Area is trapped here. The reports state the emissions would exacerbate the existing exceedance of state ambient air quality standards. The winds and mountains we have no control over. What progress and growth happens in Shasta County we do. To add to the exceedance of the air quality standards appears to me to be against the law. **95-2**

We are dependant upon recreation in Shasta County for a major revenue source. Air quality is our valuable asset. It will affect our other assets, the lakes and rivers. The standard levels are established by law for the welfare of the community as a whole.

Third, Noise and Traffic Excesses: People who buy homes in rural areas forfeit certain benefits of city living; my phone service has static, most of the time I can not get on-line, our commute time is longer and costs more, our roads cause more wear and tear on our vehicles-especially the private roads. The emergency response time is greater, fire **95-3**

Letter 95 Continued

hydrants are not close by, our water and gas are not plumbed in from public utilities and when the power lines are taken out by severe weather we wait longer for our service to be restored. We choose some inconveniences for the benefits of a quiet peaceful living environment-no noise, no traffic. **95-3 cont.**

Now I ask you, what legal entitlement does one "for profit company" have to our reasonable expectations of quality of life that the county has mandated for us by the laws, regulations, ordinances and standards it has set in place to secure our safety, our quality of life and our personal rights to health? By what legal authority can the county knowingly allow anyone or one company to willfully and knowingly exceed the law on so many points as to be detrimental and even predictably harmful to its citizens? If this quality of life is taken away from the citizens in this area what restitution will compensate them for their loss? **95-4**

Thank you for you attention
Respectfully,

Donna Pratt

Letter 95

Donna Pratt

Response 95-1: All mine operators are required by law to comply with the Surface Mining and Reclamation Act (SMARA) of 1975 (as amended). SMARA was enacted to support production and conservation of California's mineral resources and assure reclamation of mined lands. SMARA is administered by the lead agency, Department of Conservation Office of Mine Reclamation, California Geological Survey, and the State Mining and Geology Board. Under SMARA, there are specific regulatory definitions and laws that set standards and protocols for the reclamation (clean-up and productive use) of mined lands in order to allow a mine operator to mine. For a complete description of the reclamation plan, see Appendix 3.0-3, Shasta Ranch Mining and Reclamation Plan of the FEIR. The Shasta County Planning Division is the responsible agency for conducting annual inspections and enforcement as required under the SMARA and delegated by the Office of Mine Reclamation. It is the Mine Operator's responsibility to provide the annual report and fees to the Office of Mine Reclamation in order for the County to maintain annual inspections.

The Planning Division costs of monitoring and inspection are charged to the gravel operator by fees established under the County Surface Mining and Reclamation Act regulatory program. Other County agencies may also collect monitoring and inspection fees. Non-compliance of these requirements could lead to revocation of the operator's permit to operate.

Response 95-2: The commenter is correct. The findings determined in the Air Quality Section 4.4 do exceed the County's local air quality standards. The DEIR identifies the impacts and has provided mitigation measures to reduce the level of significance. However, the impact still exceeds the local air quality standards and will be significant and unavoidable. The significant and unavoidable impacts described in Section 4.4 would require the County to make a statement of overriding considerations for approval of the project. It may be noted, however, that although the results of the air quality impact are, in some cases, statistically significant, the claim that such impacts would adversely affect the County's recreation resources and related economic values is not supported or substantiated with any information.

Response 95-3: The comment addresses the sacrifices of living in a rural area and the desire for limited noise and traffic in rural areas. This comment is noted.

Response 95-4: The commenter's concerns are noted. The following response is provided: CEQA Guideline section 15201 states, "Each public agency (Shasta County) must include provisions in its CEQA procedures for wide public involvement, both formal and informal, to encourage the public to react to environmental issues related to the agency's proposed projects. CEQA's main objectives are to disclose to decision makers and the public the significant environmental effects of proposed activities and to require agencies to avoid or reduce the environmental effects by implementing feasible alternatives or mitigation measures. CEQA provides ample opportunities for members of the public to participate in the environmental review process. These opportunities include

public participation through scoping (Guidelines Sec. 15083), public notice and public review of CEQA documents (Guidelines secs. 15072, 15087), and the public comments in Final EIR's (Guidelines sec. 15088). CEQA has provisions by which a County can make a Statement of Overriding Considerations. After considering the FEIR, the Lead Agency must not approve the project if the project will have a significant effect on the environment after imposition of feasible mitigation measures, unless the Lead Agency finds that the benefits of the project outweight the unavoidable adverse environmental effects. Guidelines Secs. 15092, 15096(h). However, when approving a project with unavoidable significant environmental effects, the Lead Agency is required by CEQA to prepare a Statement of Overriding Considerations. The Statement of Overriding Considerations is a written statement explaining why the agency is willing to accept each significant effect. In this way, CEQA requires the decision makers to balance the benefits of a proposed project against unavoidable environmental risks in determining whether to approve the project. The statement sets forth the specific overriding social, economic, or other beneficial project aspects that support the agency's decision.

The commenter does not raise any new environmental issues. Therefore, no further response is necessary.

Letter 96

Unger
4773 Pheasant Dr.
Anderson, CA 96007

Bill Walker, Sr. Planner
Shasta County Dept. of Resource Management,
Planning Division,
1855 Placer St., Suite 103
Redding, CA 96001

29 September 2006

Dear Mr. Walker,

This letter is in response to the proposed Shasta Ranch Mining and Reclamation Plan Project (SRMRPP). I have many concerns with this project and will voice a few of them in this letter. My references to the Tullis opinion come from an interview with the Valley Post printed in the Record Searchlight. My references to the EIR come from the public notice and references to the EIR. I have not been able to access the EIR online at the address given in the notice.

One concern of my family is the increase of traffic on Balls Ferry Rd. This street is already incredibly dangerous for pedestrians and bicycles. I have tried riding my bike to work. There is little room for a car to pass a bike without crossing the center. Even with 2 or 3 added feet on each side, there would not be room for a truck to pass a pedestrian or bike without either the truck crossing the center, the bike or pedestrian leaving the pavement, or the truck or its mirrors hitting the person. Even though SRMRPP proposes starting truck traffic after morning school buses, they would still have to share the road with afternoon students and buses. Tullis referred to ideally keeping the trucks to 60 trips daily and then said that would be about 1 truck every half hour. (30 hour days?) This is not an insignificant number of trucks. If they run from 8am to 8 pm, it would still be a truck at least every 12 minutes. We live in a quiet, semi-rural area. In my opinion, it's one of the prettiest areas in the county. We have irrigation available, and many "family farms". Most of us who have moved to this area moved here because of the quiet, rural setting. (I moved to this area 28 years ago.) This gravel plant ends that scenario. The noise, both from the trucks and from the actual plant, would carry intensively throughout the low-lying area. **96-1**

Another great concern of mine is the reduction of air quality. This is a low-lying area. We have frost before other areas because the cold sinks and settles here. We have a low-lying fog many mornings. The emissions from the trucks and from the plant machinery, as well as the dust, will not disperse. It will continue to increase in this area. The respirable particulate matter will increase problems for many people in this area. I have asthsma, and I dread having to breathe more poor quality air. We already have some days that make breathing more difficult, because of agriculture spraying and harvesting. **96-2**

Letter 96 Continued

Unger p.2

With this project, every working day will put more matter in the air and make asthma worse.

I am concerned about water quality. We all have wells in this area. If the water quality is damaged we are all affected. Tullis refers to the issue of dioxins as complicated. It is. How can we put so many people at risk with potential pollutants that have such a large negative effect? **96-3**

Although I am distressed on all levels about this project (not the least of which is the fact that I am trying to make my property current for permits and am paying fines for not being within new (since 1982) building standards for agricultural areas and this company can come and destroy that agricultural ambience), the last issue I will address in this letter is the aesthetical impact this project will have. I have seen air photos of strip mines and gravel plants. Both are great scars upon the earth. This company will be taking land that has been agricultural (even when Simpson was dumping waste, they claimed it would be agricultural land, and that the waste was fertilizer), and making a wasteland of it, including waste ponds that fill the holes dug, empty space of churned land, not really usable for anything, and some agricultural land. **96-4**

This area is agricultural. We are all abiding by the rules imposed on us by the county. We have chosen an agricultural area and tolerate agricultural noises, airborne particulate matter, and other agricultural inconveniences because they are expected in an agricultural area. Please preserve this quality of life for those who live in this part of Shasta County, all of us. Please send the gravel company to look in another area, less populated and less agricultural. Please protect this agricultural lifestyle for those of us who cherish it.

Sincerely,

Nancy Unger

Letter 96

Nancy Unger, September 29, 2006

Response 96-1: Please see Response 1-1 regarding the roadway width of Balls Ferry Road. See Response 45-2 regarding likely frequency of trucks on the roadway. Noise impacts were evaluated in the DEIR. (See Section 4.7, Noise). The DEIR, in addressing Impact 4.7.7, concluded that increases in traffic noise levels along some affected roadway segments will be significant and unavoidable.

Response 96-2: See Response 24-1.

Response 96-3: The commenter is concerned about their water quality being contaminated from dioxins. Please see Responses 13-1 and S-2 for more information regarding dioxin and furan toxin results. Under Section 4.12 of the Draft EIR, Impact 4.12-2 includes a complete discussion on the potential transport of dioxin and furan contamination of neighboring private drinking water wells. In result, after mitigation the impact is reduced to less than significant.

Response 96-4: The commenter is concerned about the quality of life and aesthetics of their surrounding community. Please refer to Response 95-1 for more information on the requirements under the California Surface Mining and Reclamation Act (SMARA) In response to agricultural lands, see the revised Impact 4.2.1 in Section 3.0, Revisions to the DEIR, contained in the FEIR, under *Land Use* for further discussion on the impacts of converting agricultural lands. Based on the County's existing zoning designation for the property, "Agricultural and Mineral Resource Extraction" illustrates that the County previously identified and accepted the potential loss of agricultural lands during mineral resource extraction activities. In result, the Shasta County General Plan and CEQA review already addressed and accepted the mutually exclusive uses. Commenter states they are opposed to the project.

Letter 97

Bill Walker

From:	liz@sacrivertrust.org
Sent:	Friday, September 29, 2006 4:09 PM
To:	Bill Walker
Cc:	Scott Ferris; Nora Todenhagen (E-mail); Kate Foley; John Merz (E-mail); John Burge (E-mail); Jim Dwyer (E-mail); Gary Shook; Eric Ginney; Denny Latimer (E-mail); Debbie Chakarun; Debbie Work Chakarun
Subject:	Shasta Ranch Mining Project DEIR

Dear Mr. Walker,

The Sacramento River Preservation Trust (Trust) has reviewed the Draft Environmental Impact Report (DEIR) for the proposed Shasta Ranch Mining and Reclamation Plan Project (Project) and would like to submit the following comments:

1) In the Executive Summary (pages 2.0 - 24 thru 2.0 - 34) the various species identified are going to have studies and related activities performed by biologist(s) retained by the applicant (in the case of the purple martins, etc., bats and ringtails, it is not identified who will be doing the retaining, so clarification is hereby requested). The Trust strongly believes that such mitigation monitoring activity needs to be performed by independent third parties, under contract to Shasta County and with the costs of such monitoring paid for by the applicant. Otherwise, a potential for a conflict of interest exists, both financially and ethically. **97-1**
The Trust hereby requests that this contractual relationship be changed so that such conflicts do not arise.

2) The spur dike (Figure 3.0 - 9) is a bad idea for lots of reasons, not the least of which is that it will be a dam-like structure running at a 90 degree angle to the flow of the Sacramento River. This will have a number of impacts, especially to those properties downstream of the dike. **97-2**

3) The storage area (Figure 3.0 - 5) is located in the 100-year floodplain (as is the majority of the Project). The potential for inundation is practically guaranteed. The Trust believes that no structures of any type should be allowed within the 100-year floodplain and that the storage area should be relocated. **97-3**

4) The Trust would like a more detailed analysis of the alternatives considered, including a description of all current gravel mining operations in both Shasta and Tehama Counties. **97-4**

5) The Trust finds the Project ill-advised and contrary to a number of significant efforts to preserve the natural values of the Sacramento River, including the protection of one of the most valuable salmon habitats on the West Coast. As a consequence, the Trust hereby incorporates by reference the comments of the California Department of Fish and Game (as provided to you in letters dated May 26, 2005, November 29, 2005, and September 26, 2006) concerning this Project. Said comments are totally supported by the Trust and cast into question the entire rational for this Project (outside of making money, of course). **97-5**

6) Though the DEIR indicated that a public hearing would be held prior to the close of comments, this did not happen. The Trust believes that this decision was a mistake and that such action is not conducive to thorough and complete public review. Therefore, the Trust hereby requests that the public comment period be extended until such time as a public hearing before the Shasta County Planning Commission can be held on the DEIR. **97-6**

The Trust appreciates having had the opportunity to comment on this Project and hereby requests that it be notified of any and all future actions concerning the Project. All correspondence should be sent to my attention c/o SRPT, P.O. Box 5366 Chico, CA 95927, jmerz@sacrivertrust.org

John Merz
President

1

Letter 97

John Merz, September 29, 2006

Response 97-1: Comment noted. The commenter asserts that mitigation monitoring efforts should be done by an independent third party under contract to Shasta County. However, standard practice is for the County to require the applicant to be responsible for obtaining the qualified specialists necessary to successfully implement the adopted mitigation measures. All public documents or studies are available for public review and challenge.

Response 97-2: In response, the spur dike will create a barrier that prevents excess river flow that spills into the site from continuing southward during a major flood and will cause this excess flow to be redirected back to the river. Downstream of the site, the Sacramento River may still exceed its banks and inundate adjacent lands during a major flood after project implementation, but in essentially the same manner as it would for the pre-project condition. See Impact 4.9.3 of the DEIR for further discussion and mitigation to reduce adverse impacts.

Response 97-3: The commenter's concerns related to structures being located in the 100-year flood plain are noted. The proposed project is in compliance with the Shasta County Zoning Ordinance 17.22.030, Designated Floodway District.

Response 97-4: Please refer to Section 3.0, Revisions to the DEIR in the FEIR document for revisions to Alternatives. See Attachment 6 in the FEIR for a list of Shasta County Surface Mining Operations dated December 2005. The commenter does not substantiate the need to include a description of all current gravel mining operations in Tehama County.

Response 97-5: The commenter expresses the opinion that the project is ill-advised and incorporates by reference the comments of the California Department of Fish and Game. Please refer to responses to comments S-1 through S-6.

Response 97-6: Neither the California Environmental Quality Act nor Shasta County policy requires a public hearing during review of a Draft EIR. A public hearing will be scheduled for the Planning Commission in consideration of the project permits. The public may comment on environmental impacts at that hearing.

09/29/2006 15:36 FAX 002
VESTRA Resources, Inc.
962 Maraglia Street
Redding, CA 96002-1012
Telephone: (530) 223-2585
info@vestra.com
www.vestra.com
FAX (530) 223-1145 / 223-6985

September 29, 2006

Letter 98

70542

Bill Walker
County of Shasta
Department of Resource Management
1855 Placer Street
Redding, California 96001

Via Facsimile
(530) 245-6468

Re: Comments
Shasta Ranch Quarry
Draft Environmental Impact Report

Dear Mr. Walker:

Tullis Inc., proponent for the above project, has reviewed the Draft Environmental Impact Report and provides the following comments for consideration:

LAND USE

Comment LU.1 Relating to Impact 4.2.1 – Conversion of Farmlands. It should be noted that land, not currently identified as prime farmland in the vicinity of Phase I operations will, at the close of Phase I, be converted to prime farmland. This construction of new farmland is approximately 70 percent of the total farmland to be removed from production in Phase II and III, which will be converted to wetland features. Inclusion of Phase boundaries, as on Figure 4.2-1, may assist the public in the presentation of this point. **98-1**

Comment LU.2 Also, related to the conversion of farmland, it should be noted that the County's dual zoning of the property, for both Agricultural and Mineral Resources Extraction, provides that the County previously acknowledged and accepted the potential loss of agricultural land during the extraction of mineral resources. This mutually exclusive use was previously addressed AND accepted under the Shasta County General Plan and associated previous CEQA review. This loss of farmland should not need to be reconsidered or evaluated as it relates to this project.

TRANSPORTATION AND CIRCULATION

Comment C-1 Tullis Inc. also operates the Black Lane Pit, located off of Blacks Lane in Cottonwood. For the past 15 years, between 80 and 100 trucks **98-2**

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Letter 98 Continued

Bill Walker
September 29, 2006
Page 2 of 4

per day have traveled from Blacks Lane, down Main Street in Cottonwood, to Bowman Road, hence to the Tullis plant on Draper Lane. This truck traffic will cease with depletion of this resource scheduled for December 2006. This offset use is not included anywhere in the traffic analysis and will, in reality, significantly reduce traffic count numbers on Road Segments 8, 9, 10 and 11 as well as in Intersection 8. The traffic analysis should be modified to include actual planned traffic volumes, especially if the offset volumes are also under the control and management of the project proponent. **98-2 cont.**

Comment TC-2 Numerous sources continue to use approximately 120 trucks per day on Bowman Road. To reiterate: the total trucks per day estimated to leave the site at 64 and employee vehicles at 20, for a total of 84. The 64 truck trips will be distributed as follows: **98-3**

Percent	Destination	Estimated No.
32	I5 North	20
25	273 North	17
13	Olinda Road	8
25	Bowman to Draper	16
5	I5 South	3

Comment TC-3 Tullis Inc. is willing to complete negotiations with Tehama County and the City of Anderson for mitigation/improvement and pro-rata share of improvements as required. **98-4**

AIR QUALITY

Comment AC-1 Proponent feels that the air quality section over-estimated levels on NOx emissions and PM10 for the project due to: **98-5**

- The net countywide diesel emissions resulting from truck traffic will not change since the total number of trucks per day, with closure of the Black Lane Pit, does not increase. In fact, the number of trucks estimated, due to the Shasta Ranch, is less than the current truck trips from Black Lane Pit, resulting in a net positive impact.
- Proponent proposes to pave all access roads to the site, resulting in net decreases to current PM10 emissions as compared to past agricultural uses.
- Recently passed legislation requires the retrofit of diesel engines by 2010. This retrofit requirement will significantly reduce long term diesel engine emissions from the site equipment and truck trips in the short and long term. A portion of equipment being purchased for use onsite will be retrofitted to meet the 2010 requirements prior to initial installation in 2006.

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Letter 98 Continued

Bill Walker
September 29, 2006
Page 3 of 4

Comment AC-2 The Shasta Ranch resource is among the last major concrete grade aggregate resources in Shasta County. If it is not developed, aggregate for use in the County will be imported from locations out of County. The DEIR does not address the environmental impacts of a "no-project" alternative on traffic or air quality, which would be significant. **98-6**

Comment AC-3 The predicted cancer risk should be recalculated using the Black Lane truck credits, which represent the actual projected emissions increases, presenting a net decrease on a countywide basis. **98-7**

Comment AC-4 Proponent disagrees with findings 4.4-6 and 4.4-7 and suggests that the risk calculations include 2007 applicable to diesel engines. **98-8**

Comment AC-5 It should also be noted that a number of the haul route areas, projected for use under the proposed project, were used for hauling of logs and related heavy truck traffic until very recently. These past uses should be included in the baseline condition. **98-9**

GENERAL

Shasta County will face a significant shortage in concrete grade aggregate if the project is not approved. Currently six sites produce concrete quality aggregates in our area. They are:

- Clear Creek Road (Shea)
- Smith Road (Shea)
- Cottonwood Creek (Shea)
- Black Lane Pit (Tullis)
- Highway 273 (Schmitt)
- Noah Fork Aggregate (Rich)

Of these, only one, Shea on Clear Creek Road, had any significant reserves. Shea's lease at Smith Road expires in 3 years. Shea's source at Cottonwood is nearly depleted. The Tullis source at Black Lane will deplete in 2006. Schmitt's permit for their source off Highway 273 expires in 2012 but will probably deplete long before that. North Fork Aggregate has a source that contains good quality rock, but the limits on the use permit restrict the ability to harvest or supply a sufficient quantity of material as to deem the source significant. This permit expires in 7 years. RR Sand and Gravel has just received approval to begin the harvest of materials off Gas Point Road at Squiss Road. Unfortunately, the RR pit has a relatively limited supply, (about 800,000 tons) and the quality of the material is such that it could be used to produce road base, but no concrete or asphalt. **98-10**

In approximately 5 years, several small gravel operations may still continue to operate, however, the Shea facility on Clear Creek will be the only significant source remaining for concrete quality aggregates in Shasta County.

The current demand along the I-5 corridor, in Shasta County, for concrete and asphalt aggregates, is about one million tons per year. An additional one and a half million tons is consumed as road base, fill and other uses. There is a total demand of 2.5-3 million tons per year in Shasta County.

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Letter 98 Continued

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Bill Walker
September 29, 2006
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Caltrans plans to construct hundreds of millions of dollars of infrastructure improvements on I-5 and feeder highways in the next few years alone.

The DEIR understates the importance of, and need for, this gravel source and fails to address the local social and economic impacts, as well as impacts from long-distance importation of gravel in the "no-project" altetnative. **98-10 cont.**

Thank you for the opportunity to comment on this document. Please contact me with any questions at (530) 223-2585

Sincerely,

VESTRA Resources, Inc.

Wendy Johnston
Project Manager for Proponent

Cc: Lyle Tullis/Tullis Inc.

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Letter 98

Wendy Johnston, September 29, 2006

Response 98-1: In response to commenter's number L.U.1 see Response 47-1. Comment L.U.2. noted.

Response 98-2: Comment noted. Any reduction in traffic associated with closure of the Black Lane Pit would reduce traffic in that area and would potentially reduce impacts. However, the analysis, which did not assume the closure of Black Lane Pit, is considered conservative for CEQA purposes. The information noted has been incorporated into Section 3.0 of the FEIR to clarify the distribution of truck traffic along the designated haul routes.

Response 98-3: Comment is noted. The DEIR assumed an average of 64 truck round trips per day, or 128 total truck trips (64 inbound and 64 outbound). The FEIR includes a signed agreement between Tullis Inc. and Tehama County Public Works Department (referred to as Appendix 3.0-4 in the FEIR) that has been incorporated into Section 3.0, the Project Description, as opposed to a mitigation measure.

Response 98-4: See Response 98-3.

Response 98-5: Emission estimates presented in the DEIR were calculated based on emission factors recommended by the U.S. Environmental Protection Agency (EPA) and California Air Resources Board (ARB), as well as data obtained from the existing Permit to Operate issued by the Tehama County Air Pollution Control District (TCAPCD) for the Cottonwood Creek Sand and Gravel Plant. The emissions estimates include off-road equipment travel on unpaved surfaces, haul truck travel on paved and unpaved surfaces, material storage, and on-site material handling activities. As noted in the DEIR, predicted daily emissions would vary, by phase, depending on distance haul trucks would need to travel from the processing area. Estimated uncontrolled operational emissions are presented in Table 4.4-8 of the DEIR. Predicted operational emissions identified in the DEIR assume that the access roads to the site would be paved. Mitigation was included in the DEIR, however, that required paving of the access road to occur as early in the construction phase as possible to reduce emissions associated with the initial construction and installation of the processing equipment.

As noted in the DEIR, both the federal and state regulatory agencies have enacted legislation to reduce emissions from diesel-engines. The emission standards for new diesel-powered engines due to take effect in 2010 pertain to on-highway vehicles. As noted in the DEIR, a majority of the on-highway haul trucks that would be used for the transport of mined material would not be owned or operated by the project proponent. In addition, emissions from on-highway vehicles represent only a small fraction of the project's overall emissions. As a result, emissions standards due to take effect in 2010 would not be anticipated to result in a substantial reduction in project-generated emissions. For off-highway equipment, the proposed project does not specify the model years of off-highway mobile equipment to be operated on-site as

part of the proposed project and it is anticipated that a mix of model years would be operated. The emission factors used for calculation of emissions from on-site equipment were, therefore, based on current fleet averages provided by the ARB. Maximum daily operational emissions associated with the proposed project are presented in Table 4.4-8 of the DEIR. The emissions estimates presented in Table 4.4-8 of the DEIR represent maximum daily on-site emissions, assuming that reclamation, excavation, and processing activities were to occur simultaneously. The air quality analysis recognizes, however, that daily activities and associated emissions will likely vary from day to day, dependent on the specific activities conducted.

Although agricultural activities currently conducted at the project site result in intermittent emissions of NOx associated with the use of tractors for ground preparation activities, as well as emissions of PM_{10}, such activities are seasonal and do not occur on a reoccurring daily basis. However, it is recognized that some net reduction in annual emissions attributable to the proposed project could occur. However, because agricultural activities at the site are not reoccurring on a daily basis and because the County's significance threshold is based on daily emissions, rather than annual emissions, project-generated emissions presented in the DEIR do not account for possible net reductions in emissions associated with currently agricultural activities. Furthermore, in accordance with currently recommended guidance for the determination of project-related air quality impacts, project-related impacts do not take into account changes in operational characteristics of other offsite facilities that are not associated with the proposed project, such as the closure of the Black Lane gravel pit. The closure of the Black Lane gravel pit would not result in net reduction in project-related emissions, including localized impacts anticipated to occur near the proposed project site or along proposed haul routes. It is also important to reiterate that the region is currently designated nonattainment for the state ozone and PM_{10} ambient air quality standards. This condition is not anticipated to change with the closure of the Black Lane gravel pit. As a result, uncontrolled emissions attributable to the proposed project would still be anticipated to contribute to existing nonattainment conditions, with or without closure of the Black Lane gravel pit.

Mitigation measures were included in the DEIR to require the use of cleaner-burning mobile equipment owned and/or leased by the project proponent. Various options for reducing emissions (including emissions of NOx and PM_{10}) are available, which would include the use of newer model-year equipment. The proposed mitigation measures incorporated into the DEIR include all measures determined by the AQMD to be feasible and practical for the reduction of project-generated emissions, as well as measures intended to ensure compliance with existing regulatory requirements. Operational emissions attributable to the proposed project, with implementation of the recommended mitigation measures are summarized in Table 4.4-9 of the DEIR. Calculated controlled emissions presented in Table 4.4-9 include anticipated reductions in emissions attributable to the use of cleaner-burning mobile equipment.

In addition and in accordance with AQMD permitting requirements and Shasta County General Plan Policy AQ-2e, emissions offsets would be required

for emissions in excess of 25 tons/year (137 lbs/day equivalent). Emissions offsets would be required prior to issuance of a permit to operate from the AQMD. Based on discussions with the AQMD, emission offsets may be obtained by purchase of emission credits or through implementation of AQMD-approved emission reduction measures and credits. The purchase of emissions offsets or implementation of emission reduction measures, such as the paving of unpaved road surfaces or the retrofit/repower of diesel-powered engines, would offset the project's adverse impact to regional air quality conditions. Final determination pertaining to allowable emissions credits and reductions to be applied will be determined by the AQMD.

Response 98-6: The hauling of material from locations located out of the County would result in an increase in regional emissions attributable to on-highway trucks used to haul the material. However, as noted in the DEIR, on-highway vehicles are subject to stricter emission controls than off-highway equipment. By comparison and as noted in the DEIR, on-highway vehicles account for only a small percentage of the overall emissions attributable to the proposed project. For this reason, and given the amount of project-related emissions attributable to off-highway sources, it is equally conceivable that the no-project condition could result in a net decrease in regional emissions. However, given that locations and haul distances required to supply future aggregate demands within the County are unknown, a comparative evaluation of no-project verses project conditions, in terms of regional emissions, cannot be conducted at this time and would be considered speculative. The no-project condition would, however, result in fewer localized air quality impacts to receptors located near the project site and along proposed haul routes.

Response 98-7: As noted in the DEIR and in addition to regional air quality impacts, the proposed project would contribute to localized air quality impacts, including increased concentrations of fugitive dust and toxic air contaminants (i.e., diesel-exhaust particulate matter). Whereas increases in ozone precursor pollutants (i.e., ROG and NOx) are evaluated based on a project' contribution to regional air quality conditions, localized pollutant impacts are evaluated based on predicted concentrations at nearby receptors. For example, even if the proposed project would result in an overall decrease in county-wide haul truck traffic, localized impacts due to increases in concentrations of diesel-exhaust emissions along specific haul routes may still occur. For this reason, emissions of toxic air contaminants are evaluated based on the project's potential for contribution to localized concentrations at nearby receptors, rather than on a regional or countywide basis.

Localized concentrations at nearby receptors are calculated using computerized models that take into account the dispersion of pollutants from on-site and offsite emissions sources under varying meteorological conditions to derive at predicted concentrations at defined receptor locations. For the proposed project, predicted concentrations attributable to project-related emission sources were calculated at receptors located near the project site, as well as receptors located along proposed haul routes. Predicted concentrations at identified receptor locations were then used to calculate predicted incremental increases in cancer risk attributable to the proposed

project. As noted in the DEIR, the project's contribution to localized concentrations of diesel-exhaust PM along area roadways and near the project site were considered significant. Implementation of the proposed mitigation measures, as well as compliance with ARB's ongoing diesel exhaust emissions reduction programs and rules would result in substantial reductions in diesel-exhaust emissions. Predicted cancer risks, taking into account anticipated reductions in diesel-exhaust PM, were calculated and are presented in Table 4.4-13 of the DEIR. However, as noted in Table 4.4-13, even after taking into account future reductions in diesel-exhaust PM, resultant impacts to nearby receptors would still be anticipated to exceed applicable standards. As a result, the increased exposure of nearby receptors to localized concentrations of diesel-exhaust PM were considered significant and unavoidable.

Response 98-8: Comment noted. The proposed project does not specify the model years of mobile equipment to be operated on-site as part of the proposed project. As a result, mitigation measures were included in the DEIR to require the project to implement measures that would promote the use of cleaner-burning mobile equipment. The proposed mitigation measures incorporated into the DEIR include all measures determined by the AQMD to be feasible and practical for the reduction of project-generated emissions, as well as measures intended to ensure compliance with existing regulatory requirements. Various options for reducing emissions are available, which would include the use of newer model-year equipment.

Response 98-9: Comment noted. However, prior use of area roadways for the hauling of logs are no longer relevant to existing conditions or reasonably foreseeable conditions anticipated to occur at the time the proposed project would be implemented. As a result, these activities have not been included in baseline condition.

Response 98-10: The increased demand and shortage for aggregate in the Shasta County region is noted. The commenter states the DEIR understates the importance and need for the gravel resource. In addition the document fails to address local social and economic impacts including the impacts associated with long distance importation in the "No Project" Alternative.

In response, CEQA Section 15131(a) states, "*economic and social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic social changes. The intermediate economic or social changed need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on the physical changes*".

As the proposed project will not divide a community in such a manner that may lead to blight or otherwise have a significant effect on the physical environment, the project is not required to address the economic impacts under CEQA. The commenter may refer to Appendix 4.8-1, Mining and Classification Study of the DEIR, and the Shasta County General Plan Mineral

Resources Element for information on social economic impacts. Information provided to the County outside the scope of the EIR may be considered as "findings of fact" to support the County's decision for a statement of overriding considerations.

Letter 99

GREENACTION
For Health & Environmental Justice

September 29, 2006

Comments on Draft EIR for proposed Shasta Ranch Gravel Pit (Permit # 05-101)
Conditional Use Permit Application

Bill Walker
Senior Planner
Shasta County Department of Resource Management
Planning Division

Note: These comments have been faxed to Shasta County Department of Resource Management per instructions from Dawn Ducket to Karl Krupp in a phone conversation on September 29, 2006.

Greenaction for Health and Environmental Justice respectfully submits the following comments on the Draft Environmental Impact Report for the proposed Shasta Ranch Gravel Pit project.

We submit these comments on behalf of our constituents who reside in the immediate vicinity of the project and others who are Native Wintu peoples who have significant cultural, spiritual and archaeological sites on the property of the proposed project.

Our review of the DEIR confirms our belief that the proposed project cannot be approved due to the significant negative environmental, ecosystem, health and cultural impacts that would result from the project if it was approved. **99-1**

These significant negative impacts cannot be mitigated, and are so severe the project simply cannot be approved.

Native cultural and archaeological sites: It is an undisputed fact that there are at a minimum several important ancient, prehistoric cultural and archaeological sites present at the site. The Redding Rancheria has expressed concern about these sites and expressed opposition to the project due to the serious negative impact the proposed project would have on these sites. Greenaction joins the Redding Rancheria in raising these concerns and opposition to the proposed project.

These sites include burials, and probably include a village site. Any project activity – whether directly and physically damaging these sites or taking place near these sites – would have a significant and unacceptable impact on these sites. Even if activity related to the proposed project did not physically damage any of these sites (although we believe the danger of physical damage and destruction of these

One Hallidie Plaza, Suite 760, San Francisco, CA 94102 ▪ Telephone: 415-248-5010 · Fax: 415-248-5011
www.greenaction.org greenaction@greenaction.org

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Letter 99 Continued

sites exists) the mere fact of allowing industrial activity in such close proximity to burial sites would constitute a desecration of the burials and of the spiritual well-being of these peoples and their descendants among Native peoples who reside today in the area.

Too often non-Native government agencies fail to understand – or care – about the spiritual or cultural impacts of such destruction or desecration of burial sites. Protection of such sites is not just a moral responsibility, but indeed destruction and desecration of such sites would constitute a violation of the civil rights of the Native peoples of the area. This is especially relevant for the proposed project as we understand that recently a large number of burials were destroyed during a development project approved by the County that took place on Knighton Road in Anderson. If the county allows more desecration of Indian burial sites despite being informed about their cultural and spiritual significance we believe this would constitute a clear and bold violation of Title VI of the United States Civil Rights Act of 1964. Title VI and its implementing regulations prohibit entities that receive federal funding (and we assume Shasta County receives federal funding) from taking action that would have a discriminatory or disproportionate impact on low-income and people of color, such as the tribal members of Redding Rancheria and other Native peoples in the area. **99-1 cont.**

The Draft EIR should have evaluated the full cultural, archaeological and spiritual impacts of the project as described above, and must also evaluate the impacts of a violation of the U.S. Civil Rights Act. It must be considered likely that a formal administrative complaint alleging that the county violated Title VI of the Civil Rights Act will be filed if this project is approved by the county, and the impacts of such civil rights violations and complaints must be fully evaluated.

Toxic Contamination: We understand that the proposed project site is located on a site that had dioxin and other toxic contamination from a former paper mill, and activity associated with the proposed project has the potential to disturb contaminants that may still be present. Even remediated sites can leave toxic residues that were not discovered earlier, and this has the potential to impact the project site, adjacent waterway, human health, fish and other wildlife. Dioxin is one of the most toxic substances known to science, and is harmful in minute levels of exposure to both humans and wildlife. Dioxin exposure in even small doses can cause cancer, reproductive, developmental, immunological and other ill health effects. **99-2**

The buffer zone between the proposed gravel pit and the Sacramento River is inadequate, and the project thus poses a serious threat to the River and fish including endangered salmon that pass this stretch of river to spawning grounds.

Air quality will be affected by the dust and diesel fumes of the enormous number of trucks that will potentially travel the two lane county roads, near homes. The fumes from the trucks will contain both particulate and toxic emissions, posing a health risk to residents. **99-3**

Traffic will be severely impacted by the large number of trucks associated with the proposed project, especially due to the two lane county roads that would be used.

The DEIR does recognize that there will be other very significant impacts of the proposed project, and these are additional reasons the project cannot be approved.

Letter 99 Continued

Significant and unavoidable impacts include excessive emissions of NOx and PM10 on nearby sensitive receptors, diesel exhaust with emissions that pose cancer risks and can cause respiratory problems, excessive mobile and fugitive source emissions, excessive noise, and cumulative impacts that are not properly quantified. **99-3 cont.**

For all of the above reasons, we believe this project poses an unacceptable severe threat to public health, the environment, local quality of life, Native culturally significant sites, waterways including the Sacramento River, wildlife including endangered salmon. These impacts cannot be mitigated and are so significant the permit application for the project must be denied.

Please notify us of any further opportunities for public comment on this project. Notices should be sent to:

Greenaction for Health and Environmental Justice
One Hallidie Plaza, Suite 760
San Francisco, CA 94102

Sincerely,

Bradley Angel

Bradley Angel
Executive Director

Letter 99

Bradley Angel, September 29, 2006

Response 99-1: The commenter expresses opposition to the project, claiming the DEIR should have more thoroughly evaluated the cultural, archeological, and spiritual impacts the project would have, in addition to an alleged violation of Title VI the Civil Rights Act of 1964. The claim that the project would knowingly "desecrate" burial sites is unsubstantiated. See response to comment Letters D and F.

Response 99-2: See responses to comments M-1, M-2, S-1, S-2, M-1, 35-2, and 86-15. The commenter also expresses their concerns with dust, fumes, and traffic. As noted in the Draft EIR, Section 4.12, an air toxics evaluation was conducted to estimate the potential non-cancer and cancer health risks associated with exposure to dioxin and furans that may become airborne during future quarry operations in Phase 3 of the proposed project. The Office of Environmental Health Hazard Assessment (OEHHA) guidelines for estimating potential exposure to chemical emissions were used to assess the potential human exposure to airborne chemicals from a variety of exposure pathways. The toxicity, exposure and risk assessment levels were all found below the levels that typically require emission controls by the California Air District. See Response 24-1 for more information regarding dust and fumes associated with traffic.

Response 99-3: The commenter states traffic will have a significant impact and will be subjected to an overwhelming amount of toxins and fumes from so many trucks on a two-lane road. See Response 24-1 for more information regarding dust and fumes related to diesel exhaust. Please refer to Section 4.3, Transportation and Circulation of the DEIR, and Response 1-1 for traffic impacts.

Letter 100

Date: Sept. 15, 2006

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: **100-1**

Fish: This project is dangerously close to the Sacramento River. No amount of levee-building would adequately protect fish, including endangered species of salmon. From the possible seepage of toxic materials or keep them from being trapped should high water come. Also, salmon beds would be in danger of being silted over during gravel processing.

Additional Memo:
Fishing the Sacramento River is a highlight of our area and County. The damage that will be done from the processing procedures of this gravel pit operation, in our estimation, would be overwhelming to the fish population and their reproduction. **100-2**

Arleigh and Rosemarie Glaier
4777 Parkville Rd.
Anderson, CA 96007

cc: Shasta County Board of Supervisors

Letter 100

Arleigh and Rosemarie Oliver, September 15, 2006

Response 100-1: See responses to comments O-2, S-1, S-2, and 12-1. The fish levees will be constructed to the elevation of the 50-year flood mark. Floods exceeding this magnitude are extremely rare and have less than a 1% chance of occurring in any given year. Due in part to the relatively low velocities that would be present in the elevated floodplain areas adjacent to the river during a major flood (roughly in the range of 4 to 6 feet per second during a 100-year event, and less during lesser events), hydraulic studies performed by Hydmet, Inc. have indicated that any rise in flood levels caused by the proposed levees will be negligible. In addition, according to Mike Tucker of the National Marine Fisheries Service, the project design elements described for a 50-year flood event would provide adequate protections for listed fish, as long as they are fully implemented and maintained.

Response 100-2: See response to Fish and Game comments S-1through S-5.

Letter 101

Date: 09/29/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Widen Roads: The plan to widen Balls Ferry Road would create a disaster for many of the residents alongside. Homes, wells, and ACID ditches would be destroyed. At the same time, the widening of this road would not begin to resolve the traffic problems which would be caused by this proposed gravel project. **101-1**

HAVE ALL THE PROPERTY OWNERS WHO WILL BE LOSEING THEIR FRONT YARDS AND TREES BEEN NOTIFIED OF THE PROPOSED TRUCK ROUTE THAT WILL IMPACT THEIR PROPERTY. PRIOR NOTIFICATION TO THE EIR APPROVAL SHOULD BE REQUIRED **101-2**

ROBERT BRANNON
22463 LONE TREE RD
ANDERSON CA 96007

cc: Shasta County Board of Supervisors

Letter 101

Robert Brannon, September 29, 2006

Response 101-1: See Response 26-1 and thereby Response 1-1.

Response 101-2: It should be noted that this EIR does not portray itself as the CEQA analysis documentation for the road projects. CEQA Guideline Section 15201 states, "Each public agency (Shasta County) must include provisions in its CEQA procedures for wide public involvement, both formal and informal, to encourage the public to react to environmental issues related to the agency's proposed projects. CEQA's main objectives are to disclose to decision makers and the public the significant environmental effects of proposed activities and to require agencies to avoid or reduce the environmental effects by implementing feasible alternatives or mitigation measures. CEQA provides ample opportunities for members of the public to participate in the environmental review process. These opportunities include public participation through scoping (Guidelines Sec. 15083), public notice and public review of CEQA documents (Guidelines secs. 15072, 15087), and the public comments in Final EIR's (Guidelines sec. 15088).

Although mitigation measure MM 4.3.1 has been recommended to improve some of the involved County roadways, such a project or projects would need to be initiated by Shasta County in cooperation with the project developer.

Letter 102

Date: 9/26/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

102-1

Toxins: There is no question that dioxins and furans were dumped on this property for over 30 years. Digging up and washing gravel at this site would distribute these substances into the air and, via the plume of turbidity created from washing gravel, force these poisons into the aquifer from which a couple of hundred wells draw. Seepage from gravel washing would also end up in the river, creating a further hazard for the fish and those who consume them.

Joann Moe
21964 Whispering Waters Ln.
Anderson, CA 96007

Extend the 6" testing of soils to 20 feet or more. Take test samples from the center of sites not along the edge. Also down stream or down flow of the aqua flows.

102-2

cc: Shasta County Board of Supervisors

Letter 102

Joanne Moore, September 26, 2006

Response 102-1: See Response 15-1.

Response 102-2: The Vestra samples were taken to specifically respond to the question of dioxin in both the material to be mined and the vertical soil profile, which includes both over burden and material to be excavated. Three test pits were excavated, one in each of the proposed Mining areas (Phase 1 and Phase 2 which had never received treated effluent and in the Phase 3 area that had received treated effluent.) The issue of the possible release of dioxin compounds due to use of treated mill effluent for irrigation is only an issue on the proposed Phase 3 mining area.

Soil samples were collect at approximately 18 inches (1.5 feet) 42 inches (3.5 feet) and 96 inches (8 feet). The results included:

- The TEQ results from the Phase 1, Phase 2, and Phase 3 areas are less than the EPA residential PRG.
- At a given depth, the TEQ results in areas that did not receive mill effluent (Phase 1 and Phase 2) are an order of magnitude lower than the corresponding TEQ results in areas that received effluent (Phase 3).
- TEQ results decrease with depth. The highest concentrations are in shallow soils that will be stripped and stockpiled for rehabilitation. TEQ results in the underlying sandy gravel that will be processed for aggregate are orders of magnitude less.

In areas where effluent was applied, the highest dioxin concentration in the underlying aggregate was 0.034 ppt. In areas where effluent was not applied, the highest dioxin concentration in the underlying aggregate was 0.008 ppt. These levels are at least two orders of magnitude less than the EPA residential PRG 0f 3.9 ppt, and the average near-surface background concentrations of 4.1 ppt observed in urban areas (Washington DOE 1999). Background dioxin concentrations are generally higher near the surface because the primary source of background dioxin is the airborne deposition from combustion sources (EPA 1999) including stack emissions, forest fires and volcanoes.

Letter 103

Date:

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Widen Roads: The plan to widen Balls Ferry Road would create a disaster for many of the residents alongside. Homes, wells, and ACID ditches would be destroyed. At the same time, the widening of this road would not begin to resolve the traffic problems which would be caused by this proposed gravel project. **103-1**

No time frame has been mentioned for doing this.
Balls Ferry should never be made a truck route.

Patsy Dunn
22359 Lone Tree Rd
Anderson, CA. 96007

cc: Shasta County Board of Supervisors

Letter 103

Patsy Dunn

Response 103-1: See Response 26-1 and thereby, Response 1-1. The mitigation to widen the roads will not necessarily affect traffic flow. The recommended mitigation measure to widen the roadways was to obtain consistency with the standards of the County's General Plan and for improved safety. The capacity analysis indicated that the surrounding facilities have sufficient capacity for the increase in traffic. Improving the road to current County design standards will allow for safer and efficient travel. Road improvements would be required. In response to timing of widening the roadway, the roadway improvements would be required prior to distribution of materials offsite.

Letter 104

Date: 8-24-06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Testing: I request testing of the proposed pit grounds by an independent laboratory, in accordance with EPA standards, this testing to be done at different depths varying from two feet to forty feet, and specifically checking for dioxins, furans, and other toxic materials at all levels; said test results and the methods of testing to be made public. **104-1**

Please help us save unnecessary taxes to pay for testing that will not be required if you stop this project.

Sincerely,
Tom Giles
Sandy Giles
5708 Deschutes Rd.
ANDERSON, CA. 96007

cc: Shasta County Board of Supervisors

Letter 104

Tom and Sandy Giles, August 24, 2006

Response 104-1: See Responses M-2, 13-1, 15-1 and 16-2. The site has been sampled previously and it has not been substantiated that additional sampling is needed. The Phase 3 area has been sampled to determine the extent of dioxin concentrations in the soil profile with variable depths. (See Appendix 4.12-2, Soil and Groundwater Dioxin Evaluation, Vestra Resources, 2006 of the DEIR). All testing has been paid for by the applicant.

Letter 105

Date: 09/29/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: **105-1**

Hours of Operation: I request that a strict schedule be put in writing in any Final EIR or permits, limiting the hours of operation to weekdays only, no earlier than 7:00 a.m., and no later than 5:00 p.m., specifically stating that there will be no weekend hours of operation and no rollover hours to make up for time lost for any reason.

I LIVE AT 22463 LONE TREE RD. I PURCHASED THIS RESIDENCE 10+ YEARS AGO BECAUSE OF THE QUIET, PEACEFULL, COUNTRY SETTING. I DO NOT WANT THIS PROJECT TO GO THRU, BUT IF IT DOES I WANT A STRICT SCHEDULE OF OPERATION, I DON'T WANT THE OPERATOR TO BE ABLE TO PAY FINES TO EXTEND THE HOURS **105-2**

ROBERT BRANNON
22463 LONE TREE RD
ANDERSON CA 96007

cc: Shasta County Board of Supervisors

Letter 105

Robert Brannon, August 29, 2006

Response 105-1: See response to 7-1.

Response 105-2: The commenter states they are opposed to the project. The commenter requests if the project is approved a strict schedule of operations be enforced and the operator should not be allowed to pay fines to extend hours. See Section 3.0, Revisions to DEIR under Alternatives in the FEIR for revisions made to the "Restricted Hours of Operation" alternative.

Letter 106

Date: 09/29/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: **106-1**

Traffic: Balls Ferry Road already has congestion and safety issues. Adding loaded gravel trucks every four to seven and one-half minutes and empty trucks returning for further loads would create instant gridlock with existing traffic which includes stop-and-go service vehicles such as school buses, and mail and garbage trucks. The safety problems would be ugly.

THE TRUCK COUNTS IN THE DRAFT EIR WERE OBTAINED BY THE NEW 6 TO 8 PEOPLE THIS PLANT WOULD EMPLOY. WHAT ABOUT THE OTHER LOCAL OPERATIONS THAT WILL SHIFT THEIR EMPLOYEES TO THIS SITE, AND WHAT ABOUT THE PRIVATE CITIZENS WHO WILL PURCHASE THE PRODUCT, I THINK THE EIR NEEDS TO EXAMINE THE REAL PICTURE OF VEHICLES, NOT THE PROPOSED 6 TO 8 EMPLOYEES. **106-2**

ROBERT BRANNON
22463 LONE TREE RD
ANDERSON CA 96007

cc: Shasta County Board of Supervisors

Letter 106

Robert Brannon, September 29, 2006

Response 106-1: Please see Response 1-1 relating to roadway improvements to bring local roadways up to current County design standards (which is sufficient to accommodate all modes of travel, including accommodating emergency response vehicles).

Response 106-2: In response to the comment, noted trip generation rates were estimated based on projected employment at the site and aggregate yields from the project site (translated into truck trips). The trip generation estimates are consistent with the project description. Other trucks not originating from or destined to the project site are accounted for in the existing count data. (e.g. cumulative and cumulative plus project)

Letter 107

Date:

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

107-1

Fish: This project is dangerously close to the Sacramento River. No amount of levee-building would adequately protect fish, including endangered species of salmon. From the possible seepage of toxic materials or keep them from being trapped should high water come. Also, salmon beds would be in danger of being silted over during gravel processing.

It is really a shame that the City of Redding and Shasta County spent millions to gravel the River bed and to millions more to restore the lower Clear Creek spawning grounds for spawning salmon. Silt will wash into the River as the gravel shifts into this project from digging below or at River depth. Fish will be frightened by vibrations and noise. What a waste! This project should not go forward. The DEIR do not sufficiently address the life health and Safety of our environment.

Patsy Dunn
22359 Lone Tree Rd
Anderson, CA 96007

cc: Shasta County Board of Supervisors

Letter 107

Patsy Dunn

Response 107-1: See Responses O-2, M-2, S-2 through S-6, and 12-1.

Letter 108

Date: 9/25/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: **108-1**

Traffic: Balls Ferry Road already has congestion and safety issues. Adding loaded gravel trucks every four to seven and one-half minutes and empty trucks returning for further loads would create instant gridlock with existing traffic which includes stop-and-go service vehicles such as school buses, and mail and garbage trucks. The safety problems would be ugly.

Beth M. Wood
4905 Parkville Rd
Anderson CA 96007

I have personally witnessed (3) accidents on Balls Ferry Rd – the added traffic will be a disaster waiting to happen, I travel the road 2x a day with small children – many lives will be in jeopardy with this added traffic & trucks **108-2**

cc: Shasta County Board of Supervisors

Letter 108

Beth Wood, September 25, 2006

Response 108-1: See Response 1-1.

Response 108-2: As noted in the DEIR, accident data was summarized in Section 4.3, Transportation and Circulation. The claim that "many lives will be in jeopardy with this added traffic and trucks" is not substantiated. As noted in Response 1-1, the County will need to consider the information in the DEIR (including the condition of roads such as Balls Ferry Road) and determine how the County and the project proponent can realistically provide appropriate measures to satisfy the County that uses of the roads as proposed is acceptably "safe" and consistent with the function of those roads.

Letter 109

Date: 9/25/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: **109-1**

Widen Roads: The plan to widen Balls Ferry Road would create a disaster for many of the residents alongside. Homes, wells, and ACID ditches would be destroyed. At the same time, the widening of this road would not begin to resolve the traffic problems which would be caused by this proposed gravel project.

Beth M. Wind
4905 Parkville Rd
Anderson CA 96007

Broader roads will not help traffic flow — why should residents pay this price. Alternative methods need to be found that do not effect small ranches and farms — many that have been in families for years. **109-2**

cc: Shasta County Board of Supervisors

Letter 109

Beth Wood, September 25, 2006

Response 109-1: See Response 26-1 and thereby, Response 1-1.

Response 109-2: In response, mitigation measure MM 4.3.1 was not a capacity issue. The capacity analysis indicated the surrounding facilities are sufficient for the increase in traffic. Improving the road to current County design standards will allow for improved safety movement of all modes of travel. The improvements are determined to be the project sponsors' responsibility as identified in the mitigation and monitoring program. The commenter states alternative methods need to be found, but does not provide any new information or alternatives to rebut the analysis provided under Impact 4.3.1.

Letter 110

Date: 9/25/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Noise: The ongoing sounds of dredgers, rock crushers, rumbling trucks, and other big machinery from early morning until quitting time are neither acceptable nor consistent with our **agricultural** setting. **110-1**

Beth M. Wood
4405 Parkville Rd
Anderson CA 96007

The excessive noise would spoil the prestine country setting we have in, therefore, decreasing property values and quality of life — to the benefit of "big $".

cc: Shasta County Board of Supervisors

Letter 110

Beth Wood, September 25, 2006

Response 110-1: See Response 10-1. The DEIR addresses a range of impacts (e.g. noise, air quality, traffic, etc.) that contribute to perceptions of the area's "quality of life." However, the County will need to determine how the sum of those factors relates to the overall "quality of life" and compares to other project factors when it determines whether or not to approve the project. Similarly, the effect of a project on surrounding property values is not an "environmental impact" in the context of the DEIR, but may be considered as a social and economic factor when the County decision makers take action concerning the project permits.

Letter 111

Date:

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: 111-1

Land Use: There is no adequate provision for clean-up and productive use of this land after the project is completed.

The DEIR does not say this will be converted for public use or even that the project will end in 30 yrs. 111-2

Who can say what will occur on this project in that period of time. History repeats itself. Just look at the toxic mess the licenced, permitted Paper Mill left us in their 30 yrs of operation.

Actually this property would make a Great Horse Park. It would follow the ag land use. Would increase traffic but not significantly to cause life, health and safety issues, as well as protecting the Fish & Game and pollution of our food chain.

Patsy Quinn
22359 Lone Tree Rd. Anderson, CA 96007

cc: Shasta County Board of Supervisors

Letter 111

Patsy Dunn

Response 111-1: See Response 20-1.

Response 111-2: The property is privately owned and is not designated or intended for public use. See Section 3.0, project description in the DEIR, or refer to Appendix 3.0-3, Shasta Ranch Mining and Reclamation Plan, in the FEIR for a complete description of the proposed site reclamation activities.

Letter 112

Date:

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Length and Scope: The proposed project goes too far into the future and is too far-reaching. If permits are issued, they should limit the project to no more than ten years and deny any use of the proposed "Phase 3" area. There should also be provision for ongoing testing of the grounds in use by an independent laboratory and for publishing of the results of and methods used for this testing. 112-1

A 30 year project permit is irresponsible. Just look at the "mess" the Paper Mill left. None of us will be alive to monitor this project especially those of us living in this area. Please let us adopt a "lets see" attitude with a 10 year permit contigent upon no release of toxins, endangering wildlife and fish, and operating within the life, health and safety parameters of the cequa laws.

Patsy Dunn
22359 Lone Tree Rd
Anderson, CA 96007

cc: Shasta County Board of Supervisors

Letter 112

Patsy Dunn

Response 112-1: See Response 5-1.

Letter 113

Date:

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Toxins: There is no question that dioxins and furans were dumped on this property for over 30 years. Digging up and washing gravel at this site would distribute these substances into the air and, via the plume of turbidity created from washing gravel, force these poisons into the aquifer from which a couple of hundred wells draw. Seepage from gravel washing would also end up in the river, creating a further hazard for the fish and those who consume them. **113-1**

Toxins are there in every sample. Cancer causing dioxin and furan are present in all areas of this project. Well 62 on the SE corner of this project has elevated levels of this toxins after every "high water" or spring rains saturation.

The RWQCB requires continued monitoring and testing of water wells on this property. Particle testing was done at one site (a new well dug) and soil analysis done. The soil testing results were not included in the May 2006 report to the RWQCB. **113-2**

The toxins were tested for residential, ag use - not land intense mining.

The mining and spreading this toxin riddin dirt, sand and gravel to all areas of this county is life, health and safty threating. Granting this use permit is irresponsible and life threatening to all our county and any others "down river"

cc: Shasta County Board of Supervisors

Patsy Dunn

Letter 113

Patsy Dunn

Response 113-1: See Responses M-1, M-2, and 15-1.

Response 113-2: See Responses M-1, 13-1 and 16-2. As noted in the DEIR in Section 4.12, Hazards and Hazardous Materials, the soil and groundwater results are represented in Table 4.12-3. In response to the final groundwater monitoring summary report,it has been completed and is attached as Appendix 4.9-1(G) in the FEIR.

Letter 114

Date: Sept. 15, 2006

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: **114-1**

Land Use: There is no adequate provision for clean-up and productive use of this land after the project is completed.

Additional Memo: What would this waste land of property be used for after the gravel operation is abandoned? The plans by Sullis, Inc. doesn't address this situation adequately, in our opinion. **114-2**

Arleigh and Rosemarie Olivei
4777 Parkville Rd.
Anderson, CA 96007

cc: Shasta County Board of Supervisors

Letter 114

Arleigh and Rosemarie Oliver, September 15, 2006

Response 114-1: See Response 95-1.

Response 114-2: As noted in the DEIR under Section 3.0, Project Description, Phase 1 reclamation activities include the creation of an 85-acre reclaimed area of farmland. Phase 2 and 3 reclamation activities will create riparian and aquatic habitat in the form of two freshwater ponds and open space preserves. In the FEIR document, please refer to Appendix 3.0-3, the amended Shasta Ranch Mining and Reclamation Plan for a complete description of the proposed site reclamation activities.

Letter 115

Date: 7/28/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

115-1

Traffic: Balls Ferry Road already has congestion and safety issues. Adding loaded gravel trucks every four to seven and one-half minutes and empty trucks returning for further loads would create instant gridlock with existing traffic which includes stop-and-go service vehicles such as school buses, and mail and garbage trucks. The safety problems would be ugly.

We object to this project. You will make Balls Ferry Rd a dangerous road to travel. This traffic of gravel trucks will impose a risk of accidents on residents who use this road every day. To subject us to this risk plus the risk of cancer causing toxins for 29 yrs. is unreasonable. Why is money more important to the County than a person's health? Agencies have not weighed the risk of toxins on our health properly. The soil has not been

115-2

cc: Shasta County Board of Supervisors

evaluated properly. Please take another look at this project.

Charles Z. + Betty Bedwell
4845 Pasture Lane
Anderson, CA 96007

Letter 115

Charles and Betty Bidwell, September 28, 2006

Response 115-1: See Response 1-1.

Response 115-2: Commenter states they are opposed to the project. The Commenter expresses their concerns with toxins, fumes, and traffic. As noted in the Draft EIR, Section 4.12, an air toxics evaluation was conducted to estimate the potential non-cancer and cancer health risks associated with exposure to dioxin and furans that may become airborne during future quarry operations in Phase 3 of the proposed project. The Office of Environmental Health Hazard Assessment (OEHHA) guidelines for estimating potential exposure to chemical emissions were used to assess the potential human exposure to airborne chemicals from a variety of exposure pathways. The toxicity, exposure and risk assessment levels were all found below the levels that typically require emission controls by the California Air District. See Response 24-1 for more information regarding dust and fume associated with traffic.

See Response 10-1 and Section 4.7 of the DEIR for noise impacts.

See Response 1-1 and Section 4.3 of the DEIR for traffic impacts.

Letter 116

Date:

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
SEP 20 2006
PLANNING/BUILDING DIVISIONS

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Dust/Fumes: There is no pollution control device which is 100% effective for this kind of operation. The air-borne dust created by this gravel process would undoubtedly contain dioxins and furans lying dormant – substances better left undisturbed. This, mixed with diesel fumes (a known carcinogen) from the fleet of gravel trucks and other equipment, would make an evil concoction which would adversely affect those of us in a great area surrounding the proposed gravel pit, especially during any of our frequent summer air inversions. **116-1**

This is a huge concern! These chemicals & fumes cause cancer & health problems. Please consider the health of the citizens of the County!

Thank you,

Phillip & Marcie Sargant
5333 Bella Ferry Rd.
Anderson, CA 96007

cc: Shasta County Board of Supervisors

Letter 116

Phillip and Marcie Sargeant, September 20, 2006

Response 116-1: As noted in the DEIR, Section 4.12, Hazards and Hazardous Materials, an air toxics evaluation was conducted to estimate the potential non-cancer and cancer health risks associated with exposure to dioxin and furans that may become airborne during future quarry operations in Phase 3 of the proposed project. The Office of Environmental Health Hazard Assessment (OEHHA) guidelines for estimating potential exposure to chemical emissions were used to assess the potential human exposure to airborne chemicals from a variety of exposure pathways. The toxicity, exposure and risk assessment levels were all found below the levels that typically require emission controls by the California Air Resource District. See Response 24-1 for more information regarding dust and fumes associated with traffic.

Letter 117

Date:

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Levees: Tullis, Inc. has proposed, indeed has prematurely begun, to build levees in order to keep the Sacramento River from encroaching onto the property and stranding fish, as well as to stop the project sludge from washing into the river. I do not believe a levee can be built which will be high enough to accomplish this. This proposed levee would also adversely affect property owners during high water times by unnaturally forcing water onto their properties. **117-1**

What happened to concern about salmon? Also- our property is flooded each year by Anderson Creek. We will sustain severe damage if flooding worsens. Please consider the swollen creeks & river during the winter. **117-2**

Thankyou,
Phillip & Marcie Sargeant
5333 Balls Ferry Rd.
Anderson, CA 96007

cc: Shasta County Board of Supervisors

Letter 117

Phillip and Marcie Sargeant

Response 117-1: See Responses O-2, S-1, S-2, and 12-1.

Response 117-2: In response to offsite flooding, the project includes the construction of levees in the floodway fringe area of the Sacramento River. Impact 4.9.3 addresses the impacts for both on- and off-site flooding. Implementation of mitigation measures MM MM 4.9.3(a-c) would reduce this impact to less than significant. In addition, there are no project features that extend out into the Sacramento River that would cause a change in the natural drainage pattern of the river. During major flood events, the Sacramento River will overtop its banks and spill into adjacent areas within the floodplain. The proposed project levees will locally (within the site) prevent flow from entering pit operations but will not divert flow onto other properties or increase water surface elevations for the river by more than 0.1 foot (a negligible increase).

Letter 118

Date:

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Well Testing: I request that Shasta Ranch Mining & Reclamation be made responsible for pre-testing (before said proposed project would begin), as well as ongoing testing, of water wells of the properties on Blue Jay, Pheasant, and Lone Tree, from Ball's Ferry Road to the proposed project. Said well testing would be specifically for dioxins, furans, and other toxic materials. **118-1**

We are very concerned about the well water in the surrounding area. Digging up the soil with dioxins & furans will surely have an impact.

Thank you,
Phillip & Marcie Sargent
5333 Balls Ferry Rd.
Anderson, CA 96007

cc: Shasta County Board of Supervisors

Letter 118

Phillip and Marcie Sargeant

Response 118-1: Please see Responses M-2, 13-1 and S-2 for more information regarding dioxin and furan toxin results. Under Section 4.12 of the Draft EIR, Impact 4.12-2 includes a complete discussion on the potential transport of dioxin and furan contamination of neighboring private drinking water wells. In result after mitigation the impact is reduced to less than significant. Domestic wells in the vicinity of the Shasta Ranch are located up-gradient of site activities, and the groundwater flow direction is away from local residences.

Letter 119

Date:

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: **119-1**

Testing: I request testing of the proposed pit grounds by an independent laboratory, in accordance with EPA standards, this testing to be done at different depths varying from two feet to forty feet, and specifically checking for dioxins, furans, and other toxic materials at all levels; said test results and the methods of testing to be made public.

Since the project requires digging to 30 feet we would request testing done at 1-2 foot intervals to test specifically for chemical contaminants. **119-2**

Thank you,

Phillip & Marcie Dargeant
5333 Balls Ferry Rd.
Anderson, CA 96007

cc: Shasta County Board of Supervisors

Letter 119

Phillip and Marcie Sargeant

Response 119-1: See Responses M-1, M-2, 13-1, 15-1 and 16-2. The site has been sampled previously and additional sampling as part of the CEQA process is not warranted. The Phase 3 area has been sampled to determine the extent of dioxin concentrations in the soil profile with variable depths. (See Appendix 4.12-2, Soil and Groundwater Dioxin Evaluation, in the DEIR by Vestra Resources, 2006)

Response 119-2: See Responses M-1, M-2, 13-1, 15-1 and 16-2. The Vestra samples were taken to specifically respond to the question of dioxin in both the material to be mined and the vertical soil profile, which includes both over burden and material to be excavated. Three test pits were excavated, one in each of the proposed Mining areas (Phase 1 and Phase 2 which had never received treated effluent and in the Phase 3 area that had received treated effluent.) The issue of the possible release of dioxin compounds due to use of treated mill effluent for irrigation is only an issue on the proposed Phase 3 mining area.

Soil samples were collected at approximately 18 inches (1.5 feet) 42 inches (3.5 feet) and 96 inches (8 feet). The results included:

- The TEQ results from the Phase 1, Phase 2, and Phase 3 areas are less than the EPA residential PRG.
- At a given depth, the TEQ results in areas that did not receive mill effluent (Phase 1 and Phase 2) are an order of magnitude lower than the corresponding TEQ results in areas that received effluent (Phase 3).
- TEQ results decrease with depth. The highest concentrations are in shallow soils that will be stripped and stockpiled for rehabilitation. TEQ results in the underlying sandy gravel that will be processed for aggregate are orders of magnitude less.

In areas where effluent was applied, the highest dioxin concentration in the underlying aggregate was 0.034 ppt. In areas where effluent was not applied, the highest dioxin concentration in the underlying aggregate was 0.008 ppt. These levels are at least two orders of magnitude less than the EPA residential PRG 0f 3.9 ppt, and the average near-surface background concentrations of 4.1 ppt observed in urban areas (Washington DOE 1999). Background dioxin concentrations are generally higher near the surface because the primary source of background dioxin is the airborne deposition from combustion sources (EPA 1999) including stack emissions, forest fires and volcanoes.

Letter 120

Date: 9/18/06

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
SEP 21 2006
PLANNING/BUILDING DIVISIONS

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Dust/Fumes: There is no pollution control device which is 100% effective for this kind of operation. The air-borne dust created by this gravel process would undoubtedly contain dioxins and furans lying dormant – substances better left undisturbed. This, mixed with diesel fumes (a known carcinogen) from the fleet of gravel trucks and other equipment, would make an evil concoction which would adversely affect those of us in a great area surrounding the proposed gravel pit, especially during any of our frequent summer air inversions. **120-1**

Mr. Walker,

I feel the concerns of approving the gravel plant are significant. I live just off of Balls Ferry & Deschutes roads. Of major concern to me are the dust containing known carcinogens, the fumes, noise, and increased traffic. I have children attending Anderson & Cottonwood schools. I am gravely concerned about school buses and truck together on our local roads. Balls Ferry and Gas Point are already dangerous roads without diesel truck traffic. Also, what will this do to the home values of all the homes affected by this plant? Can the revenue from this plant make up for the significant loss of home values? Please do not approve this project. Let the residents of Anderson and Cottonwood know they are more important than dirty [illegible] gravel. Thank you Glen Barrett **120-2**

cc: Shasta County Board of Supervisors

Letter 120

Ellen Barrett, September 18, 2006

Response 120-1: As noted in the DEIR, Section 4.12, Hazards and Hazardous Materials, an air toxics evaluation was conducted to estimate the potential non-cancer and cancer health risks associated with exposure to dioxin and furans that may become airborne during future quarry operations in Phase 3 of the proposed project. The Office of Environmental Health Hazard Assessment (OEHHA) guidelines for estimating potential exposure to chemical emissions were used to assess the potential human exposure to airborne chemicals from a variety of exposure pathways. The toxicity, exposure and risk assessment levels were all found below the levels that typically require emission controls by the California Air District. See Response 24-1 for more information regarding dust and fume associated with traffic.

Response 120-2: Commenter is opposed to the project. The commenter expresses their concerns with dust, fumes, noise, and traffic. See response above.

See Response 10-1 and Section 4.7 of the DEIR for noise impacts.

See Response 1-1 and Section 4.3 of the DEIR for traffic impacts.

Letter 121

Date: 9/18/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

DEPARTMENT OF
RESOURCE MANAGEMENT
RECEIVED

SEP 21 2006

PLANNING/BUILDING
DIVISIONS

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Testing: I request testing of the proposed pit grounds by an independent laboratory, in accordance with EPA standards, this testing to be done at different depths varying from two feet to forty feet, and specifically checking for dioxins, furans, and other toxic materials at all levels; said test results and the methods of testing to be made public. **121-1**

Mr. Walker,
This issue must be addressed. You are considering endangering the lives of many residents of Anderson and Cottonwood. I urge you to reconsider.
Thank you,
Ellen Barrett
Ellen Barrett
5855 Douglas Dr.
Anderson, CA 96007

cc: Shasta County Board of Supervisors

Letter 121

Ellen Barrett, September 18, 2006

Response 121-1: See Response M-1, M-2, 13-1, 15-1 and 16-2. The site has been sampled previously and additional sampling is not necessary for the CEQA review. The Phase 3 area has been sampled to determine the extent of dioxin concentrations in the soil profile with variable depths. (See Appendix 4.12-2, Soil and Groundwater Dioxin Evaluation, in the DEIR, Vestra Resources, 2006)

Letter 122

Date: 9/28/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: **122-1**

Noise: The ongoing sounds of dredgers, rock crushers, rumbling trucks, and other big machinery from early morning until quitting time are neither acceptable nor consistent with our **agricultural** setting.

The noise and traffic will have a huge impact on us as we are very close to Balls Ferry Road. We are senior citizens and moved to the country for peace and quiet and to get away from city traffic. Now you will be subjecting us to toxins and fumes besides the danger of so many trucks on a two lane road. We object to this project. This project will have an impact on our health and country life style. → **122-2**

cc: Shasta County Board of Supervisors

you are imposing an industrial site on homeowners in an agricultural area. We object to this Shasta Ranch mining & Reclamation project.

William J. & Hazel Bidwell
22300 Ramona Ct
Anderson, CA 96007

Letter 122

William and Hazel Bidwell, September 28, 2006

Response 122-1: See Response 10-1.

Response 122-2: Commenter states they are opposed to the project. The commenter states traffic will have a significant impact on them as they live very close to Balls Ferry Road and will be subjected to an overwhelming amount of toxins and fumes from so many trucks on a two-lane road. As noted in the DEIR, Section 4.12, Hazards and Hazardous Materials, an air toxics evaluation was conducted to estimate the potential non-cancer and cancer health risks associated with exposure to dioxin and furans that may become airborne during future quarry operations in Phase 3 of the proposed project. The Office of Environmental Health Hazard Assessment (OEHHA) guidelines for estimating potential exposure to chemical emissions were used to assess the potential human exposure to airborne chemicals from a variety of exposure pathways. The toxicity, exposure and risk assessment levels were all found below the levels that typically require emission controls by the California Air District. See response to comment 24-1 for more information regarding dust and fumes.

See Section 4.3, Transportation and Circulation of the DEIR and Response 1-1 for traffic impacts.

Letter 123

Date: 9/28/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Toxins: There is no question that dioxins and furans were dumped on this property for over 30 years. Digging up and washing gravel at this site would distribute these substances into the air and, via the plume of turbidity created from washing gravel, force these poisons into the aquifer from which a couple of hundred wells draw. Seepage from gravel washing would also end up in the river, creating a further hazard for the fish and those who consume them. 123-1

The very idea that the County would approve this project and subject homeowners in the area to these toxins is so objectionable. You, the County, were be subjecting us to cancer causing agents. The diesel fumes from the garbage truck once a week is terrible; yet, you would subject us to overwhelming fumes all day long from 120 trips each day for over 29 years. 123-2

cc: Shasta County Board of Supervisors

Why is money so much more important that ~~[illegible]~~ than homeowners health. This project should not be approved!

Letter 123

Author unknown, September 28, 2006 (no signatory page, no reproduction of back page)

Response 123-1: See Responses M-1,M-2, and 15-1.

Response 123-2: The commenter states they will be subjected to an overwhelming amount of cancer-causing agents and fumes from 120 truck trips every day. As noted in the DEIR, Section 4.12, Hazards and Hazardous Materials, an air toxics evaluation was conducted to estimate the potential non-cancer and cancer health risks associated with exposure to dioxin and furans that may become airborne during future quarry operations in Phase 3 of the proposed project. The Office of Environmental Health Hazard Assessment (OEHHA) guidelines for estimating potential exposure to chemical emissions were used to assess the potential human exposure to airborne chemicals from a variety of exposure pathways. The toxicity, exposure and risk assessment levels were all found below the levels that typically require emission controls by the California Air District. See Response 24-1 for more information regarding dust and fumes.

Letter 124

Date: 9/28/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Hours of Operation: I request that a strict schedule be put in writing in any Final EIR or permits, limiting the hours of operation to weekdays only, no earlier than 7:00 a.m., and no later than 5:00 p.m., specifically stating that there will be no weekend hours of operation and no rollover hours to make up for time lost for any reason. **124-1**

Joann Moore
21964 Whispering Waters Ln.
Anderson, CA
96007

Using averages to allow over time of operation during good weather should not be allowed. Quality of Life is important. Losing sleep due to extended hours is a health hazard. **124-2**

cc: Shasta County Board of Supervisors

Letter 124

Joann Moore, September 28, 2006

Response 124-1: See Response 7-1. Please refer to Section 3.0, Revisions to the DEIR, in the FEIR document for further discussion on the proposed "Restricted Hours of Operation" under the Alternatives section.

Response 124-2: The commenter expresses that using averages to allow overtime operations during good weather should not be allowed. Comment is noted.

Letter 125

Date: 9/26/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: **125-1**

Noise: The ongoing sounds of dredgers, rock crushers, rumbling trucks, and other big machinery from early morning until quitting time are neither acceptable nor consistent with our **agricultural** setting.

Joann Moore
21964 Whispering Waters Ln
Anderson, CA
96007

The DEIR - states noise will exceed county limits - significant and unavoidable. - It is avoidable - do not grant it. CEQA states quality of life will not be detrimental to health - lack of sleep will affect health

cc: Shasta County Board of Supervisors

Letter 125

Joann Moore, September 26, 2006

Response 125-1: See Response 10-1.

Letter 126

Date: 9-22-06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Dust/Fumes: There is no pollution control device which is 100% effective for this kind of operation. The air-borne dust created by this gravel process would undoubtedly contain dioxins and furans lying dormant – substances better left undisturbed. This, mixed with diesel fumes (a known carcinogen) from the fleet of gravel trucks and other equipment, would make an evil concoction which would adversely affect those of us in a great area surrounding the proposed gravel pit, especially during any of our frequent summer air inversions. **126-1**

Joann Moore
21964 Whispering Water Ln.
Anderson, CA 96007

Stated in DEIR - Significant and unavoidable — unable to meet state or county standards. If we know this now, why add to our air quality problem -? Buying air credits will not make breathing easier!

cc: Shasta County Board of Supervisors

Letter 126

Joann Moore, September 22, 2006

Response 126-1: As noted in the DEIR, Section 4.12, Hazards and Hazardous Materials, an air toxics evaluation was conducted to estimate the potential non-cancer and cancer health risks associated with exposure to dioxin and furans that may become airborne during future quarry operations in Phase 3 of the proposed project. The Office of Environmental Health Hazard Assessment (OEHHA) guidelines for estimating potential exposure to chemical emissions were used to assess the potential human exposure to airborne chemicals from a variety of exposure pathways. The toxicity, exposure and risk assessment levels were all found below the levels that typically require emission controls by the California Air District. See Response 24-1 for more information regarding dust and fume associated with traffic.

Letter 127

Date: 9-26-06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Length and Scope: The proposed project goes too far into the future and is too far-reaching. If permits are issued, they should limit the project to no more than ten years and deny any use of the proposed "Phase 3" area. There should also be provision for ongoing testing of the grounds in use by an independent laboratory and for publishing of the results of and methods used for this testing. **127-1**

Phase 3 is too pollated to use and still consider the area safe. Who removed the toxic sign off the gate? This sign has been there for years. Who gave the permission to take it down? The ground has not been cleaned up- **127-2**

Joann Moore
21964 Whispering Waters
Anderson, CA
96007

cc: Shasta County Board of Supervisors

Letter 127

Joann Moore, September 26, 2006

Response 127-1: See Response 5-1.

Response 127-2: See Responses M-1, M-2, 13-1, 15-1 and 16-2. The question of who removed the sign does not address the adequacy of the DEIR. However, initially under federal authority, EPA conducted a screening evaluation at the site and determined that no further action, under federal status and regulation for the protection of human health and the environment, was required. In addition, as stated in Response 13-1, the property owner has complied with the groundwater monitoring activities required by the RWQCB. Shasta Ranch LLC completed the monitoring program in summer 2006 and submitted the conclusion of monitoring to the RWQCB. The RWQCB determined that additional site monitoring of wells and surface water was not warranted. This may be one reason as to why the sign was removed.

Letter 128

Date: 9-28-06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Land Use: There is no adequate provision for clean-up and productive use of this land after the project is completed.

This project will irrevocably affect the use of the land, not only on the Shasta Ranch, but all the surrounding area. This land use will turn our quiet rural way of life into an industrial area. **128-1**

Protect our community.
Do not grant this permit.

Joann Moore
21964 Whispering Waters Ln.
Anderson, CA 96007

cc: Shasta County Board of Supervisors

Letter 128

Joann Moore, September 28, 2006

Response 128-1: See Response 95-1.

Letter 129

Date: 9/28/06

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Levees: Tullis, Inc. has proposed, indeed has prematurely begun, to build levees in order to keep the Sacramento River from encroaching onto the property and stranding fish, as well as to stop the project sludge from washing into the river. I do not believe a levee can be built which will be high enough to accomplish this. This proposed levee would also adversely affect property owners during high water times by unnaturally forcing water onto their properties. **129-1**

Why has the DEIR changed the puposel from the Inital EIR of 25 to 50 year floods to levees of 10 year flood plane. **129-2**

Joann Moore
21964 Whispering Waters Ln.
Anderson, CA
96007

cc: Shasta County Board of Supervisors

Letter 129

Joann Moore, September 28, 2006

Response 129-1: See Responses O-2, S-1, S-2, and 12-1.

Response 129-2: The commenter identifies the discrepancy between the flood-year levees as stated in Section 3.0, Project Description, Section 4.5, Biological Resources and Section 4.9, Hydrology and Water Quality of the DEIR. The fish levees will be constructed to the elevation of the 50-year flood mark with 18 inches of freeboard. Floods exceeding this magnitude are extremely rare and have less than a 1% chance of occurring in any given year. Due in part to the relatively low velocities that would be present in the elevated floodplain areas adjacent to the river during a major flood (roughly in the range of 4 to 6 feet per second during a 100-year event, and less during lesser events), hydraulic studies performed by Hydmet, Inc. have indicated that any rise in flood levels caused by the proposed levees will be negligible. Changes have been made to the Shasta Ranch Mining and Reclamation Plan as directed by the Department of Fish and Game and the Office of Mine Reclamation. See response to comment Letters O and S.

Letter 130

Date:

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Traffic: Balls Ferry Road already has congestion and safety issues. Adding loaded gravel trucks every four to seven and one-half minutes and empty trucks returning for further loads would create instant gridlock with existing traffic which includes stop-and-go service vehicles such as school buses, and mail and garbage trucks. The safety problems would be ugly. 130-1

There is no way to mitigate the life, health and safety of residents along this route. Since Mr. Tullis did not choose to use the first traffic study he had done or reference it in this DEIR, the results of the referenced traffic study are slanted and false. 130-2

If we can build a conveyor belt to run from Civic auditorium to the Kesnick and Shasta Dam in the first half of the last century, surely technolgy exists to do so now. Mr. Tullis ~~has~~ ~~means~~ seems to have unlimited funds to ram this project through. Perhaps not trucking on Balls Ferry is the best and least expensive mitigation to this proposed project.

Patsy Dunn
22359 Lone Tree Rd. Anderson, Ca. 96007

cc: Shasta County Board of Supervisors

Letter 130

Patsy Dunn

Response 130-1: See Response 1-1.

Response 130-2: Comment noted. Please note that the traffic study in the EIR was conducted under contract to Shasta County independently from the traffic study prepared directly for the project sponsor.

Letter 131

Date:

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project:

Levees: Tullis, Inc. has proposed, indeed has prematurely begun, to build levees in order to keep the Sacramento River from encroaching onto the property and stranding fish, as well as to stop the project sludge from washing into the river. I do not believe a levee can be built which will be high enough to accomplish this. This proposed levee would also adversely affect property owners during high water times by unnaturally forcing water onto their properties. **131-1**

Compacting soil to build a levee @ the 25 yr. flood stage will not work. Look at Anderson River park to see what will happen with the additional affect of contaminated soil washing into the river.

This project does not contribute to the life, health and safety of our community.

Sincerely,
Patsy Quinn
22359 Lone Tree Rd
Anderson, Ca. 96007

cc: Shasta County Board of Supervisors

Letter 131

Patsy Dunn

Response 131-1: See Response O-2, S-1, S-2, and 8-1. The commenter asserts that proposed levees will not protect fish and that salmon beds could be silted over during the gravel processing, but does not provide documentation to rebut the analysis provided under Impact 4.5-6 in the Draft EIR. The levee designs have been modified per the direction of the California Department of Fish and Game. Impact 4.5-6 acknowledges that listed fish could become stranded during extreme flood events that exceed the 50-year flood recurrence level. Mitigation Measures MM 4.5-6a-c were modified to provide further protection to fish species (see also Response S-2). Potential effects of toxins on fish are also discussed under Impact 4.5-6 and based on the information provided in the Soil and Groundwater Dioxin Evaluation (Vestra, 2006), the dioxin levels are below the threshold to cause adverse effects on fish. (See Responses M-1 and M-2) The potential for salmon beds to be silted over during gravel processing is also evaluated and recognized to be a potentially significant impact. Mitigation measures MM 4.9-3a-c in the Hydrology and Water Quality section address potential effects related to erosion and sedimentation into adjacent water ways, including the Sacramento River. No change to the DEIR is required is response to the comment.

Letter 132

Date:

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001-1759

Attn: Bill Walker, Senior Planner

Re: Shasta Ranch Mining & Reclamation
Use Permit 05-010, Reclamation Plan 05-001

This is a comment on the Draft EIR, released July 14, 2006, in the above-captioned matter. I feel that the following has not been addressed sufficiently and cannot be mitigated in any reasonable way, and therefore object to the issuance of a Final EIR or any permits for said proposed project: **132-1**

Noise: The ongoing sounds of dredgers, rock crushers, rumbling trucks, and other big machinery from early morning until quitting time are neither acceptable nor consistent with our **agricultural** setting.

This is far to significant to be ignored. We have lived in this quiet area for 20 years. We choose it and built our home here ~~for the rest of~~ meaning to spend the rest of our lives here. We were here first!
The DEIR does nothing to address this issue sufficiently. It is avoidable.

Patsy Dunn
2235 9 Lone Tree Rd
Anderson, CA. 96007

cc: Shasta County Board of Supervisors

Letter 132

Patsy Dunn

Response 132-1: See Response 10-1.

Letter 133

September 21, 2006

Shasta County Department of Resource Management
Planning Division
1855 Placer St., Suite 103
Redding, Ca. 96001

Dear Mr. Walker,

Upon further review of the Shasta Ranch Mining use permit 05-010 and reclamation plan 05-001draft environmental impact report; I have discovered the following errors.

Page 4.12-11 Geomatrix data in the "soil" section is referenced to Appendix 4.9-2 and the Vestra data is also referenced to 4.9-2 as well as on page 4.12-12. Are you confused? Imagine how difficult and time consuming this becomes when you only have dial-up on-line service available to you and you computer locks up. 133-1

I believe **this report is in Error.** I need more time to review **this erroneous document. What is the correct Appendix Reference? Could you please take the time to correct these errors and give me additional time to review your corrections?**

Sincerely,

Charlene E Hope
5391 Balls Ferry Rd
Anderson Ca 96007

DEPARTMENT OF
RESOURCE MANAGEMENT
RECEIVED

SEP 26 2006

PLANNING/BUILDING
DIVISIONS

Letter 133

Charles Hope, September 21, 2006

Response 133-1: Corrections have been made to reference the correct appendices on pages 4.12-11 and 4.12-12:

Page 4.12-11:

Dioxin TEQ results from the Geomatrix investigation are presented in *Appendix 4.8-2.* The Vestra results are presented in *Appendix 4.12-2*, and the results are compared to current regulatory levels in Table 4.12-2.

Page 4.12-12:

As outlined in the approved monitoring program, quarterly groundwater samples were collected from the seven on site monitoring wells during 2005. (See *Appendix 4.9-1)*

Letter 134

August 24, 2006

We the under signed do here by petition Shasta County Department of Resources and the Shasta County Board of Supervisors to denie the use permitt for the Shasta Ranch Mining and Reclamation Project. (UP 05-010 RP05-001)

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
SEP 27 2006
PLANNING/BUILDING DIVISIONS

Given the amount of "significant but unavoidable" midigations (see public notice for DEIR) we feel the county should not consider this project.

Name James D Higgins
Address 22029 Reading Dr
City & State Anderson, Calif
Zip Code 96007

Name Joan L Higgins
Address 22029 Reading
City & State Anderson
Zip Code 96007

Name Martha P. Shumaker
Address 22092 Hermann Dr.
City & State Anderson, Calif.
Zip Code 96007

Name

Letter 134 Continued

August 24, 2006

We the under signed do here by petition Shasta County Department of Resources and the Shasta County Board of Supervisors to denie the use permitt for the Shasta Ranch Mining and Reclamation Project. (UP 05-010 RP05-001)

Given the amount of "significant but unavoidable" midigations (see public notice for DEIR) we feel the county should not consider this project.

Name Irma Crosteard

Address 22059 Hermosa Dr
City & State Anderson Ca.
Zip Code 96007

Name Lee Satterfield

Address 22068 Hermosa Dr
City & State Anderson, Ca
Zip Code 96007

Name SA Satterfield

Address 22068 Hermosa Dr.
City & State Anderson, Ca.
Zip Code 96007

Name

Letter 134 Continued

August 24, 2006

We the under signed do here by petition Shasta County Department of Resources and the Shasta County Board of Supervisors to denie the use permitt for the Shasta Ranch Mining and Reclamation Project. (UP 05-010 RP05-001)

Given the amount of "significant but unavoidable" midigations (see public notice for DEIR) we feel the county should not consider this project.

Name REX KLEIN

Address 5726 PLEASANT VIEW

City & State ANDERSON CA

Zip Code 96007

Name

Address

City & State

Zip Code

Letter 134 Continued

August 24, 2006

We the under signed do here by petition Shasta County Department of Resources and the Shasta County Board of Supervisors to denie the use permitt for the Shasta Ranch Mining and Reclamation Project. (UP 05-010 RP05-001)

Given the amount of "significant but unavoidable" midigations (see public notice for DEIR) we feel the county should not consider this project.

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
SEP 27 2006
PLANNING/BUILDING DIVISIONS

Name John Wade
Address 2885 Cobblestone Ln
City & State Anderson, Ca
Zip Code 96007

Name GLEN DAILY
Address 2600 RED BUD LN #26
City & State ANDERSON CA
Zip Code 96007

Name DAVID & DIANA Lewellen
Address 5526 Rancho Dr
City & State Anderson Calif
Zip Code 96007

sent in by:
Name Marilyn Lewellen

Letter 134 Continued

August 24, 2006

We the under signed do here by petition Shasta County Department of Resources and the Shasta County Board of Supervisors to denie the use permitt for the Shasta Ranch Mining and Reclamation Project. (UP 05-010 RP05-001)

Given the amount of "significant but unavoidable" midigations (see public notice for DEIR) we feel the county should not consider this project.

Name [illegible]

Address 5526 Rutland Dr

City & State Anderson CA

Zip Code 96007

Name Kip C. Wilson

Address 21230 Gaines Ln.

City & State Anderson, CA.

Zip Code 96007

Name [illegible]

Address 320 Cherry Patch

City & State Redding Calif

Zip Code 96003

sent in by 2

Name Marilyn Lewellen

Letter 134 Continued

August 24, 2006

We the under signed do here by petition Shasta County Department of Resources and the Shasta County Board of Supervisors to denie the use permitt for the Shasta Ranch Mining and Reclamation Project. (UP 05-010 RP05-001)

Given the amount of "significant but unavoidable" midigations (see public notice for DEIR) we feel the county should not consider this project.

Name Jerry Hanlon

Address P O Box 878

City & State Anderson, CA

Zip Code 96007

Name Curtis Flower

Address 3015 Joyce Dr

City & State Anderson CA

Zip Code 96007

Name Marilyn Lewellen

Address 5486 Riverland Dr.

City & State Anderson Ca 96007

Zip Code 96007

Sent in by:

Name Marilyn Lewellen

Letter 134

Response 134-1: The petition to deny approval of the proposed project is noted. The position expressed by the petition does not raise any new environmental issues that were not already addressed in the DEIR. No response for the DEIR is needed.

Letter 135

RECEIVED

PETITION FOR DENIAL OF USE PERMIT
SHASTA RANCH MINING & RECLAMATION PROJECT

Listed by the DEIR are emissions NOx & PM-10, increased PM-10 concentrations, airborne concentrations of diesel exhaust, increased haul truck traffic, increased emissions of ozone precursors, an increase in emission levels of mobile and fugitive source particulate matter, predicted onsite operational noise levels and noticeable increase in traffic noise levels, all of which will **EXCEED** either county, state or federal standards or **EXCEED** applicable air quality standards or cancer-risk thresholds and all of which are stated as **SIGNIFICANT AND UNAVOIDABLE.** There are over 11,000 men, women and children who will be impacted by the above and we the undersigned are petitioning the Shasta County Department of Resources and the Shasta County Board of Supervisors to deny the use permit for the Shasta Ranch Mining and Reclamation Project thereby making all of the above mentioned impacts **VOIDABLE.**

UP 05-010 RP05-001

	NAME Signature	ADDRESS	CITY
1	Vivian Harris	5340 Balls Ferry	Anderson
2	[illegible]	6850 Scotview Ln	Anderson
3	Stephen D. [illegible]	6850 Scotview Ln	Anderson
4	[illegible]	5137 Scottdale Ln	Anderson
5	Jeremy Hoerber	1039 Parkview Ave	Redding
6	Eldeie R Sears	5643 Pleasantview	Anderson 96007
7	Beverly Cooke	3734 Oak Briar Ln.	Cottonwood
8	[illegible]	3734 Oakbriar Ln	Cottonwood
9	[illegible]	7036 Cooo CT	Anderson
10	[illegible]	2618 [illegible] Ln	Anderson
11	William E. Bankson	5267 Riverland Dr	Anderson
12	[illegible]	3343 Oak St	Anderson

Letter 135 Continued

RECEIVED

SEP 2 7 2006

COUNTY OF SHASTA
DEPARTMENT

PETITION FOR DENIAL OF USE PERMIT
SHASTA RANCH MINING & RECLAMATION PROJECT

Listed by the DEIR are emissions NOx & PM-10, increased PM-10 concentrations, airborne concentrations of diesel exhaust, increased haul truck traffic, increased emissions of ozone precursors, an increase in emission levels of mobile and fugitive source particulate matter, predicted onsite operational noise levels and noticeable increase in traffic noise levels, all of which will **EXCEED** either county, state or federal standards or **EXCEED** applicable air quality standards or cancer-risk thresholds and all of which are stated as **SIGNIFICANT AND UNAVOIDABLE.** There are over 11,000 men, women and children who will be impacted by the above and we the undersigned are petitioning the Shasta County Department of Resources and the Shasta County Board of Supervisors to deny the use permit for the Shasta Ranch Mining and Reclamation Project thereby making all of the above mentioned impacts **VOIDABLE.**

UP 05-010 RP05-001

	NAME / Signature	ADDRESS	CITY
1	[illegible]	10511 SWEDE CR RD	PALO CEDRO
2	[illegible]	22212 Ash Creek	Anderson
3	Howard Parker	1321 Lorraine Dr.	Redding 96002
4	[illegible]	1905 GARDEN	REDDING 96001
5	[illegible]	3190 DRIFTSTONE	ANDERSON 96007
6	[illegible]	1500 Valencia Ln	Tracy CA
7	Karen Lewis	12330 Standing Oaks Ln.	Redding, CA 96003
8	Jonathan Stelle	7032 White Oak Dr.	Anderson, Ca
9	[illegible]	3551 Betty Dr	Anderson, Ca 96007
10	[illegible]	19532 Stumptown Place Cottonwood, CA.	96022
11	[illegible]	515 Walnut	Shasta CO 96002
12			

Letter 135

Response 135-1: Petition is noted with all signatures opposed to the proposed project. The position expressed by the petition does not raise any new environmental issues that were not addressed in the DEIR. No response for the DEIR is needed.

Letter 136

To whom it may concern,

It saddens me to think that this beautiful stretch of land along the banks of the Sacramento may soon be excavated and dredged for sand and gravel, changing the area forever. Hasn't Shasta County seen enough dredging and mining in its past. Imaging how stunning the Clear Creek area would be today if mining hadn't taken place there so many decades ago. In a day where the creation of parks, preserves, and designated wild places are so important why would we even consider destroying this wonderful ecosystem, when we could turn it into a jewel of south Shasta County by protecting it for future generations. 136-1

For 30 years we have lived within a short walk of the proposed project site, and have seen an immense array of flora and fauna that would be utterly devestated if this action were to take place. It would take a century or more for this area to recover at all from the proposed operations. Is that really what we want our grandchildren to remember us for, the destruction of what could have been an absolutly stunning nature preserve or county park. We must think about the future.

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
SEP 26 2006
PLANNING/BUILDING DIVISION

The Davis Family.

Letter 136

Davis Family, September 26, 2006

Response 136-1: The commenter states the flora and fauna would be devastated. In response impacts to special-status wildlife species such as bald eagle and osprey, as well as resident wildlife species with no special-status are included in Section 4.5, Biological Resources of the Draft EIR. A protocol-level floristic survey, comprehensive wildlife habitat characterization, and protocol-level survey for valley elderberry longhorn beetle were conducted within the project site. Based on these studies, the DEIR identified significant impacts to the following special-status species: fox sedge, Sacramento River winter-run ESU Chinook salmon, Central Valley spring-run ESU Chinook salmon, Central Valley ESU steelhead, southern DPS green sturgeon, valley elderberry longhorn beetle, bald eagle, California red-legged frog, northwestern pond turtle, Cooper's hawk, osprey, white-tailed kite, purple martin, tricolored blackbird, California yellow warbler, yellow-breasted chat, loggerhead shrike, pallid bat, Townsend's big-eared bat, and ringtail cat. Mitigation measures that reduce these impacts to a less-than-significant level are provided in Section 4.5, Biological Resources of the DEIR.

As noted in other responses, the site along the river was selected because that is where the aggregate resources are located.

Letter A

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Arnold Schwarzenegger
Governor

Sean Walsh
Director

DEPARTMENT OF
RESOURCE MANAGEMENT
RECEIVED
AUG 29 2006
PLANNING/BUILDING
DIVISIONS

Memorandum

Date: August 25, 2006

To: All Reviewing Agencies

From: Scott Morgan, Senior Planner

Re: SCH # 2005102134
Shasta Ranch Mining and Reclamation Plan, Use Permit 05-010 and Reclamation Plan 05-001

Please be advised, on July 13, 2006 the Environmental Impact Report for the above referenced project was sent to your agency for review with missing pages. Please accept the attached material for your review. The Lead Agency has also extended the review period to September 29, 2006 to accommodate the review process. We apologize for any inconvenience this may have caused. All other information remains the same. **A-1**

cc: Bill Walker
Shasta County Department of Resource Management
1855 Placer Street, Suite 103
Redding, CA 96001

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Letter A Continued

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P. O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH # 2005102134

Project Title: Shasta Ranch Mining and Reclamation Plan, Use Permit 05-010 and Reclamation Plan 05-001
Lead Agency: Shasta County Department of Resource Management, Planning Division — Contact Person: Bill Walker, Senior Planner
Mailing Address: 1855 Placer Street, Suite 103 — Phone: (530) 225-5532
City: Redding — Zip: 96001 — County: Shasta

Project Location:
County: Shasta — City/Nearest Community: City of Anderson
Cross Streets: Bells Ferry Road between Kimberly Drive and Riverland Drive — Zip Code: 96007
Assessor's Parcel No.: 091-040-002, 091-050-002, 091-080-002 — Section: P.B. Reading Grant Sections 53, 55, 56, 59, 60
Within 2 Miles: State Hwy #: Interstate 5 — Waterways: Sacramento River, Anderson Creek, and A.C.I.D. canal
Airports: — Railways: Union Pacific — Schools: Meadow Lane School

Document Type:
CEQA: ☐ NOP ☐ Early Cons ☐ Neg Dec ☐ Mit Neg Dec ☒ Draft EIR ☐ Supplement/Subsequent EIR (Prior SCH No.) ☐ Other
NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI
Other: ☐ Joint Document ☐ Final Document ☐ Other

RECEIVED JUL 13 2006 STATE CLEARING HOUSE

Local Action Type:
☐ General Plan Update ☐ General Plan Amendment ☐ General Plan Element ☐ Community Plan
☐ Specific Plan ☐ Master Plan ☐ Planned Unit Development ☐ Site Plan
☐ Rezone ☐ Prezone ☒ Use Permit ☐ Land Division (Subdivision, etc.)
☐ Annexation ☐ Redevelopment ☐ Coastal Permit ☒ Reclamation Plan

Development Type:
☐ Residential: Units ____ Acres ____
☐ Office: Sq.ft. ____ Acres ____ Employees ____
☐ Commercial: Sq.ft. ____ Acres ____ Employees ____
☐ Industrial: Sq.ft. ____ Acres ____ Employees ____
☐ Educational
☐ Recreational
☐ Water Facilities: Type ____ MGD ____
☐ Transportation: Type
☒ Mining: Mineral Aggregate
☐ Power: Type ____ MW ____
☐ Waste Treatment: Type ____ MGD ____
☐ Hazardous Waste: Type
☐ Other:
Total Acres (approx.) 268 acres will be mined on a total of 947 acres.

Project Issues Discussed in Document:
☒ Aesthetic/Visual ☒ Agricultural Land ☒ Air Quality ☒ Archeological/Historical ☒ Biological Resources ☐ Coastal Zone ☐ Drainage/Absorption ☐ Economic/Jobs
☐ Fiscal ☒ Flood Plain/Flooding ☐ Forest Land/Fire Hazard ☒ Geologic/Seismic ☒ Minerals ☒ Noise ☐ Population/Housing Balance ☒ Public Services/Facilities
☐ Recreation/Parks ☐ Schools/Universities ☒ Septic Systems ☐ Sewer Capacity ☒ Soil Erosion/Compaction/Grading ☒ Solid Waste ☒ Toxic/Hazardous ☒ Traffic/Circulation
☐ Vegetation ☒ Water Quality ☐ Water Supply/Groundwater ☒ Wetland/Riparian ☒ Wildlife ☐ Growth Inducing ☒ Land Use ☒ Cumulative Effects ☐ Other

Present Land Use/Zoning/General Plan Designation: : The present land use is primarily agricultural cropland with a eucalyptus grove, a feed lot and cattle corrals, a few residences and some wildlife habitat areas. The General Plan Land use designations are Agricultural Cropland (AC), and Agricultural Cropland combined with the Interim Mineral Resource designation (AC-IMR). The zonings of the site are Exclusive Agriculture (EA), Exclusive Agriculture combined with the Restrictive Flood District (EA-F-2), Exclusive Agriculture combined with the Interim Mineral Resource District (EA-IMR), and Exclusive Agriculture combined with the Restrictive Flood District and Interim Mineral Resource Districts (EA-F-2-IMR).

Project Description:
The proposed project is a request for approval for a Use Permit (UP 05-010) and Reclamation Plan (RP 05-001) to mine alluvial sand and gravel near the Sacramento River. The project site encompasses approximately 947 acres, of which 268 acres will be mined for aggregate material. The mined aggregate (gravel) would be crushed, screened, washed, stockpiled, and loaded for off-site transport. Approximately 3.43 million cubic yards of overburden and 8.06 million cubic yards of soil and gravel would be excavated. The project would generate an average of 60 truck round-trips per day, and a maximum of 120 truck round-trips per day. The project would operate for approximately 29 years, until the year 2035. There are three phases, and each phase would operate for 8 to 10 years. Upon completion of all mining activities, the areas of disturbance would be reclaimed to agricultural farmland, ponds, and open space.

State Clearinghouse Contact: (916) 445-0613
State Review Began: 7 . 13 - 2006
SCH COMPLIANCE 9 . 29 - 2006
extended review, per lead*
Please note State Clearinghouse Number (SCH#) on all Comments
SCH#: 2005102134
Please forward late comments directly to the Lead Agency
AQMD/APCD 31
(Resources: 7 . 15)

Project Sent to the following State Agencies
X Resources
___ Boating & Waterways
___ Coastal Comm
___ Colorado Rvr Bd
X Conservation
X Fish & Game # 1
___ Delta Protection Comm
___ Forestry & Fire Prot
X Historic Preservation
X Parks & Rec
___ Reclamation Board
___ Bay Cons & Dev Comm
X DWR
___ OES (Emergency Svcs)
Bus Transp Hous
___ Aeronautics
X CHP
X Caltrans # 2
___ Trans Planning
___ Housing & Com Dev
___ Food & Agriculture
X Health Services
State/Consumer Svcs
___ General Services
Cal EPA
___ ARB – Airport Projects
___ ARB – Transportation Projects
___ ARB – Major Industrial Projects
___ Integrated Waste Mgmt Bd
___ SWRCB: Clean Wtr Prog
___ SWRCB: Wtr Quality
___ SWRCB: Wtr Rights
X Reg. WQCB # 5R
X Toxic Sub Ctrl-CTC
Yth/Adlt Corrections
___ Corrections
Independent Comm
___ Energy Commission
X NAHC
X Public Utilities Comm
X State Lands Comm
___ Tahoe Rgl Plan Agency
___ Conservancy
___ Other:

Letter A

Scott Morgan, Senior Planner; Governor's Office of Planning and Research, State Clearinghouse and Planning Unit, August 25, 2006

Response A-1: The State Clearinghouse notes that the DEIR (SCH No. 2006052077) was submitted to select state agencies for review with missing pages and to accept the attachments for a complete review. The State Clearinghouse acknowledges the extended review period of 30 days to accommodate the review period. The comments received from agencies were forwarded.

Letter B

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Arnold Schwarzenegger
Governor

Sean Walsh
Director

DEPARTMENT OF RESOURCE MANAGEMENT
RECEIVED
AUG 31 2006
PLANNING/BUILDING DIVISIONS

August 29, 2006

Bill Walker
Shasta County Department of Resource Management
1855 Placer Street, Suite 103
Redding, CA 96001

Subject: Shasta Ranch Mining and Reclamation Plan, Use Permit 05-010 and Reclam
SCH#: 2005102134

Dear Bill Walker:

The enclosed comment (s) on your Draft EIR was (were) received by the State Clearinghouse after the end of the state review period, which closed on August 28, 2006. We are forwarding these comments to you because they provide information or raise issues that should be addressed in your final environmental document.

The California Environmental Quality Act does not require Lead Agencies to respond to late comments. However, we encourage you to incorporate these additional comments into your final environmental document and to consider them prior to taking final action on the proposed project. **B-1**

Please contact the State Clearinghouse at (916) 445-0613 if you have any questions concerning the environmental review process. If you have a question regarding the above-named project, please refer to the ten-digit State Clearinghouse number (2005102134) when contacting this office.

Sincerely,

Terry Roberts

Terry Roberts
Director, State Clearinghouse

Enclosures
cc: Resources Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Letter B

Terry Roberts, Director; State Clearinghouse, August 29, 2006

Response B-1: The State Clearinghouse notes that the DEIR (SCH No. 2006052077) was submitted to selected state agencies for review and that the comments received from the agencies were forwarded. The letter states CEQA does not require Lead Agencies to respond to late comments; however, it is recommended the comments be incorporated into the document and considered prior to final action on the proposed project.

Letter C

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Arnold Schwarzenegger
Governor

Sean Walsh
Director

August 29, 2006

DEPARTMENT OF
RESOURCE MANAGEMENT
RECEIVED

AUG 3 1 2006

PLANNING/BUILDING
DIVISIONS

Bill Walker
Shasta County Department of Resource Management
1855 Placer Street, Suite 103
Redding, CA 96001

Subject: Shasta Ranch Mining and Reclamation Plan, Use Permit 05-010 and Reclamation Plan 05-001
SCH#: 2005102134

Dear Bill Walker:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on August 28, 2006, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that: **C-1**

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Terry Roberts

Terry Roberts
Director, State Clearinghouse

Enclosures
cc: Resources Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Letter C Continued

Document Details Report
State Clearinghouse Data Base

SCH#	2005102134
Project Title	Shasta Ranch Mining and Reclamation Plan. Use Permit 05-010 and Reclamation Plan 05-001
Lead Agency	Shasta County
Type	EIR Draft EIR
Description	The proposed project is a request for approval for a Use Permit (UP 05-010) and Reclamation Plan (RP 05-001) to mine alluvial sand and gravel near the Sacramento River. The project site encompasses approximately 947 acres, fo which 268 acres will be mined for aggregate material. The mined aggregate (gravel) would be crushed, screened, washed, stockpiled, and loaded for off-site transport. Approximately 3.43 million cubic yards of overburden and 6.06 million cubic yards of soil and gravel would be excavated. The project would generate an average of 60 truck round-trips per day, and a maximum of 120 truck round-trips per day. The project would operate for approximately 29 years, until the year 2035. There are three phases, and each phase would operate for 8 to 10 years. Upon completion of all mining activities, the areas of disturbance would be reclaimed to agricultural farmland, ponds, and open space.

Lead Agency Contact

Name	Bill Walker		
Agency	Shasta County Department of Resource Management		
Phone	(530) 225-5532	*Fax*	
email			
Address	1855 Placer Street, Suite 103		
City	Redding	*State* CA	*Zip* 96001

Project Location

County	Shasta			
City				
Region				
Cross Streets	Balls Ferry Road between Riverland Drive and Kimberly Drive			
Parcel No.	091-040-002; 091-050-002; 091-080-002			
Township	*Range*	*Section*	P.B. R	*Base*

Proximity to:

Highways	I-5
Airports	
Railways	UPRR
Waterways	Sacramento River, Anderson Creek, and ACID Canal
Schools	Meadow Lane School
Land Use	The present land use is primarily agricultural cropland with a eucalyptus grove, a feed lot and cattle corrals, a few residences and some wildlife habitat areas. GP Designation: Agriculture-Croplands (A-C) and Agriculture-Croplands combined with the Interim Mineral Resource designation (AC-IMR) Zoning: Exclusive Agriculture (EA), Exclusive Agriculture combined with the Restrictive Flood District (EA-F-2), Exclusive Agriculture combined with the Interim Mineral Resource District (EA-IMR), and Exclusive Agriculture combined with the Restrictive Flood District and the Interim Mineral Resource District (EA-F-2-IMR).

Project Issues Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Cumulative Effects; Flood Plain/Flooding; Geologic/Seismic; Landuse; Minerals; Noise; Public Services; Septic System; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Water Quality; Wetland/Riparian; Wildlife

Note: Blanks in data fields result from insufficient information provided by lead agency.

Letter C Continued

Document Details Report
State Clearinghouse Data Base

Reviewing Agencies	Resources Agency; Regional Water Quality Control Bd., Region 5 (Redding); Department of Parks and Recreation; Native American Heritage Commission; Public Utilities Commission; Department of Health Services; Office of Historic Preservation; Department of Fish and Game, Region 1; Department of Water Resources; Department of Conservation; California Highway Patrol; Caltrans, District 2; Department of Toxic Substances Control; State Lands Commission

Date Received 07/13/2006 ***Start of Review*** 07/13/2006 ***End of Review*** 08/28/2006

Note: Blanks in data fields result from insufficient information provided by lead agency.

Letter C

Terry Roberts, Director; State Clearinghouse, August 29, 2006

Response C-1: The letter states the State Clearinghouse submitted the DEIR to selected agencies for review and listed the state agencies that reviewed the document. The letter acknowledges that Shasta County has complied with the State Clearinghouse review requirements for draft environmental documents pursuant to CEQA.

Letter D

REDDING RANCHERIA

James Hayward, Sr.
Cultural Resource Program Manager

2000 Redding Rancheria Road
Redding, CA 96001
(530) 242-4543
Fax: (530) 242-4542
Cell: (530) 604-9478

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
AUG 11 2006
PLANNING/BUILDING DIVISIONS

Aug 10 2006

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding Ca. 96001

Attn. Bill Walker.

Thank you for notifying the Redding Rancheria about this project on the Sacramento River off of Bluejay Lane and Ball Ferry Road. After thorough checks at the North Eastern Information Center and Native American Heritage Commission, I'm sure that you are aware of the sensitivity of this project as it concerns the destruction of sacred sites of the Wintu Tribe. After losing sight of the fact that numerous burials were desecrated on Knighton Rd. (200 +) this planning commission is again minimalizing the fact that this site that has Historical and Prehistorical value to the Native community as well as the community at large and it just mystifies our Tribe here at Redding Rancheria. Some of the designations have been solely Agricultural and some designation has a Interim Mineral Resource. The site itself is a combination of Exclusive Agriculture and Restrictive Flood District and a combination of all 3 including mineral. When the final analysis was done and the same old repetitive archaeological report was submitted by Jenson and Jenson in 2000 and then 2004, there was amendment made to the General Plan. This in itself activates SB 18 and direct consultation with local Tribes with the lead agency (Shasta County Planning Commision.) I will bring to your attention SB 1395 which is soon to be appropriated and amended to CEQA which also provides a mechanism for consultation and mitigation when sacred sites are adversely affected when the significance of the site is Prehistoric, Archaeological, Cultural, Spiritual or a Ceremonial place. There 3 waterways that will require the Army Corp of Engineers to be involved (Section 106) which is Federal Laws.CA-SHA -779 was put up for The National Register of Historic Places and there 2 other registered sites.This does not even preclude the fact that the Wintu Tribe has a united front with Redding Rancheria in determining that there are burial grounds there along the river. I'm not going to go into the past about the history of this county or the indescrepencies but I will say that a line has to be drawn in the sand and so I take this letter to be an invitation to consult with the Redding Rancheria and I will say that I will sit down with any knowledgeable archaeologist ,cultural resource person or commissioner and discuss this project. I can be reached here at the Redding Rancheria. (530)242-4543.

D-1

D-2

Thank you, James Hayward Sr.
Cultural Resource Program Manager
Redding Rancheria Tribe

2000 Redding Rancheria Rd. Redding, CA 96001 Tribal Office: 530-225-8979 Fax: 530-241-1879

Letter D

James Hayward, Sr., Cultural Resource Program Manager; Redding Rancheria Tribe, August 10, 2006

Response D-1: The commenter identifies the existing Land Use designations on the project site. The commenter notes a General Plan Amendment activates SB 18 consultation and direct consultation with local tribes with the lead agency. In response, the proposed project does not include a General Plan Amendment which indicates the project is not subject to SB 18. However, the Archeological Survey (see Appendix 4.6-1 of the DEIR) documented Native American consultation with the Native American Heritage Commission (NAHC) requesting a sacred land listings for the project area with Wintu and other representatives. The NAHC indicated there were no sacred land listings for the project area or adjacent lands. See Appendix 4.6-1 for a complete list of individuals contacted. The commenter suggests that there are sacred sites and burial grounds on the project site that were not disclosed in the archaeological survey. No evidence was provided with the comment to support the claim.

Three cultural sites were recorded on the project site. Site CA-SHA-779 was the only one considered eligible under Criteria d) per Section 15064.5 of the amended CEQA guidelines. Impact 4.6.2 does acknowledge ground disturbance activities could potentially have a significant effect on site CA-SHA-779.

The following modifications were made to mitigation measure MM 4.6.2.

Page 4.6-11, mitigation measure MM 4.6.2 was split into two mitigation measures, 4.6.2(a) and (b). Mitigation measure MM 4.6.2(a) was added for clarification:

MM 4.6.2(a) *Ground disturbing project activity should not be conducted within boundaries of site CA-SHA-779. Site preservation (as-is) should be retained through impact avoidance. To ensure site preservation the boundaries of the site and the site area should be flagged by an archaeologist with a 30 ft. buffer accurately located through formal survey. Once the area is flagged and mapped then the area should be designated as an impact avoidance zone on project and county development maps.*

MM 4.6.2(b) If ground disturbing activity within boundaries of this site cannot be avoided, one of the following options shall be implemented:

1. An archaeologist meeting the Secretary of Interior's Professional Qualifications Standards in prehistoric archaeology shall be retained to excavate the sites to determine their eligibility for inclusion on the NRHP and the

CRHR and recover the data potential of the sites, if appropriate; or

2. An archaeologist meeting the Secretary of Interior's Professional Qualifications Standards in prehistoric archaeology shall be retained to: prepare an inadvertent discovery plan; monitor any ground disturbing activities within site boundaries; and update the records for the sites; or

3. A representative of the Wintu Tribe shall be on-site to monitor all ground disturbing activity within the boundaries of CA-SHA-779. If significant cultural resources are identified during monitoring the protocols presented in the inadvertent discovery plan shall be implemented.

Timing/Implementation: As a condition of project approval, and implemented prior to and during grading, mining and/or construction activities.

Enforcement/Monitoring: Shasta County Department of Resource Management, Planning Division.

Implementation of ~~MM 4.6.2~~ MM 4.6.2(a) and (b) would reduce the impacts to a less than significant impact. (LS)

In response, Mitigation measures MM 4.6.2(a) and MM 4.6.2(b) are recommended to provide further protection to the site. In addition, Mitigation measures MM 4.6.3 through MM 4.6.5 of Section 4.6 in the DEIR have been incorporated to avoid or reduce adverse impacts to prehistoric, historic, and paleontological resources. In result, these mitigation measures are considered adequate per the CEQA guidelines.

Response D-2: Commenter wants additional consultation with the Redding Rancheria and the Lead Agency. The County's position is that there has already been an adequate amount of related consultation for the project.

Letter E

REDDING RANCHERIA

DEPARTMENT OF
RESOURCE MANAGEMENT
RECEIVED

AUG 28 2006

PLANNING/BUILDING
DIVISIONS

Aug 24 2006

The reason I come here today is to bring to the boards attention that the greater native community and particularly Wintus have had Sacred sites and Prehistoric sites exploited, desecrated, robbed and lost forever since the late 19th century and it still continues today. History tells us that complete villages were decimated through disease, massacre, bounty hunters and slave traders. Because of the Dersh incident, not only Yana Indians but Wintu Indians suffered at the hands of vigilante groups. (Bloody Island Massacre is a prime example)

There are three recorded sites in this project area. CA-SHA-2939;CA-SHA-779;CA-SHA-780.These sites were recorded long before any consultation processes were in place ...meaning there was never a process in place to allow for the local native tribes information therefore sacred burials and such were not recorded.

There is one recorded Historic Site and Two Prehistoric Sites. One prehistoric site (780) was said to be completely obliterated shortly after the archaeological report deemed it ineligible for the National Historic Register

The site that is completely intact is site 779 which is directly along the banks of the Sacramento River. This is where the Wintu People buried their dead

E-1

The most recent archaeological study done by Jenson and Associates (2004) Site CA-SHA-779 meets criteria D outlined in section 36 CFR 60.4 and amended guidelines of CEQA. This criteria states that this particular site- has yielded and is likely to yield information in prehistory and history.

This designation in itself makes this site eligible for the historic register and is duly recommended in the Summery of Findings and Project Recommendations of the Archaeological Addendum. There are two mitigating options, with the first priority given to avoidance and preservation as is, or "in situ" The next option is Archaeological testing to determine the the significant eligibility . This is to be done with monitoring with a representative of the local Wintu Tribe determined by the Native American Heritage Commission and culminating in a professional report with explicit recommendations for any mitigative-level data recovery work monitored by Tribal Representation.
Redding Rancheria Prefers option one . Complete avoidance. Aside from site 779 all any inadvertent discovery of human remains or scattered remains shall be treated with accordance to California Law and county coroner and Native American Heritage Commission shall be notified and proper disposition and mitigation shall apply.

Thank you, James Hayward Sr. James Hayward Sr.
Redding Rancheria Cultural Resource Program Manager.

2000 Redding Rancheria Rd. Redding, CA 96001 Tribal Office: 530-225-8979 Fax: 530-241-1879

Letter E

James Hayward, Sr., Cultural Resource Program Manager; Redding Rancheria Tribe, August 24, 2006

Response E-1: The cultural site in question (CA-SHA-779) will be avoided with a buffer area around it. Mitigation measures (MM 4.6.3 and 4.6.5) will mitigate the potential for inadvertent discovery and disturbance of significant cultural resources and human remains.

Letter F

STATE OF CALIFORNIA — Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax

RECEIVED
AUG 0 1 2006
STATE CLEARING HOUSE

Clear 8-28-e

July 14, 2006

Mr. Bill Walker, Senior Planner
Shasta County Department of Resource Management: Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001

Re: SCH#2005102134; CEQA EIR for Shasta Ranch Mining & Reclamation Plan (Shasta Ranch LLC proponent) east of Anderson, CA along Sacramento River and east of Balls Ferry Rd and Blue Jay Lan (Sections 53,55,56,59,60 of the P.B. Reading Grant)

Dear Mr. Walker:

Thank you for the opportunity to comment on the above-referenced document. The California Environmental Quality Act (CEQA) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR per CEQA guidelines § 15064.5(b)(c). In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the area of project effect (APE), and if so, to mitigate that effect. To adequately assess the project-related impacts on historical resources, the Commission recommends the following action:

√ Contact the appropriate California Historic Resources Information Center (CHRIS). The record search will determine:
- If a part or the entire APE) has been previously surveyed for cultural resources.
- If any known cultural resources have already been recorded in or adjacent to the APE.
- If the probability is low, moderate, or high that cultural resources are located in the APE.
- If a survey is required to determine whether previously unrecorded cultural resources are present.

√ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
- The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure.
- The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center. **F-1**

√ Contact the Native American Heritage Commission (NAHC) for:
- A Sacred Lands File (SLF) search of the project area and information on tribal contacts in the project vicinity who may have additional cultural resource information. Please provide this office with the following citation format to assist with the Sacred Lands File search: USGS 7.5-minute quadrangle citation with name, township, range and section.
- The NAHC advises the use of Native American Monitors to ensure proper identification and care given cultural resources that may be discovered. The NAHC recommends that contact be made with Native American Contacts on the attached list to get their input on potential project impact.

√ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
- Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5 (f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
- Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.

√ Lead agencies should include provisions for discovery of Native American human remains or unmarked cemeteries in their mitigation plans.
- CEQA Guidelines, Section 15064.5(d) requires the lead agency to work with the Native Americans identified by this Commission if the Initial Study identifies the presence or likely presence of Native American human remains within the APE. CEQA Guidelines provide for agreements with Native American, identified by the NAHC, to assure the appropriate and dignified treatment of Native American human remains and any associated grave liens.

√ Health and Safety Code §7050.5, Public Resources Code §5097.98 and Sec. §15064.5 (d) of the CEQA Guidelines mandate procedures to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

√ Lead agencies should consider avoidance, as defined in § 15370 of the CEQA Guidelines, when significant cultural resources are discovered during the course of project planning.

Please feel free to contact me at (916) 653-6251 if you have any questions.

Sincerely,

Dave Singleton
Program Analyst

Cc: State Clearinghouse
Attachment: List of Native American Contacts

Letter F

Dave Singleton, Program Analyst; Native American Heritage Commission, July 14, 2006

Response F-1: The commenter's response is noted and included in the DEIR. An Archeological Survey Report was completed by Jensen and Associates (Appendix 4.6-1 of the DEIR) that provided specific recommendations to avoid and preserve those sites found eligible per the CEQA significance criteria and the National Register of Historic Places. Consultation was undertaken with the Native American Heritage Commission (NAHC) requesting sacred land listings for the project area, and with Wintu and other representatives. The NAHC indicated there were no sacred land listings for the project area or adjacent lands. See Appendix 4.6-1 of the DEIR for a complete list of individuals contacted. Mitigation measures MM 4.6.1 through MM 4.6.5 of Section 4.6 in the DEIR have been incorporated to avoid and/or reduce adverse impacts in compliance with CEQA guidelines.

As noted in Section 3.0, Revisions to the DEIR, and response D-1, the following modifications were made to Mitigation measure MM 4.6.2.

Page 4.6-11, Mitigation measure MM 4.6.2 was split into two mitigation measures, MM 4.6.2(a) and (b). Mitigation measure MM 4.6.2(a) was added for clarification:

~~MM 4.6.2~~

MM 4.6.2(a) *Ground disturbing project activity should not be conducted within boundaries of site CA-SHA-779. Site preservation (as-is) should be retained through impact avoidance. To ensure site preservation the boundaries of the site and the site area should be flagged by an archaeologist with a 30 ft. buffer accurately located through formal survey. Once the area is flagged and mapped then the area should be designated as an impact avoidance zone on project and county development maps.*

MM 4.6.2(b) If ground disturbing activity within boundaries of this site cannot be avoided, one of the following options shall be implemented:

1. An archaeologist meeting the Secretary of Interior's Professional Qualifications Standards in prehistoric archaeology shall be retained to excavate the sites to determine their eligibility for inclusion on the NRHP and the CRHR and recover the data potential of the sites, if appropriate; or

2. An archaeologist meeting the Secretary of Interior's Professional Qualifications Standards in prehistoric archaeology shall be retained to: prepare an inadvertent discovery plan; monitor any ground disturbing activities within site boundaries; and update the records for the sites; or

3. A representative of the Wintu Tribe shall be on-site to monitor all ground disturbing activity within the boundaries of CA-SHA-779. If significant cultural resources are identified during monitoring the protocols presented in the inadvertent discovery plan shall be implemented.

Timing/Implementation: As a condition of project approval, and implemented prior to and during grading, mining and/or construction activities.

Enforcement/Monitoring: Shasta County Department of Resource Management, Planning Division.

Implementation of ~~MM 4.6.2~~ *MM 4.6.2(a) and (b)* would reduce the impacts to a less than significant impact. (LS)

Letter G

MEMORANDUM

SHASTA COUNTY DEPARTMENT OF RESOURCE MANAGEMENT
1855 Placer Street, Redding, CA 96001

Environmental Health Suite 201 225-5787	Administration Suite 200 225-5789	Air Quality Management Suite 101 225-5674
Planning Division Suite 103 225-5532	Community Education Section Suite 200 225-5789	Building Division Suite 102 225-5761

TO: Bill Walker, Senior Planner

FROM: Jim Smith, Environmental Health Division Manager

DATE: August 16, 2006

SUBJECT: SHASTA RANCH MINING AND RECLAMATION PLAN

Environmental Health Division (EHD) staff have reviewed the Draft Environmental Impact Reports (DEIR) for the Shasta Ranch Mining and Reclamation Plan. Our comments on this review are as follows:

- Page 3.0-17 and Page 4.11-6 - We would request the installation of a permanent restroom facility and sewage disposal system at the site. Sewage disposal systems must be constructed, under a permit issued by EHD, in an area of suitable soils meeting all applicable setbacks. **G-1**
- Page 4.8-15 and 4.8-28 - This project would be exempt from the requirement to obtain a grading permit. Grading activities at the site are regulated by our Planning Division's SMARA staff and not by EHD staff. **G-2**
- Page 4.12-30 - Mitigation measure should identify our Planning Division, not EHD, for enforcement/ monitoring. **G-3**
- Page 4.12-31 - The reference to Shasta County Department of Mosquito and Vector Control District should be changed to Shasta Mosquito and Vector Control District. **G-4**

JS/pw
EWAUG16-06.WPD

Letter G

Jim Smith, Manager; Environmental Health Division, Shasta County Department of Resource Management, August 16, 2006

Response G-1: The commenter requests that the project have at least one permanent restroom facility and sewage disposal system on site. The following changes were incorporated into the FEIR.

Page 4.11-6, paragraph one has been revised as follows:

~~The project does not require on-site an on-site disposal system to accommodate the waste disposal.~~ Wastewater generated from the property will be limited to *a restroom with septic tanks system*, portable restrooms, and gravel washing processes approved by the Regional Water Quality Control Board, Army Corp of Engineers, and the Shasta County Environmental Health Department to avoid any violation of water quality control standards. *Pursuant to the Shasta County Divisiont of Environmental Health the project will be required to install a permanent restroom facility and on-site sewage disposal system.* The applicant *may also* ~~will~~ provide sewage disposal services through a local service provider to accommodate ~~all~~ on-site waste disposal generated from restrooms *but these facilities will not be permitted as the primary sewage disposal method.*

Impact 4.11.4 The project would generate additional demands for wastewater treatment services and disposal that would exceed the current wastewater treatment systems capacity. This impact is considered *less than significant*. (LS)

Page 4.11-15, Impact 4.11.4 has been modified to include an on-site waste disposal system.

The project site does not include any wastewater treatment services that would exceed the current wastewater treatment facilities capacity. *Pursuant to the Shasta County Environmental Health Division (EHD) the project will be required to install* ~~There will be no on-site sewage disposal system or infrastructure constructed~~ or connect to an existing wastewater treatment facility *for the installation of a permanent restroom facility and an on-site sewage disposal system. The sewage disposal system must be constructed, under a permit issued by EHD, in an area of suitable soils meeting all the applicable setbacks.* With the exception of *the on-site sewage disposal system and* portable restrooms, ~~that will be~~ maintained by a local service provider, the project will be recycling all wastewater on-site in accordance with federal and state regulatory requirements. This impact is considered *less than significant. (LS)*

Response G-2: In the DEIR, page 4.8-15, Section 4.8.2, Regulatory Framework, the discussion and reference to obtaining a Grading Permit from the Environmental Health Division (EHD) is being omitted. On pages 4.8-22 through 4.8-27, the following mitigation measures have been revised to assign the correct responsibility for enforcement/ monitoring.

MM 4.8.2: Enforcement/Monitoring: Shasta County Department of Resource Management, ~~Environmental Health Division and~~ Planning Division.

MM 4.8.3(a): Enforcement/Monitoring: Shasta County Department of Resource Management, ~~Environmental Health Division and~~ Planning Division.

MM 4.8.3(b): Enforcement/Monitoring: Shasta County Department of Resource Management, ~~Environmental Health Division and~~ Planning Division.

MM 4.8.3(c): Enforcement/Monitoring: Shasta County Department of Resource Management, ~~Environmental Health Division and~~ Planning Division.

MM 4.8.3(d): Enforcement/Monitoring: Shasta County Department of Resource Management, ~~Environmental Health Division and~~ Planning Division.

MM 4.8.3(e): Enforcement/Monitoring: Shasta County Department of Resource Management, ~~Environmental Health Division and~~ Planning Division.

MM 4.8.4: Enforcement/Monitoring: Shasta County Department of Resource Management, ~~Environmental Health Division and~~ Planning Division.

Response G-3: On page 4.12-30, mitigation measures MM 4.12.3(a, b) of Section 4.12 in the DEIR have been revised to assign the correct responsibility for enforcement/monitoring.

MM 4.12.3(a): Enforcement/Monitoring: Shasta County Resource Management Department~~, Environmental Health~~ *Planning* Division.

MM 4.12.3(b): *Enforcement/Monitoring: Shasta County Resource Management Department~~, Environmental Health~~ Planning Division.*

Response G-4: The responsible agency title has been corrected on page 4.12-31 of the DEIR as noted below.

MM 4.12.4: Enforcement/Monitoring: Shasta ~~County Department of~~ Mosquito and Vector Control District.

Letter H

GREATER Redding CHAMBER OF COMMERCE

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
SEP 01 2006
PLANNING/BUILDING DIVISIONS

August 29, 2006

Bill Walker
Shasta County Department of
Resource Management
1855 Placer Street
Suite 103
Redding, CA 96001

Dear Mr. Walker:

I am writing in support of the Shasta Ranch Mining and Reclamation Project.

The Chamber has reviewed the environmental impact report and is impressed with the thorough nature of this study. We believe that this project has significant merit, without creating an undue environmental impact on our area.

The need for aggregate has been well-documented, and if we do not plan for the future now, projects essential to the vitality and economics of our area will be curtailed to the detriment of all sectors of our community. **H-1**

Since this proposal is consistent with the General Plan, we are hopeful that this will be approved. We believe that this proposal will be an overall benefit to Shasta County and the surrounding area, and we encourage you to move the process forward.

Sincerely,

Dave H. Scott
Chairman of the Board

747 Auditorium Drive • Redding, California 96001 • (530) 225-4433 • Fax (530) 225-4398
www.reddingchamber.com

Letter H

Dave H. Scott, Chairman of the Board; Greater Redding Chamber of Commerce, August 29, 2006

Response H-1: Comment is noted in support of the proposed project. The commenter believes the need for aggregate has been well documented and will be a benefit to the overall community in the future. No new environmental issues are raised.

Letter I

CITY OF
ANDERSON

DEPARTMENT OF
RESOURCE MANAGEMENT
RECEIVED
SEP 01 2006
PLANNING/BUILDING
DIVISIONS

August 31, 2006

Shasta County Department of Resource Management
Planning Division
Attention: Bill Walker
1855 Placer Street
Redding, CA 96001

Subject: Shasta Ranch Mining and Reclamation Plan Draft EIR (SCH # 2005102134)

Dear Mr. Walker,

Thank you for the opportunity to review the draft EIR for the proposed Shasta Ranch gravel project. The City of Anderson submits the following comments:

1. MM4.3.3: The participation in a pro-rata share of the cost of improvements at the Deschutes at Interstate 5 interchange is necessary. The share should be calculated pursuant to the Zone of Benefit formula adopted to fund these improvements. **I-1**

2. The proposed haul route to and from the project through the City of Anderson needs to be limited to Locust and Deschutes Roads to and from Interstate 5 and SR 273. Balls Ferry is a busy commercial route within the City that would be a circuitous route to either Interstate 5 or SR 273. Use of this route could also temp haulers to utilize Stingy Lane, which is not a truck route. Therefore, utilizing the Balls Ferry route would be a significant impact on the adjoining residential neighborhoods, streets and intersections within the City. **I-2**

continued

Public Works Department • 1887 Howard Street, Anderson, California 96007-1804 • Telephone (530) 378-6636 • Fax (530) 378-6666

Letter I Continued

3. The incremental impact of the weights and volumes of truck traffic on the future maintenance of Locust and Deschutes Roads within the City of Anderson needs to be mitigated. A mitigation fee needs to be implemented similar to the one set up to mitigate the incremental impact on South Street caused by truck traffic for the private landfill located west of the City. It is anticipated that this would be a per ton fee based on the trips utilizing the Locust and Deschutes haul route through the City. **I-3**

If you have any additional questions please contact me.

Sincerely,

John R. Stokes, Planning Director

cc: Scott Morgan, Anderson City Manager
Rich Barchus, Anderson Public Works Director
Anderson Planning Commissioners
Anderson City Councilmembers

Letter I

John R. Stokes, Planning Director; City of Anderson, August 31, 2006

Response I-1: As stated in the discussion under Impact 4.3.3 and MM 4.3.3, the project proponent "shall pay its fair share contribution for interchange improvements by participating in the Deschutes Road interchange zone of benefit."

Response I-2: The haul routes identified and used in this assessment assume that Deschutes Road would be the primary route used to access demands north of the site. The only truck traffic that would use Balls Ferry Road, north of Deschutes Road, would be local haul trips serving development in that area. In response to concern about use of Stingy Lane, this roadway is listed as a Truck Route per the City of Anderson General Plan Section 3.36, Truck Routes and Figure 3.5.2, titled Truck Routes.

Response I-3: The commenter requests the weights and volumes of increased truck traffic on the future maintenance for Deschutes and Locust roadways be mitigated. The impacts for increased volumes of truck traffic along these roadways were evaluated in Section 4.3 of the DEIR. CEQA identifies a significant impact as the following: (a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e. result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at the intersection); (b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways; (c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks; (d) substantially increase hazards due to a design feature; (e) Result in inadequate emergency access; (f) Result in inadequate parking capacity; and (g) Conflict with adopted policies, plans, or programs supporting alternative transportation. Per the above definition, increasing vehicle weight on local roads may affect the condition of pavement but is not clarified by CEQA as a significant impact. Additionally, there is no significance criteria identified in the EIR that identifies this as a significant impact. The request to mitigate future maintenance impacts for both the Locust and Deschutes Roadways within the city limits of Anderson was considered in the DEIR. As discussed on page 4.3-36, participation in the funding for the improvements at the Deschutes Road and I-5 interchange are considered adequate mitigation. In response to the City's request for maintenance of the roadways, there is no documentation from the City of Anderson to substantiate the claim of a need for maintenance. Therefore, there is no mitigation measure that includes an agreement for roadway maintenance.

Letter J

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
OFFICE OF COMMUNITY PLANNING
1657 RIVERSIDE DRIVE
P. O. BOX 496073
REDDING, CA 96049-6073
PHONE (530) 229-0517
FAX (530) 225-3578
TTY (530) 225-2019

Flex your power!
Be energy efficient!

Sha-5-4.28
Tullis Shasta Ranch
Use Permit 05-010 & RP 05-001
DEIR SCH# 2005102134

August 25, 2006

Mr. Bill Walker
Shasta County Department of
Resource Management
Planning Division
1855 Placer Street
Redding, CA 96001

Dear Mr. Walker:

Caltrans has reviewed the Draft Environmental Impact Report (DEIR) for a use permit and reclamation plan for the Shasta Ranch gravel operation submitted on behalf of Tullis Inc. The project is located east of the Deschutes Road/Interstate 5 (I-5) interchange along the southwestern bank of the Sacramento River, northeast of Balls Ferry Road between Riverland Drive and Blue Jay Road. The project intends to transport the gravel materials for further processing to either a site on Bowman Road via Main Street in Cottonwood or to Clear Creek Road via I-5 through the Deschutes Road/Factory Outlets Drive interchange to SR 273, through the I-5/ Riverside interchange, or northward on I-5. **J-1**

As you are probably already aware, Shasta County has been experiencing significant growth and development over the last several years, with significant additional growth expected to continue. Caltrans District 2 is just completing a record construction year and, if the bond measure passes, future years are expected to be even bigger. A tremendous amount of aggregate is needed to build these projects. Construction costs for highway projects continue to rise due in part to shortages of aggregate. I have included a copy of a February 27, 2006 letter from Caltrans' Director Will Kempton regarding the need for aggregate sources in California.

According to the Mineral Land Classification study referenced in the Mineral Element of the Shasta County General Plan, the amount of Portland cement concrete grade alluvial sand and gravel located in mining operations which have approved use permits and reclamation plans will supply the County for approximately 17 years. The Minerals Element also recognizes that the potential locations for aggregate resources are constrained to areas found along rivers and creeks. Further constraints that limit the number of operations that may occur include the quality and quantity of the resource and **J-2**

"Caltrans improves mobility across California"

Letter J Continued

DEIR SCH# 2005102134
August 25, 2006
Page 2

potential environmental impacts. Therefore, it is apparent to us that this source of gravel is important to the citizens of Shasta County as well as to the State.

Caltrans' review of the traffic study for the DEIR found several minor errors, but agrees with the results reached. We are satisfied that the impacts of this project will be mitigated with payment of fair share fees to be applied to improvements to affected interchanges along I-5 at Bowman Road and Deschutes Road. Incorporation of the proposed traffic mitigation measures would adequately address Caltrans' traffic concerns. **J-3**

Thank you for the opportunity to provide comments on the proposed project. We look forward to receiving and reviewing the Final EIR for the project. If you have any questions, please call me at (530) 229-0517.

Sincerely,

MICHELLE MILLETTE, Chief
Office of Community & Regional Planning
Caltrans District 2

Enclosure

"Caltrans improves mobility across California"

Letter J

Michelle Millette, Chief; Office of Community and Regional Planning, Caltrans District 2, August 25, 2006

Response J-1: Caltrans has commented on the increased growth in the area and states a "tremendous" amount of aggregate is going to be needed. The Caltrans District 2 just finished completing a record year and if the bond measure passes, future years are expected to be even bigger. Construction costs for highway projects continue to rise due to aggregate shortages. The attached comment (Letter K) by Will Kempton, Caltrans Director, identifies the need in the state for additional aggregate facilities.

Response J-2: Comment noted. Caltrans agrees with the findings of the Mineral Land Classification Study referenced in the Mineral Resource Element of the Shasta County General Plan. Caltrans agrees the mineral resource is of importance to the citizens of Shasta County and the state.

Response J-3: Caltrans reviewed the traffic study in the DEIR and, although they found minor errors, they agree with the final results (see Letter K). Caltrans has stated incorporation of the proposed mitigation measures would adequately address Caltrans' traffic concerns.

Letter K

STATE OF CAL. ... TATION AND HOUSING AGENCY ... ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
OFFICE OF DIRECTOR
1120 N STREET
P. O. BOX 942873
SACRAMENTO, CA 94273-0001
PHONE (916) 654-5266
FAX (916) 654-6608
TTY (916) 653-4086

Flex your power!
Be energy efficient!

February 27, 2006

Dear Transportation Partners:

As I am sure you are aware, the Governor has proposed the Strategic Growth Plan, which calls for $105 billion to be invested in transportation over the next ten years, plus $2 billion for mitigation of existing air quality impacts from ports and goods movement. In all, nearly half of the estimated $222 billion expected to be raised under the plan is slated for transportation.

Part of the Governor's Strategic Growth Plan is a historic comprehensive transportation investment package that incorporates *GoCalifornia*, a mobility action plan designed to decrease congestion, improve travel times, and increase safety. Last fiscal year, the California Department of Transportation (Department) delivered about $900 million in highway construction. This year we are on track to deliver over $3 billion. If the Legislature adopts the Governor's infrastructure program, the Department will be challenged to deliver an even larger program over the next few years. Although highway construction is a relatively minor component in overall aggregate consumption in California, we are concerned about availability and pricing. As part of *GoCalifornia*, the Department's statewide strategy is to work with communities and other State agencies in securing adequate industry capacity for California's needs. **K-1**

Towards this effort, I would like to bring to your attention the tremendous amount of aggregate needed to supply the projects that support the improvement of the State's transportation infrastructure and the need for new aggregate sources. In recent industry capacity expansion workshops, our construction industry partners shared their concern about the availability of aggregate and other commodities in California. Based upon information from the Department of Conservation, possible cost increases because of potential shortages of aggregate would impact the fiscal budgets of local, regional, and State public works agencies (see enclosed reduced copy of Map Sheet 52, and visit the following Internet site http://www.conservation.ca.gov/CGS/geologic_resources/mineral_production/ms52.htm). **K-2**

At these workshops, the industry also informed the Department of the many years it can take to get a new aggregate source through the permitting process. We encourage the development of new material sources for aggregate reserves that are identified and developed within California, but recognize that the permitting of any new mining locations must be done in accordance with federal, State, and local laws and regulations while being environmentally sensitive.

"Caltrans improves mobility across California"

Letter K Continued

Transportation Partners
February 27, 2006
Page 2

Please share this information with your planning commissions, city councils, and county board of supervisors. Thank you in advance for your assistance in helping the Department in its mission to improve mobility across California.

Sincerely,

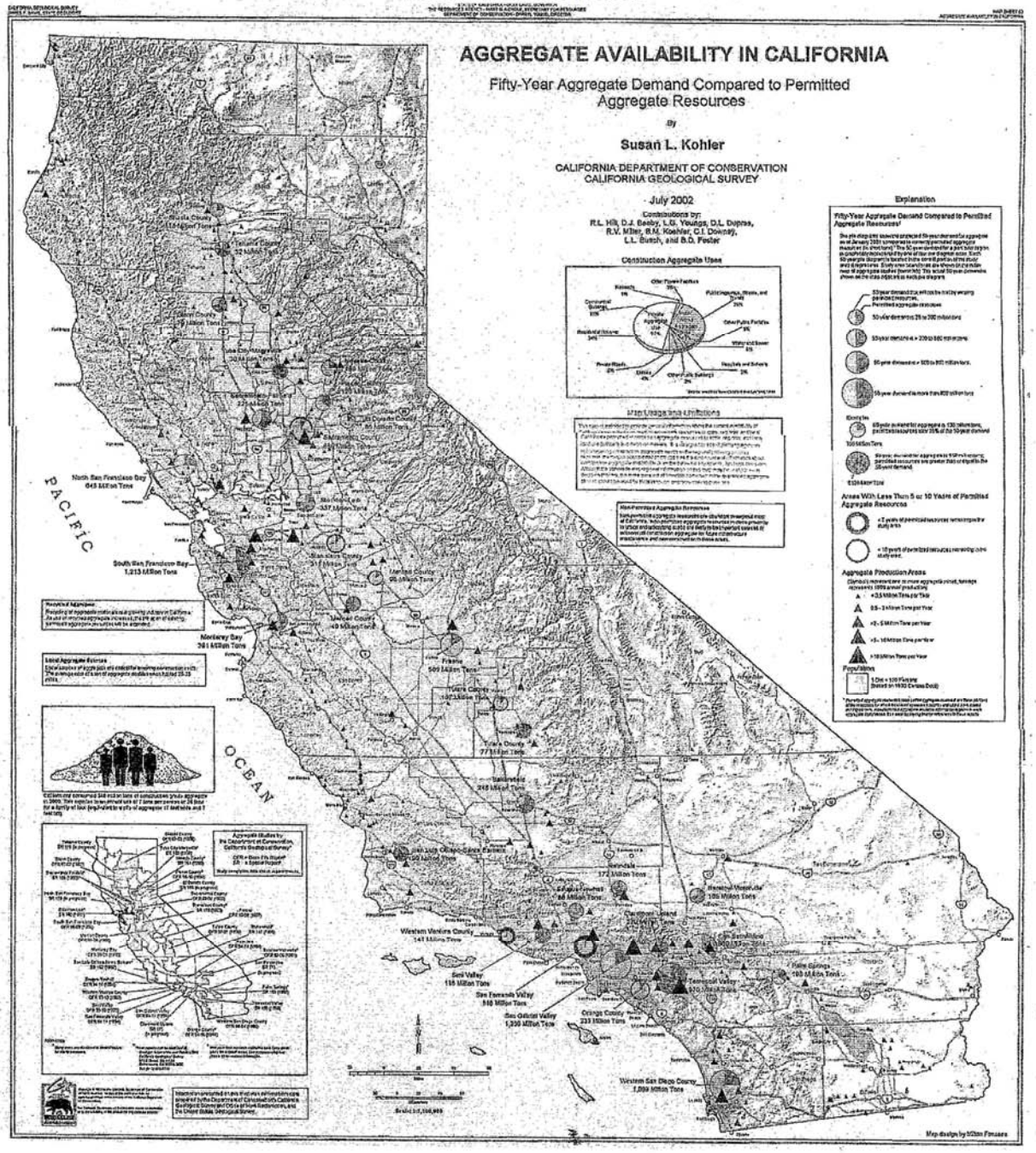
WILL KEMPTON
Director

Enclosure

c: Mr. Charlie Rea, Construction Materials Association of California
Mr. Sam Hassoun, ACG of California
Ms. Tara Haas, Engineering & Utility Contractors Association
Mr. Ed Kalish, Southern California Contractors Association, Inc.
RTPAs
MPOs
County Transportation Commissions

"Caltrans improves mobility across California"

Letter K Continued



Letter K

Will Kempton, Director; Department of Transportation, February 27, 2006

Response K-1: See Response J-1. The comment testifies to the need for aggregate. No new environmental issues are raised.

Response K-2: See Response J-1.

Letter L

Bill Walker

From: Marcelino Gonzalez [marcelino_gonzalez@dot.ca.gov]
Sent: Thursday, August 24, 2006 8:38 AM
To: Bill Walker
Subject: Sha-5-4 Shasta Gravel DEIR Response

Attachments: Sha-5-4.28 Tullis Up 05-10 & RP 05-01 DEIR SCH.doc; gravel plan notice.pdf

Sha-5-4.28 Tullis Up 05-10 & R... gravel plan notice.pdf (2 MB)

Electronic copy of response. Signed copy to follow by regular mail. Also attached is a PDF of a Statewide letter referenced in our response. We intend to provide a clearer copy with the hard copy.

Our comments note minor observations identified in the review of the traffic information that do not appear to affect the conclusions of the traffic impacts but may be worthy of clarification.

Table 4.3-1 (p. 4.3-6): Comment: Deschutes Rd is not 4 lanes all the way to Locust. There are only two through lanes under I-5 and to the east. **L-1**

Table 4.3-1 (p. 4.3-6): SR-273 has higher daily volume than 4,110 shown. Volumes are readily available on the Caltrans website (http://www.dot.ca.gov/hq/traffops). Volumes range from 9300 – 14,000 AADT. **L-2**

Figure 4.3-6 (p. 4.3-22): Comparing these volumes with the volumes shown on figure 4.3-5, the project appears to be generating 300 additional trips heading north on Ball Ferry Rd and 124 trips to the south. These daily volumes do not compare with those shown on Table 4.3-9 on page 4.3-20 (only 84 trips a day). Also, could not determine where the 300 northerly trips are distributed from the Deschutes Road intersection. **L-3**

Table 4.3-13 (p.4.3-26): Deschutes Rd is shown as a 4-lane facility from SR-273 to Locust, and is shown as LOS A in the cumulative condition (year 2027). There are only two through lanes under I-5. LOS A appears incorrect. **L-4**

(See attached file: Sha-5-4.28 Tullis Up 05-10 & RP 05-01 DEIR SCH.doc) (See attached file: gravel plan notice.pdf)

Marcelino "Marci" Gonzalez
Local Development Review
(530) 225-3369
(530) 225-3020 FAX

1

Letter L

Marcelino Gonzalez, California Department of Transportation, Local Development Review, August 24, 2006

Response L-1: Comment is correct, that Deschutes Road, between I-5 and Locust is two lanes (although the portion between SR-273 and I-5 is four lanes), and is noted.

Response L-2: Counts on this roadway segment were provided by Omni-Means as part of their due-diligence work on the proposed project. Please note that Caltrans' published counts are either derived from counts collected by Caltrans or developed using growth projections (which do not always reflect actual counts). However, the comment is noted.

Response L-3: The Figures 4.3-5 and 4.3-6 reflect average daily traffic (ADT) volumes after a passenger car equivalent (PCE) of 3.0 per truck is applied to the trip generation information. From Deschutes, some of the trips are added to I-5 (north) while the rest are projected to access SR-273. The "vehicle trips" indicated on Table 4.3-9 are actual vehicle counts (i.e. are not PCE).

Total average truck trips per day leaving the site is 64 and employee vehicles is 20, for a total of 84. The 64 truck trips account for the total project truck traffic that will be distributed as follows:

Percent	Destination	Estimated Number
32	I-5 North	20
25	273 North	17
13	Olinda Road	8
25	Bowman Road to Draper Road	16
5	I-5 South	3

Source: Vestra Resources, 2006.

Response L-4: See Response L-1. Please note that volumes drop dramatically east of the interchange, where the two-lane segment is located.

Table 4.3-13 indicates that the Deschutes Road under both Cumulative and Cumulative Plus Project would be LOS "B" not LOS "A" as suggested in the comment.

Letter M

California Regional Water Quality Control Board

Central Valley Region

Alan C. Lloyd, PhD
Secretary for Environmental Protection

Redding Office
415 Knollcrest Drive, Suite 100, Redding, California 96002
Phone (530) 224-4845 • FAX (530) 224-4857
http://www.swrcb.ca.gov/rwqcb5

Arnold Schwarzeneg
Governor

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23 May 2005

Mr. Bill Walker
Planning Division
Shasta County Department of Resource Management
1855 Placer Street, Suite 103
Redding, CA 96001

Clear
8-28-06
Wte e

USE PERMIT 05-010 AND RECLAMATION PLAN 05-001, SHASTA RANCH PROJECT, ~~THOMES CREEK~~, TULLIS INC., SHASTA COUNTY

We have reviewed the subject document submitted to our office on 22 April 2005. The Shasta Ranch Project Mining and Reclamation Plan (Plan) was submitted on behalf of the project applicant, as a support document for a conditional use permit for surface mining and reclamation activities adjacent to the Sacramento River, near the community of Anderson. The present land use of the project area is primarily agriculture but zoning classification allows for surface mining and reclamation through issuance of a use permit. The project area encompasses 660-acres, of which approximately 268-acres will be mined for aggregate during three phases over a time period of 24 to 29 years. Mined aggregate will be processed onsite using washing and/or wet screening and process water will discharge to an onsite wastewater pond.

The Regional Board has comments regarding three general aspects of the project. They are as follows:

Site history and potential impacts. The project site was once a waste disposal location for an off-site paper mill. Waste from the paper mill included primary treatment sludge, wastewater effluent, and waste lime (a byproduct of the paper manufacturing process). Disposal of the primary sludge was to two trenches located in the northeastern portion of the current E field, wastewater effluent was used for irrigation of fields D, E, J, K, L, and waste lime was stored and, subsequently, spread in the southeastern portion of the site. See Appendix D, Figure 3 of Plan for layout of subject fields.

According to Figure 11 (Excavation Locations) of the Plan, the Phase 3 extraction pit is located within fields E, J, K, L, where effluent was historically sprayed. Further, it appears Phase 3 and/or the proposed levee will be located within or adjacent to the historic location of the sludge disposal trench. Section 3.6-Hazardous Materials, of the Plan, states that waste lime was stored in the area proposed for Phase 1D and that waste lime has been spread within the Phase 2 and 3 extraction areas. **M-1**

A Phase 1 Environmental Site Assessment (ESA), performed in October 2004, concluded there are several Recognized Environmental Conditions (RECs) at the project site. These RECs include, but are not limited to, locations where limited soil sampling had been performed (i.e. sludge disposal trenches) and where no soil sampling has occurred (where mill wastewater effluent was directly used for irrigation). The location of Phase 3 is located within an area where RECs exist. It is unclear

California Environmental Protection Agency

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Letter M Continued

Mr. Bill Walker - 2 - 23 May 2005

from the Plan whether Phase 1 and 2 are located where RECs would exist. The ESA recommended additional soil and groundwater monitoring if there was a change in property use from agricultural to residential (see Section 3.6-Hazardous Materials of the Plan). The ESA did not specify actions that would be necessary for a land use change from agricultural to mining. **M-1 cont**

The soils and/or groundwater in the project site may have elevated levels of dioxins and furans (and/or other constituents of concern related to the pulp mill waste) as a result of the historic disposal activities. The Groundwater Quality Monitoring and Reporting Program contained in Appendix D of the Plan was not developed to access the suitability of the subject site for mining. Investigation as to whether the site can support gravel mining and reclamation operations without potentially exposing and/or releasing chemicals from the areas where they were once applied and stored must occur. The Regional Board recommends soil sampling where RECs exists and further environmental review before a land use change from agricultural to mining is allowed. **M-2**

Waste Discharge Requirements. Washing and/or wet screening with process water discharge to an onsite wastewater pond will require issuance of Waste Discharge Requirements from the Regional Board. Due to the historic disposal activities, additional sampling for contaminants, such as dioxins and/or furans may be required of the wastewater and the extraction pits. A filing fee and a Report of Waste Discharge deemed complete by this office must be submitted at least 140 days before any wastewater could be discharged onsite. **M-3**

General Industrial Storm Water Permit. The primary SIC code for sand and gravel facilities is 1442. The General Industrial Storm Water Permit is required of such facilities if materials are exposed to storm water. This project is thus subject to this requirement. The project proponent must submit either a Notice of Intent (for a storm water permit) or Notice of Non-Applicability (if no storm water is discharged offsite). **M-4**

If you have any questions regarding the above information, please contact me at (530) 224-4993, or at the letterhead address.

Stacy S. Gotham

Stacy S. Gotham
Staff Engineer

SSG: kg

cc: Tullis Inc., Redding
Shasta Ranch Estates, LLC, Redding
Sharrah Dunlap Sawyer, Inc., Redding
EIP Associates, Sacramento
Shasta County Department of Resource Management, Environmental Health Division, Redding

Letter M

Stacy S. Gotham, Staff Engineer; California Regional Water Quality Control Board, August 29, 2006

Response M-1: In response, the proposed mining areas Phase 1 and Phase 2 did not receive treated effluent from the paper mill. The proposed mining area Phase 3 received the treated effluent. The issue of the possible release of dioxin compounds due to past use of treated mill effluent for irrigation is an issue in the proposed Phase 3 mining area.

Five separate investigations have been implemented since 1996 in areas of the site that were irrigated with treated effluent from the paper mill. This includes Phase 3 of the proposed Shasta Ranch Aggregate project. The Shasta Aggregate Phase 1 and Phase 2 operating areas never received treated effluent from the paper mill; therefore, the issue regarding the release of dioxin compounds to surface soils from use of waste water for irrigation is only an issue on the proposed Phase 3 mining area.

In response the commenter correctly states the ESA recommended additional soil and groundwater testing in the event the land use changed from Agricultural to Residential. However, under the Agricultural land use designation, mining is a permitted use given an approved conditional use permit is obtained by the county. Essentially mining is an interim use (short-term) of the site meaning the long-term land use would remain agriculture. As indicated in the proposed reclamation plan the site would be restored back to open space and agricultural uses. Therefore, the existing Agricultural Land Use designation will not change nor require additional testing. Although additional soil and groundwater testing was conducted. For more information please refer to Section 4.12 of the DEIR regarding dioxin and furan concentrations associated with environmental and public health.

Response M-2: As stated in the DEIR under Section 4.12, Hazards and Hazardous Materials, dioxins are produced through combustion, both via manmade emissions and through natural sources such as forest fires and volcanoes. Therefore, dioxin compounds are found naturally in the ecosystem. Dioxins are also generated by industrial activity and waste incineration. Dioxin levels in the environment have declined significantly since the 1970s, following U.S. Environmental Protection Agency (EPA) regulatory controls and industry actions. EPA's best estimates of emissions from sources that can be reasonably quantified indicate that dioxin emissions in the United States decreased by about 80 percent between 1987 and 1995, primarily due to reductions in air emissions from municipal and medical waste incinerators. Recently, the U.S. EPA has pinpointed the open burning of trash, or backyard trash burning, as the largest single source of dioxins to the environment today. Research suggests that in the past few years, forest fires probably emitted nearly as much dioxin to the environment as did all EPA-quantified sources combined. As dioxin emissions from industrial sources have declined steadily over the past several decades, emissions from forest fires have increased. Combusted particles airborne by the fire are then deposited via air, onto soil and water. Because dioxins are generally measured in very low units, such as parts per trillion (ppt)

or parts per quadrillions (ppq), they can be found naturally in the environment due to airborne deposition.

Sludge, soil, and groundwater samples have been collected from the Shasta Ranch property and analyzed for dioxins for many years. Unfortunately, the early data were collected using different laboratory procedures with higher detection limits than laboratory data collected more recently. For this reason, the early data samples were not included in the recent analysis. Recent investigations using current laboratory procedures are summarized in this section. These results are representative of baseline conditions at the ranch. Since the completion of the Phase 1 document referenced in the letter, the following additional sampling has been completed:

Geomatrix Soil Sampling Program (2004)

The ranch property consists of a veneer of clayey silt underlain by sandy gravel. The depth to the sandy gravel varies between 1.5 feet to more than 5 feet. Geomatrix collected 11 on-site soil samples for dioxin analyses in 2004. The samples were collected from the clayey silt layer in areas that received mill effluent. The samples were collected from approximately 6 inches below ground surface. Sample locations were selected in areas of the Shasta Ranch to be mined and outside of the mine area that had received mill effluent.

Dioxin toxic equivalents (TEQ) results were compared to current regulatory levels. The results were less than the Agency for Toxic Substances and Disease Registry (ATSDR) residential environmental media evaluation guide (EMEG) of 50 ppt, and 9 out of 11 results are less than EPA industrial preliminary remediation goals (PRG) of 16 ppt. It is also important to note that the 95 percent upper confidence level concentration is less than the EPA industrial PRG of 16 ppt. The 95 percent upper confidence level concentration is typically used as the exposure point concentration when conducting a baseline risk assessment. The Geomatrix samples were collected from overburden that will not be processed or transported from the site.

VESTRA Resources Investigation (2006)

The Geomatrix soil sampling program focused on collecting shallow soil samples from fields that received mill sludge and/or effluent. Because these samples were collected from overburden that will not be processed as part of the proposed aggregate project and because the proposed project will not extract aggregate from these areas for approximately 20 years, VESTRA collected a total of 10 additional soil samples for dioxin analyses from areas proposed for aggregate extraction. Three samples were collected from the Phase 1 area, three samples were collected from the Phase 2 area, and four samples were collected from the Phase 3 area. In general, individual samples were collected from the clayey silt overburden material approximately 18 inches (1.5 feet) below ground surface, from the sandy gravel just below the clayey silt at approximately 42 to 48 inches (4 feet), and from the sandy gravel approximately 96 inches (8 feet) below the clayey silt. Only one

sample was collected from Test Pit P3A because shallow water was encountered.

The results were compared to current regulatory levels. A summary of the findings include:

- The toxic equivalent (TEQ) results from the Phase 1, Phase 2, and Phase 3 areas are less than the EPA residential PRG.

- At a given depth, the TEQ results in areas that did not receive mill effluent (Phase 1 and Phase 2) are an order of magnitude lower than the corresponding TEQ results in areas that received effluent (Phase 3).

- TEQ results decrease with depth. The highest concentrations are in shallow soils that will be stripped and stockpiled for rehabilitation. TEQ results in the underlying sandy gravel that will be processed for aggregate are orders of magnitude less.

In areas where effluent was applied, the highest dioxin concentration in the underlying aggregate was 0.034 ppt. In areas where effluent was not applied, the highest dioxin concentration in the underlying aggregate was 0.008 ppt. These levels are at least two orders of magnitude less than the EPA residential PRG 0f 3.9 ppt, and the average near-surface background concentrations of 4.1 ppt observed in urban areas. Background dioxin concentrations are generally higher near the surface because the primary source of background dioxin is the airborne deposition from combustion sources.

Geomatrix Groundwater Monitoring Program (2005)

Groundwater occurs at depths of approximately 10 to 15 feet below ground surface and flows northeast toward the Sacramento River. There are approximately 70 groundwater wells on the Shasta Ranch, 17 of which have been used to monitor water quality. The wells are typically 2 inches in diameter. These wells were installed to monitor hydrologic conditions when the fields were irrigated. In addition, a total of three water supply wells are located on site: near the laboratory, ranch house, and chemical storage shed (Geomatrix 2004).

The Regional Water Quality Control Board (RWQCB) requested the new property owners, Shasta Ranch LLC, to undertake groundwater monitoring abandoned by the Shasta Paper Company. Geomatrix submitted a monitoring and reporting program to the RWQCB in January 2005. The objective of the work was to collect additional groundwater and surface water data to further evaluate concentrations of dioxins/furans in groundwater and to assess the potential for groundwater containing dioxins/furans to migrate to the Sacramento River. The scope was developed in coordination with the RWQCB. In part, the program included collecting quarterly groundwater samples for dioxin analyses from seven of the site monitoring wells on a quarterly basis for 1 year. The RWQCB approved the program in March 2005. As outlined in the approved monitoring program,

quarterly groundwater samples were collected from the seven on-site monitoring wells during 2005.

Groundwater results were compared to current regulatory levels for drinking water. The maximum TEQ result of 0.0261 parts per quadrillion (ppq) observed during the 4th quarter 2005 is less than the current regulatory levels. Only one TEQ result collected during 2005 exceeded the EPA tap water PRG of 0.45 ppq. A TEQ of 0.62 ppq was observed in Monitoring Well MW-62 during the third quarter. The TEQ results in this well during the other three quarters (0 ppq, 0.0006 ppq, and 0.0003 ppq) were less than the EPA tap water PRG. The quarterly reports and work plan, in addition to results from one additional river sampling requested by the RWQCB are on file at the RWQCB office.

The RWQCB has determined no additional well sampling is required, and all on-site monitoring wells, with the exception of 5 wells located in Phase 3, may be abandoned. See letter dated December 5, 2006.

Summary

Dioxin TEQ results in the shallow overburden soil and in the underlying material to be processed for aggregate during the first 20 years of the proposed project (Phase 1 and Phase 2) are less than current regulatory levels, including the EPA residential PRG. These areas did not receive mill effluent. Furthermore, the dioxin TEQ results in all of the samples collected from the sandy gravel that will be processed for aggregate (including Phase 3) are less than the EPA residential PRG, and are significantly less than the overburden levels.

Within areas proposed for aggregate extraction, the only TEQ results that exceeded the EPA residential or industrial PRG were observed in the Phase 3 overburden. The maximum TEQ result in samples collected from the Phase 3 overburden was 18.5 ppt. This level exceeds the EPA industrial PRG of 16 ppt, and is less than the ATSDR residential EMEG of 50 ppt. The Phase 3 overburden is not suitable for aggregate and will be stockpiled on-site and used for site restoration. Otherwise, there is no reason based on the soil samples and findings to indicate that the site should be used for agriculture rather than for aggregate mining.

In addition, dioxin TEQ results in the underlying groundwater are less than the federal and state drinking water standards, and 28 out of 29 samples were less than the EPA tap water PRG.

Response M-3: A Report of Waste Discharge (ROWD) was submitted to the RWQCB Redding office on March 27, 2006.

The ROWD was deemed incomplete due to:

1. Need to submit a Notice of Intent (NOI) and Storm Water Pollution Prevention Plan (SWPPP) for storm water,
2. Need to submit application fee,

3. Request to address Aboveground Storage Tanks (AGST) and Spill Prevention Control and Countermeasure (SPCC) Plan,
4. Need to complete California Environmental Quality Act (CEQA) review.

In response:

1. A NOI and SWPPP were submitted to the State Water Resources Control Board (SWRCB) and the RWQCB in April 2006.
2. A check for the fee was submitted by the RWQCB in March 2006.
3. An SPCCC for Aboveground Petroleum Storage was submitted to the RWQCB in May 2006.
4. An EIR has been required by the Shasta County Planning Division, as the lead agency pursuant to the California Environmental Quality Act, and is underway.

A letter submitted on December 5, 2006 to the California Regional Water Quality Control Board has been incorporated in the FEIR as Attachment 4 for reference in response to the Report of Waste Discharge (ROWD).

Response M-4: The comment is noted that a General Industrial Storm Water Permit is required. The applicant shall file a Notice of Intent (for a storm water permit) or a Notice of Non-Applicability if no storm water is discharged.

A Notice of Intent (NOI) was submitted to the State Water Resources Control Board (SWRCB) on April 26, 2006, and a Storm Water Pollution Prevention Plan included as Appendix 4.9-7 in the FEIR was completed for the site in March 2006. A Spill Prevention Control and Countermeasure Plan (SPCCC) addressing on-site fuel storage was also completed in May 2006 and submitted to the RWQCB.

Letter N

California Regional Water Quality Control Board
Central Valley Region

Linda S. Adams
Secretary for
Environmental Protection

Redding Office
415 Knollcrest Drive, Suite 100, Redding, California 96002
(530) 224-4845 • Fax (530) 224-4857
http://www.waterboards.ca.gov/centralvalley

Arnold Schwarzenegger
Governor

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
AUG 29 2006
PLANNING/BUILDING DIVISIONS

28 August 2006

State Clearinghouse,
P.O. Box 3044
Sacramento, CA 95812-3004

SCH # 2005102134, NOTICE OF COMPLETION AND DRAFT EIR, SHASTA RANCH MINING AND RECLAMATION PLAN, USE PERMIT 05-010 AND RECLAMATION PLAN 05-001, SHASTA COUNTY

On 14 July 2006, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff received a Notice of Completion & Environmental Document Transmittal for "Shasta Ranch Mining and Reclamation Plan, Use Permit 05-010 and Reclamation 05-001" (Project). The transmittal included the Project's June 2006 "Draft Environmental Impact Report (DEIR)." The Central Valley Water Board provided written comments on the proposed project on 23 May 2005 with respect to the Reclamation Plan (enclosure). In addition to the information provided in that response letter, the Central Valley Water Board staff has the following comment in response to the Notice of Completion:

Site history and potential impacts: The project site was previously a waste disposal location for an offsite paper mill. Waste from the paper mill included primary treatment sludge, wastewater effluent, and waste lime (a byproduct of the paper manufacturing process). Disposal of the primary sludge was to two unlined trenches located just south of the transmission lines and west of the Sacramento River. **N-1**

According to Figure 3.0-8 (Phase 3 Operation Plan) of the DEIR, the Phase 3 and/or proposed levee will be located within or adjacent to the historic location of the sludge disposal trenches. Mining and reclamation activities have the potential to intercept or damage the sludge disposal trenches. The Discharger must ensure that the activities associated with the Shasta Ranch Mine do not compromise the integrity of the disposal trenches.

California Environmental Protection Agency
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Letter N Continued

State Clearinghouse - 2 - 28 August 2006

If you have any questions regarding the above information, please contact me at (530) 224-4848, or at the letterhead address.

Daniel L. Warner
Water Resource Control Engineer
North Regulatory Unit

DLW: reb

Enclosure

cc: Mr. Bill Walker, Shasta County Department of Resource Management, Redding

U:\Clerical Documents\SA_Correspondence\WarnerD\SR-04 Draft EIR Comments.doc

California Environmental Protection Agency

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Letter N

Daniel L. Warner, Water Resource Control Engineer; California Regional Water Quality Control Board, August 28, 2006

Response N-1: See Responses M-1 and M-2. The disposal trenches are located 70 feet from the access road located on the east side of the levee. A Stormwater Pollution Prevention Plan (SWPPP) has been prepared for the proposed project (VESTRA Resources, Inc., 2006) and addresses measures to be taken to further prevent impacts of pollutants being introduced to stormwater discharges in compliance with the statewide General Permit (Water Quality Order No. 99-08-DWQ) and the National Pollution Discharge Elimination System (NPDES). Mitigation Measure 4.9.3(b) states in part, that construction of the site levees and grading performed during mining operations will be performed in a manner such that on-site runoff will be directed to the interior of the mining phases.

Letter O

STATE OF CALIFORNIA, RESOURCES AGENCY — ARNOLD SCHWARZENEGGER, GOVERNOR

DEPARTMENT OF CONSERVATION

OFFICE OF MINE RECLAMATION

801 K STREET • MS 09-06 • SACRAMENTO, CALIFORNIA 95814

PHONE 916 / 323-9198 • FAX 916 / 445-6066 • TDD 916 / 324-2555 • WEBSITE conservation.ca.gov

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
SEP 06 2006
PLANNING/BUILDING DIVISIONS

August 30, 2006

Bill Walker
Shasta County
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001

Dear Mr. Walker:

Draft Environmental Impact Report for Shasta Ranch Mining and Reclamation Plan, CA Use Permit 05-010, Reclamation Plan 05-001and SCH # 2005102134

The Department of Conservation's Office of Mine Reclamation (OMR) has reviewed the Draft Environmental Impact Report (DEIR) for the Shasta Ranch Mining and Reclamation Plan. The project site consists of 947 acres, of which 268 acres are to be mined for sand and gravel. The site is located along the banks of the Sacramento River, east of Balls Ferry Road and approximately 2.5 miles southeast of Anderson. The project would last for 29 years in three phases of 8-10 years each, and ultimately yield approximately 6 million cubic yards of aggregate. The end-use of site is intended to be a mix of agriculture, open space, and freshwater pond habitat.

On June 1, 2005 Mike Fuller and Karen Wiese of our office conducted a site visit, which they followed with a reclamation plan comment letter dated June 17, 2005. In the present submission, this letter is located in Appendix 3.0-1 on CD disk B at the end of the "Notice of Preparation and Initial Study" rather than in appendix 3.0-2 with the other "Public Agencies and General Public Comment Letters." The reclamation plan is also found on disk B under appendix 3.0-3, "Shasta Ranch Project Mining and Reclamation Plan" and is dated March 2005. It otherwise appears to be identical to the reclamation plan we reviewed and commented on which is dated April 2005. OMR recommended that the reclamation plan be supplemented to address our concerns, but no changes to the reclamation plan are evident. OMR wishes to call attention to this comment letter to assure that a response to comments will be forthcoming in the final EIR and the comments will be addressed in a revised version of the reclamation plan prior to approval. Additional comments on the DEIR follow. **O-1**

Section 4.9 (Hydrology and Water Quality) of the DEIR indicates that all fish exclusion levees will be constructed to the 10-year flood elevation. This assertion is reiterated in the Shasta Ranch Flood Studies (Hydmet, Inc., undated) included in Appendix 4.9-4. However, section 3.0 (Project **O-2**

The Department of Conservation's mission is to protect Californians and their environment by: Protecting lives and property from earthquakes and landslides; Ensuring safe mining and oil and gas drilling; Conserving California's farmland; and Saving energy and resources through recycling.

Letter O Continued

Bill Walker
August 30, 2006
Page 2

Description) of the DEIR clearly includes construction of two 50-year levees and one 25-year levee adjacent to the proposed borrow pits. This discrepancy should be addressed and clearly resolved within the final EIR and Reclamation Plan.

As noted above, section 4.9 of the DEIR states that 10-year fish exclusion levees will be constructed, and that flooding of the borrow pits will be a relatively common occurrence. Section 4.5 (Biological Resources) discusses the potential for impacts to listed salmonid species resulting from the project, and presents specific mitigation measures (MM 4.5-6(a), MM 4.5-6(b), and MM 4.5-6(c)) for reduction of such impacts to less-than-significant levels. It appears that these mitigation measures assume that 50-year and 25-year fish exclusion levees will be constructed. Again, this discrepancy should be addressed and clearly resolved within the final EIR, and the reclamation plan should be revised accordingly. **O-2 cont.**

Final versions of the groundwater investigations and flood studies should be appended to the final EIR. These reports should be signed, stamped, and dated by the preparers.

Several maps and figures included in the DEIR show siphons within or immediately adjacent to the project boundaries. These features do not appear to be discussed within the text of the DEIR, and should be addressed as appropriate within the final EIR. **O-3**

In Figures 3.0-11 and 3.0-12, Reclamation Cross Sections, there are errors in the Plant Palette tables that need to be rectified. Tomcat clover is given the incorrect Latin name of *Rhus trilobata,* while western redbud is given the Latin name for Tomcat clover. This should be changed to read as follows. The same errors need to be corrected in the reclamation plan, figures 17 and 18. **O-4**

Western redbud	*Cercis occidentalis*
Tomcat clover	*Trifolium willdenovii*
Skunk bush	*Rhus trilobata*

If you have any questions on these comments or require any assistance with other mine reclamation issues, please contact me at (916) 323-8565.

Sincerely,

James S. Pompy, Manager
Reclamation Unit

Letter O

James S. Pompy, Manager, Reclamation Unit; Department of Conservation, Office of Mine Reclamation (OMR), August 30, 2006

Response O-1: The April 2005 Reclamation Plan was updated prior to being included in the DEIR, but did not include the recommended changes as stated in the Office of Mine Reclamation letter. (See Appendix 3.0-1, Letter from Dept. of Conservation Office of Mine Reclamation dated June 17, 2005 in the DEIR, last page.) The Shasta Ranch Mining and Reclamation Plan was subsequently amended (see Appendix 3.0-3 in this FEIR) to include the OMR recommendations and submitted to the Department of Conservation, OMR Division and the Shasta County Planning Division for review and approval as of December 2006.

Response O-2: The commenter's corrections have been noted. The original levee designs proposed in the DEIR were designed to meet the 25-year and 50-year flood elevation without freeboard. All of these fish exclusion levees, (including the temporary levee previously designed for the 25-year flood event) have been redesigned to address a 50-year storm event with 1.5 feet (18 inches) of freeboard. This 50-year storm event design equates to the same protection as the 100-year flood event with approximately 8 inches of freeboard.

The Spur Dike was originally designed for the 100-year flood event with 2 feet of freeboard and therefore no changes are required.

The hydrologic report prepared by Hydmet for Shasta Ranch Aggregates was included as Appendix 4.9-4 in the DEIR. The report shows that a 50-year flood is calculated at 122,000 cubic feet per second (cfs), while a 100-year event is calculated at 130,400 cfs. The hydrologic evaluation contained modeling specific to the site, indicating no damage will occur under high-flow conditions and that the amended levee designs are adequate.

The following revisions were made to Section 3.0, Project Description, in the DEIR:

Figure 3.0-6 have been revised to reflect a 50- year levee. Figures 3.0-11 and figure 3.0-12 have been modified to show 50-year levee designs and were consolidated into Figure 3.0-11. These figures are provided in Exhibit 3.0-A, *Revised Figures to the DEIR* contained within the FEIR.

The following revisions were made to Section 4.5, Biological Resources, in the DEIR:

Page 4.5-48, under Impact 4.5.6, second paragraph, the 25-year fish exclusion levee was omitted and revised as shown below.

The proposed Shasta Ranch Mining and Reclamation Plan includes fish exclusion levees to prevent river channel migration, gravel pit entrainment, and fish stranding in gravel pits at river flows ~~up to 25-year flow events (Phase 1) and~~ up to 50-year flow events (Phases 1, 2 and 3) for perpetuity.

MM 4.5.6(a) has been revised in accordance with the Department of Fish and Game and Office of Mine Reclamation.

MM 4.5.6(a): In the event that flood events exceed the ~~25-year (Phase 1) and~~ 50-year (Phases *1*, 2 and 3) design flood capacities of the proposed quarry levees, a qualified fishery biologist shall be retained to conduct site surveys to quantify the extent of anadromous fish stranding that may occur.

In response to Section 4.9, page 4.9-10 under "Project Description" the first paragraph has been modified for consistency with the remainder of the document. In addition, modifications were made as requested by the California Department of Fish and Game criteria for the fish exclusion levees.

These levees are intended to prevent overbank flows of the Sacramento River from causing fish entrapment during selected major storm events. The fish exclusion *levees will be constructed to a height equivalent to the elevation of the 50-year flood in the Sacramento River, plus freeboard* ~~adjacent to the Phase 1 extraction and reclamation area was originally proposed to be constructed to the elevation of the 25-year flood. The fish exclusion levees adjacent to the Phase 2 and Phase 3 extraction areas were originally proposed to be constructed to the elevation of the 50-year flood. It was eventually decided that all fish exclusion levees would be constructed to the elevation of the 10 year flood.~~

On page 4.9-12, first sentence was revised as shown below:

This flood control levee will be constructed to a height that *is equivalent to the elevation of the 100-year flood in the Sacramento River, plus freeboard.* ~~exceeds the elevation of the 100-year flood for the Sacramento River.~~

Response O-3: The commenter states there are several maps and figures that include siphons within or adjacent to the project boundaries and requests these structures be explained within the FEIR document (see Figure 3.0-9 of the DEIR). The commenter does not specify which figures or maps show these siphons and the project description does not include siphons. Therefore, due to the lack of information, no further response is necessary.

Response O-4: Comment noted. Corrections have been made to Figures 3.0-11 accordingly and amended in the Shasta Ranch Mining and Reclamation Plan and the DEIR. See Section 3.0-A, Revised Figures in the FEIR.

Letter P

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
SEP 06 2006
PLANNING/BUILDING DIVISIONS

STATE OF CALIFORNIA — Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
Fax (916) 657-5390
Web Site www.nahc.ca.gov

August 31, 2006

Mr. Bill Walker, Senior Planner
Shasta County Department of Resource Management; Planning Division
1835 Placer Street, Suite 103
Redding, CA 96001

Re: SCH#2005102134; CEQA Notice of Completion; Draft Environmental Impact Report (EIR); Use Permit 05-010 & Reclamation Plan 05-001 for Shasta Ranch Mining & Reclamation Project; Balls Ferry Road; Shasta County, California

Dear Mr. Walker:

Thank you for the opportunity to comment on the above-referenced document. The California Environmental Quality Act (CEQA) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR per CEQA guidelines § 15064.5(b)(c). In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the area of project effect (APE), and if so, to mitigate that effect. To adequately assess the project-related impacts on historical resources, the Commission recommends the following action:

√ Contact the appropriate California Historic Resources Information Center (CHRIS). The record search will determine: **P-1**

- If a part or the entire APE) has been previously surveyed for cultural resources.
- If any known cultural resources have already been recorded in or adjacent to the APE.
- If the probability is low, moderate, or high that cultural resources are located in the APE.
- If a survey is required to determine whether previously unrecorded cultural resources are present.

√ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.

- The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure.
- The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.

√ Contact the Native American Heritage Commission (NAHC) for:

  * A Sacred Lands File (SLF) search of the project area and information on tribal contacts in the project vicinity who may have additional cultural resource information. Please provide this office with the following citation format to assist with the Sacred Lands File search request: USGS 7.5-minute quadrangle citation with name, township, range and section; .

- The NAHC advises the use of Native American Monitors to ensure proper identification and care given cultural resources that may be discovered. The NAHC recommends that contact be made with Native American Contacts on the attached list to get their input on potential project impact, particularly the contacts of the on the list.

√ Lack of surface evidence of archeological resources does not preclude their subsurface existence. **P-2**

- Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5 (f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
- Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.

√ Lead agencies should include provisions for discovery of Native American human remains or unmarked cemeteries in their mitigation plans.

  * CEQA Guidelines, Section 15064.5(d) requires the lead agency to work with the Native Americans identified by this Commission if the initial Study identifies the presence or likely presence of Native American human remains within the APE. CEQA Guidelines provide for agreements with Native American, identified by the

Letter P Continued

NAHC, to assure the appropriate and dignified treatment of Native American human remains and any associated grave liens.

√ Health and Safety Code §7050.5, Public Resources Code §5097.98 and Sec. §15064.5 (d) of the CEQA Guidelines mandate procedures to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

√ Lead agencies should consider avoidance, as defined in § 15370 of the CEQA Guidelines, when significant cultural resources are discovered during the course of project planning.

P-2 cont.

Please feel free to contact me at (916) 653-6251 if you have any questions.

Sincerely,

Dave Singleton
Program Analyst

Cc: State Clearinghouse
Attachment: List of Native American Contacts

Letter P

Dave Singleton, Program Analyst; Native American Heritage Commission, August 31, 2006

Response P-1: See Response F-1.

Response P-2: See Response F-1.

Letter Q

STATE OF CALIFORNIA – THE RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 942360001
(916) 653-5791

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
SEP 06 2006
PLANNING/BUILDING DIVISIONS

SEP 1 2006

Bill Walker, Senior Planner
Shasta County Department of Resource Management, Planning Division
1855 Placer Street, Suite 103
Redding, California 96001

Shasta Ranch Mining and Reclamation Plan, Use Permit 05-010 and Reclamation Plan 05-001
State Clearinghouse (SCH) Number: 2005102134

The project corresponding to the subject SCH identification number has come to our attention. The limited project description suggests a potential encroachment on an Adopted Plan of Flood Control. If indeed your project encroaches on an adopted food control plan, you will need to obtain an encroachment permit from the Reclamation Board prior to initiating any activities. The enclosed Fact Sheet explains the permitting process. Please note that the permitting process may take as much as 45 to 60 days to process. Also note that a condition of the permit requires the securing all of the appropriate additional permits before initiating work. This information is provided so that you may plan accordingly. **Q-1**

If after careful evaluation, it is your assessment that your project is not within the authority of the Reclamation Board, you may disregard this notice. For further information, please contact me at (916) 574-1249.

Sincerely,

Al Vargas

Al Vargas
Staff Environmental Scientist
Floodway Protection Section

cc: Governor's Office of Planning and Research
State Clearinghouse
1400 Tenth Street, Room 121
Sacramento, CA 95814

Enclosure

Letter Q Continued

Fact Sheet

Reclamation Board Encroachment Permit Application Process

Authority
State law (Water Code Sections 8534, 8608, 8609, and 8710 – 8723) tasks the Reclamation Board with enforcing appropriate standards for the construction, maintenance, and protection of adopted flood control plans. Regulations implementing these directives are found in California Code of Regulations (CCR) Title 23, Division 1.

Reclamation Board Jurisdiction
The adopted plan of flood control under the jurisdiction and authority of the Reclamation Board includes the Sacramento and San Joaquin Rivers and their tributaries and distributaries and the designated floodways.

Streams regulated by the Reclamation Board can be found in Title 23 Section 112. Information on designated floodways can be found on the Reclamation Board's website at http://recbd.ca.gov/designated_floodway/ and CCR Title 23 Sections 101 - 107.

Regulatory Process
The Reclamation Board ensures the integrity of the flood control system through a permit process (Water Code Section 8710). A permit must be obtained prior to initiating any activity, including excavation and construction, removal or planting of landscaping within floodways, levees, and 10 feet landward of the landside levee toes. Additionally, activities located outside of the adopted plan of flood control but which may foreseeable interfere with the functioning or operation of the plan of flood control is also subject to a permit of the Reclamation Board [CCR Title 23 Section 6(c)].

Details regarding the permitting process and the regulations can be found on the Reclamation Board's website at http://recbd.ca.gov/ under "Frequently Asked Questions" and "Regulations," respectively. The application form and the accompanying environmental questionnaire can be found on the Reclamation Board's website at http://recbd.ca.gov/forms.cfm.

Application Review Process
Applications when deemed complete will undergo technical and environmental review by Reclamation Board and/or Department of Water Resources staff.

Technical Review
A technical review is conducted of the application to ensure consistency with the regulatory standards designed to ensure the function and structural integrity of the adopted plan of flood control for the protection of public welfare and safety. Standards and permitted uses of designated floodways are found in CCR Title 23 Sections 107 and Article 8 (Sections 111 to 137). The permit contains 12 standard conditions and additional special conditions may be placed on the permit as the situation warrants. Special conditions, for example, may include mitigation for the hydraulic impacts of the project by reducing or eliminating the

Letter Q Continued

additional flood risk to third parties that may caused by the project.

Additional information may be requested in support of the technical review of your application pursuant to CCR Title 23 Section 8(b)(4). This information may include but not limited to geotechnical exploration, soil testing, hydraulic or sediment transport studies, and other analyses may be required at any time prior to a determination on the application.

Environmental Review
A determination on an encroachment application is a discretionary action by the Reclamation Board and its staff and subject to the provisions of the California Environmental Quality Act (CEQA) (Public Resources Code 21000 et seq.). Additional environmental considerations are placed on the issuance of the encroachment permit by Water Code Section 8608 and the corresponding implementing regulations (California Code of Regulations – CCR Title 23 Sections 10 and 16).

In most cases, the Reclamation Board will be assuming the role of a "responsible agency" within the meaning of CEQA. In these situations, the application must include a certified CEQA document by the "lead agency" [CCR Title 23 Section 8(b)(2)]. We emphasize that such a document must include within its project description and environmental assessment the activities for which are being considered under the permit.

Encroachment applications will also undergo a review by an interagency Environmental Review Committee (ERC) pursuant to CCR Title 23 Section 10. Review of your application will be facilitated by providing as much additional environmental information as pertinent and available to the applicant at the time of submission of the encroachment application.

These additional documentations may include the following documentation:

- California Department of Fish and Game Streambed Alteration Notification (http://www.dfg.ca.gov/1600/),
- Clean Water Act Section 404 applications, and Rivers and Harbors Section 10 application (US Army Corp of Engineers),
- Clean Water Act Section 401 Water Quality Certification, and
- corresponding determinations by the respective regulatory agencies to the aforementioned applications, including Biological Opinions, if available at the time of submission of your application.

The submission of this information, if pertinent to your application, will expedite review and prevent overlapping requirements. This information should be made available as a supplement to your application as it becomes available. Transmittal information should reference the application number provided by the Reclamation Board.

August 25, 2006

Letter Q Continued

In some limited situations, such as for minor projects, there may be no other agency with approval authority over the project, other than the encroachment permit by Reclamation Board. In these limited instances, the Reclamation Board may choose to serve as the "lead agency" within the meaning of CEQA and in most cases the projects are of such a nature that a categorical or statutory exemption will apply. The Reclamation Board cannot invest staff resources to prepare complex environmental documentation.

Additional information may be requested in support of the environmental review of your application pursuant to CCR Title 23 Section 8(b)(4). This information may include biological surveys or other environmental surveys and may be required at anytime prior to a determination on the application.

August 25, 2006

Letter Q

Al Vargas, Staff Environmental Scientist; Department of Water Resources, September 1, 2006

Response Q-1: An Application for an Encroachment Permit (see Attachment 5 of this FEIR) for the Shasta Ranch Mining and Reclamation Project was submitted by VESTRA Resources, Inc. to the Department of Water Resources and Reclamation Board in December 2005. The application was accepted and has been assigned an Encroachment Permit No. 18078. However, related action by the Reclamation Board is pending on completion of the environmental document prepared pursuant to CEQA before the application is considered complete.

Letter R

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Arnold Schwarzenegger
Governor

Sean Walsh
Director

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED

SEP 19 2006

PLANNING/BUILDING DIVISIONS

September 15, 2006

Bill Walker
Shasta County Department of Resource Management
1855 Placer Street, Suite 103
Redding, CA 96001

Subject: Shasta Ranch Mining and Reclamation Plan, Use Permit 05-010 and Reclamation Plan 05-001
SCH#: 2005102134

Dear Bill Walker:

The enclosed comment (s) on your Draft EIR was (were) received by the State Clearinghouse after the end of the state review period, which closed on August 28, 2006. We are forwarding these comments to you because they provide information or raise issues that should be addressed in your final environmental document. **R-1**

The California Environmental Quality Act does not require Lead Agencies to respond to late comments. However, we encourage you to incorporate these additional comments into your final environmental document and to consider them prior to taking final action on the proposed project.

Please contact the State Clearinghouse at (916) 445-0613 if you have any questions concerning the environmental review process. If you have a question regarding the above-named project, please refer to the ten-digit State Clearinghouse number (2005102134) when contacting this office.

Sincerely,

Terry Roberts

Terry Roberts
Director, State Clearinghouse

Enclosures
cc: Resources Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Letter R

Terry Roberts, Director; State Clearinghouse, September 15, 2006

Response R-1: Submittal from the State Clearinghouse of an additional comment letter from the Department of Fish and Game received after the original state review period, which closed on August 28, 2006. The review period had been extended to September 29, 2006.

Letter S

State of California – The Resources Agency
ARNOLD SCHWARZENEGGER, Governor
DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
NORTHERN CALIFORNIA-NORTH COAST REGION
601 Locust Street
Redding, CA 96001
(530) 225-2300

DEPARTMENT OF RESOURCE MANAGEMENT RECEIVED
SEP 27 2006
PLANNING/BUILDING DIVISIONS

September 26, 2006

Mr. Bill Walker, Senior Planner
Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, California 96001

Dear Mr. Walker:

Shasta Ranch Project Mining and Reclamation Plan, UP 05-010 and RP 05-001
Draft Environmental Impact Report (DEIR)

The California Department of Fish and Game (DFG) has reviewed the subject document. The proposed use permit and reclamation plan would authorize a 30-year gravel extraction operation which would occupy 268 acres on the southwest bank of the Sacramento River, east of Balls Ferry Road between Riverland Drive and Blue Jay Road. Approximately 3.43 million cubic yards of overburden and 6.06 million cubic yards of soil and gravel would be removed from the site. Upon reclamation, the land would be returned to active agricultural use or revegetated to create habitat compatible with the adjacent riparian area and surrounding habitat. The DFG offers the following comments on the DEIR in our role as a trustee agency and as a responsible agency under the California Environmental Quality Act (CEQA), because an incidental take permit will be required under California Endangered Species Act (CESA) and a Streambed Alteration Notification will be required per Section 1602 of the Fish and Game Code.

DFG provided comments on this project in its letters dated May 26 and November 29, 2005, (copies enclosed). Our review indicates the DEIR has satisfactorily addressed some of the issues identified in those letters. However, in those letters we expressed concern that the project could result in "capture" of flood waters from the Sacramento River resulting in significant impacts to special-status fish, including State and federally-listed winter-run and spring-run Chinook salmon *(Oncorhynchus tshawtscha)*, and federally-listed steelhead *(Oncorhynchus mykiss)*. Bank erosion and flood channel instability during flood events could result in the capture and redirection of the river into the gravel pit(s), trapping, stranding or entombing juvenile fish and releasing accumulated pond sediments and eroded bank or levee materials into the river. This type of event has occurred at gravel operations adjacent to the river. Project plans call for construction of levees to prevent flood waters from entering the gravel pits. The Phase 1 levee is proposed to be designed to withstand a 25-year flood and the Phase 2 and 3 levees designed to contain a 50-year flood. **S-1**

Conserving California's Wildlife Since 1870

Letter S Continued

Mr. Bill Walker
September 26, 2006
Page Two

DFG strongly suggests these design goals are inadequate, and the levees should be capable of withstanding a 100-year storm event to prevent impacts to the river and to the State and federally-listed salmon and steelhead. **S-1 cont.**

Mitigation Measure 4.5-6(a) provides that in the event a flood exceeds a levee design capacity, a qualified fish biologist would conduct site surveys to quantify anadromous fish stranding and would salvage and return fish to the river. DFG does not believe this measure would be practical nor would it be effective in reducing to below a level of significance, as required by CEQA, the impact of salmon and steelhead mortality from a levee breach. It would be extremely difficult to quantify stranded fish or capture and relocate fish during a major storm event that breaches a levee, due to turbidity, access and safety constraints. Additionally, fish mortality from stranding or other consequences of a levee breach would constitute "take" as defined by the California Endangered Species Act (CESA). Mortality to State listed Chinook salmon represents a significant impact that is not mitigated to below significance merely by the capture and relocation of some of the stranded individuals that may survive. Also, capture and relocation of stranded juvenile salmon would require an incidental take permit pursuant to Section 2081 of CESA. **S-2**

DFG believes a breach of a levee designed for 25-year or 50-year flood events may result in a significant impact to State listed winter-run and spring-run Chinook salmon and in the event of a breach, the proposed mitigations would not be adequate. DFG recommends the project include the feasible alternative of designing the levees to withstand a 100-year flood event.

Impact 4.5-5 states direct impacts to all known populations of fox sedge *(Carex vulpinoidea)* have been avoided but that indirect impacts could still result. Mitigation Measure 4.5-5 requires that if special-status plants cannot be avoided during construction, DFG would be contacted to determine salvage and relocation measures. Inasmuch as project construction activities would extend for 24 to 30 years, the mitigation measure should require that preconstruction surveys would be repeated during each year of construction so that exclusionary fences could be erected based on current and newly-identified locations of fox sedge occurrences. **S-3**

Mitigation Measures 4.5-5, 4.5-6 (a, b and c), 4.5-11, 4.5-12, 4.5-13, 4.5-14, 4.5-15 (a and b) and 4.5-19 (a) incorrectly assign to the DFG the responsibility to enforce and monitor each of the corresponding mitigation measures. DFG does not and cannot perform this function for lead agencies. Monitoring and enforcing these mitigation measures and assuring their performance are solely the responsibility of the County of Shasta as lead agency. DFG would be pleased to assist the County in reviewing the Mitigation Monitoring and Reporting Plan prepared in conformance with CEQA Guidelines Section 15097 to assure that the lead agency's monitoring efforts effectively address performance of mitigation of impacts to biological resources within DFG's trustee agency jurisdiction.

Letter S Continued

Mr. Bill Walker
September 26, 2006
Page Three

Impact 4.5-6 states that the project has the potential to significantly impact Chinook salmon and steelhead or their critical habitats and green sturgeon *(Acipenser medirostris)* though direct loss or indirectly. The project could discharge sediment from on-site erosion and aggregate mining activities by covering spawning gravels and killing aquatic invertebrates. The DEIR does not provide any mitigation for this impact to support the finding found on page 4.5-49 that the impact is reduced to less than significant. **S-3 cont.**

In our May 26, 2005, letter, DFG expressed concern that the 100-foot nondisturbance buffer zone from fresh emergent wetlands must apply to all wetlands on the project site as well as extend from the drip-line of riparian zones. We further explained that adequate buffer distances to protect wetlands from both direct and indirect project impacts should be clearly stated. Although the DEIR acknowledges at Impact 4.5-4 that indirect impacts to wetlands are potentially significant, the DEIR contains no discussion of buffer zones necessary to protect project site wetlands from indirect project impacts. Furthermore, buffer zones must be vegetated to provide effective filtering function. DFG recommends that a 100-foot minimum nondisturbance buffer be established between project operations and all wetlands to prevent indirect impacts. If the buffer is reduced to less than 100 feet, but to more than 50 feet, additional vegetation planted within the buffer could enhance its function.

DFG also expressed in its May 26, 2005, letter concern that following the reclamation of the Phase 2 and Phase 3 extraction pits, ponds would be created that may be too deep to encourage sufficient vegetation around the edges to provide viable replacement wildlife habitat. DFG requested that the Phase 2 and Phase 3 sites be reclaimed in such a way as to optimally provide habitat for riparian- and wetland-dependent species. The DEIR does not address the design of reclaimed ponds to adequately provide for vegetated pond edge habitats that represent effective replacement mitigation. The DEIR must specifically call for a pond edge design and vegetation plan that would encourage effective replacement vegetated habitat. **S-4**

In the same May 26, 2005, letter, we pointed out that the Department of Water Resources should be consulted regarding the design of the levees. The State Reclamation Board, administered by the Department of Water Resources, has primary authority over activities that may affect the flood capacity of the river and the levees and banks that contain it. The Reclamation Board is not mentioned in the DEIR as a regulatory agency with authority over aspects of the project, nor is there any information in the document to indicate that any consultation with that agency has occurred. DFG recommends the project proponent consult with the Reclamation Board regarding these concerns.

Letter S Continued

Mr. Bill Walker
September 26, 2006
Page Four

The DEIR states in Chapter 4.9 Hydrology and Water Quality on Page 4.9-10: "It was eventually decided that all fish exclusion levees would be constructed to the elevation of the 10-year flood." This statement is not consistent with the Project Description nor with the discussions contained in Chapter 4.5 Biological Resources. DFG recommends that these inconsistencies be addressed. **S-5**

Finally, DFG stated in its May 26, 2005, letter that portions of the area proposed for mining may in fact be State lands because the river channel occupied the project site at the time the river channel was deeded by the Federal government to the State of California. The river has subsequently shifted from its 1850 location. We continue to believe that the project proponent must contact and present evidence from the State Lands Commission that the boundary of the land owned by the State does not encompass or overlap the project site. This issue has not been adequately addressed by the DEIR. **S-6**

Thank you for the opportunity to comment on this project. If you have any questions regarding these comments, please contact Environmental Scientist Bruce Webb at the letterhead address or telephone (530) 225-2675.

Sincerely,

DONALD B. KOCH
Regional Manager

Enclosures

cc: Mr. Dan McMannus
Department of Water Resources
5440 Main Street
Red Bluff, California 96080

Mr. Mike Mirmazaheri
Reclamation Board, Department of Water Resources
3310 El Camino Avenue, Suite LL60
Sacramento, California 95821

Mr. Bruce Webb
Department of Fish and Game
601 Locust Street
Redding, California 96001

ec: Messrs. Mark Stopher, Eric Haney and Mike Berry
Department of Fish and Game
601 Locust Street
Redding, California 96001

Letter S

Donald B. Koch, Regional Manager; Department of Fish and Game, September 26, 2006

Response S-1: The commenter suggests that the design goals for the levees are inadequate and could result in impacts to the Sacramento River and to state and federally listed salmon and steelhead.

As noted in the letter of response provided by VESTRA Resources Inc., prior to regulation by Shasta Dam in 1944, winter and spring flows in the upper Sacramento were largely uncontrolled. Flow regulation by the dam has significantly reduced the likelihood of large, damaging flood events, and a 100-year storm event of the magnitude projected in the past is not anticipated. However, in order to reduce the potential "capture" of flood waters within the Shasta Ranch Aggregates project area, the fish exclusion levees have been redesigned. The original levees were designed to meet the 25-year and 50-year flood elevation without freeboard. The difference in the 50-year flood event and 100-year flood event water surface elevation is 0.7 feet, or approximately 8 inches (see Appendix 4.9-4, Hydmet report in the DEIR). All of the fish exclusion levees, (including the temporary levee previously designed for the 25-year flood event) have been redesigned to address a 50-year storm event with 1.5 feet (18 inches) of freeboard. This equates to protection from the 100-year flood event with approximately 8 inches of freeboard. The amended figures for the fish exclusion levee designs are located in Exhibit 3.0-A, Revised Figures to the DEIR, contained in this FEIR. The Spur Dike was originally designed for the 100-year flood event with 2 feet of freeboard and requires no additional changes.

The hydrologic report prepared by Hydmet for Shasta Ranch Aggregates was included as Appendix 4.9-4 to the DEIR. The report shows that a 50-year flood is calculated at 122,000 cubic feet per second (cfs), while a 100-year event is calculated at 130,400 cfs. The hydrologic evaluation contained modeling specific to the site, indicating no damage will occur under high-flow conditions and that the amended levee designs are adequate.

Response S-2: See response S-1. The redesign of the levees to meet 100-year and 50-year flood events should eliminate any potential "capture" of flood waters from the Sacramento River, and will protect against incidental take of State and federally-listed anadromous salmon species. Therefore, the need for an incidental take permit is not necessary. Likewise any need for a qualified fish biologist to conduct site surveys and physical mitigation is no longer necessary.

In response to paragraph two of comment S-2, the levees have been redesigned to accommodate a 50-year flood event with 1.5 feet of freeboard, and a 100-year event with 0.7 feet of freeboard. The revised levee designs are located in Section 3.0, under Exhibit 3.0-A, Revised Figures in the FEIR. The exterior foot-print of the levees will not change. Any additional footing requirements will be accommodated by movement into the proposed mining area. This will ensure the setbacks discussed below are maintained. Figure 14-A of the amended Mining and Reclamation Plan

included in the FEIR (See Appendix 3.0-3 in this FEIR) illustrates the distance between levees and the sensitive species locations.

Response S-3a: The commenter recommends that preconstruction surveys for fox sedge be repeated on a yearly basis so that exclusionary fencing can be erected based on current and newly identified locations of fox sedge. In response, Mitigation Measure 4.5.5 has been revised as follows.

MM 4.5.5 *Preconstruction surveys for fox sedge shall be conducted, prior to construction of each phase. The survey shall be conducted the same year that construction is anticipated.* If special-status plant species cannot be avoided during construction, the CDFG shall be contacted immediately and determine the appropriate salvage and relocation measures. Special-status plant species populations that can be avoided shall be protected with exclusionary fencing to prohibit disturbance.

Response S-3b: The commenter indicates that mitigation measures MM 4.5-5, MM 4.5-6 (a, b, and c), MM 4.5.11, MM 4.5.12, MM 4.5.13, MM 4.5.14, MM 4.5.15 (a and b), and MM 4.5.19(a) incorrectly assign to the CDFG responsibility to enforce and monitor each of the corresponding measures. The commenter further asserts that sufficient mitigation is not provided for Impact 4.5.6. In response, the referenced mitigation measures have been revised to assign responsibility for enforcement/monitoring to Shasta County and Mitigation Measure 4.5.6 has been revised as indicated below.

MM 4.5.5 *Enforcement/Monitoring*: *Shasta County Planning Division* ~~California Department of Fish and Game~~

MM 4.5.6(a) Enforcement/Monitoring: *Shasta County Planning Division* ~~California Department of Fish and Game and National Marine Fisheries Service~~.

MM 4.5.6(b) Enforcement/Monitoring: *Shasta County Planning Division* ~~California Department of Fish and Game and Game and National Marine Fisheries Service~~.

MM 4.5.6(c) Grading of the restored Phase 1 quarry shall avoid creating pits or swales and insure that slopes and contours drain to the Sacramento River in order to prevent stranding of fish species during high flow events. *Further, mitigation measure MM 4.9-3 (a-c) shall be implemented to reduce the potential for impacts to spawning gravels and aquatic invertebrates as a result of erosion and sedimentation.*

Timing/Implementation: During reclamation activities.

Enforcement/Monitoring: *Shasta County Planning Division* ~~California Department of Fish and Game~~ and National Marine Fisheries Service.

MM 4.5.11 Enforcement/Monitoring: *Shasta County Planning Division* ~~California Department of Fish and Game~~

MM 4.5.12 Enforcement/Monitoring: *Shasta County Planning Division* ~~California Department of Fish and Game~~

MM 4.5.13 Enforcement/Monitoring: *Shasta County Planning Division* ~~California Department of Fish and Game~~

MM 4.5.14 Enforcement/Monitoring: *Shasta County Planning Division* ~~California Department of Fish and Game~~

MM 4.5.15a Enforcement/Monitoring: *Shasta County Planning Division* ~~California Department of Fish and Game~~

MM 4.5.15b Enforcement/Monitoring: *Shasta County Planning Division* ~~California Department of Fish and Game~~

MM 4.5.19a Enforcement/Monitoring: *Shasta County Planning Division* ~~California Department of Fish and Game~~

Response S-4a: The commenter expresses concern over the size of the buffer zones that will be implemented to protect wetlands. The location of the levees and project boundaries has been adjusted to accommodate a buffer around emergent wetlands and Elderberry plants. Elderberry locations will be staked in the field prior to construction and development activities so that a well-defined buffer is left around these plants. These buffer areas will remain vegetated and provide adequate filtering of potential contaminants. The location of the adjusted levees and project boundaries, in relation to special-status species identified within the project area, has been added to the Reclamation Plan as Figure 14-A. (See Appendix 3.0-3 in the FEIR.)

Based on information provided in the Federal Register (Vol. 67 No. 10, page 2093), indirect impacts are assumed when project activities are within 50 feet of waters of the United States. Such impacts would be significant.

All special-status species and emergent wetlands are a minimum of 50 feet from project-related construction activities, and most are a minimum of 100 feet from any project-related activity. The distance from special-status species to levees or project boundaries is shown on Figure 14-A. (See Appendix 3.0-3 in this FEIR). Of the 29 Elderberry plants observed within the project boundaries, 28 (or 97%) will be at least 100 feet from project related construction. The sole remaining plant is approximately 65 feet from the Spur Dike and standard practice for notification and protection will be followed relating to this individual.

Levees will be constructed from overburden material found within the project area. The levees and pit areas are subject to a reseeding and revegetation plan, as detailed in the Reclamation Plan. Buffer zones will surround the levees, placing a minimum of 50 feet between all construction-related activities, emergent wetlands and the Sacramento River. These buffer zones will remain vegetated, and will adequately filter sediment and other potential contaminants. Consequently, as storm water and eroded materials within the levees will be directed towards the center of the construction area and contained by the levees, and any potential erosion on the outer margins of the levees will be mitigated by the reseeding and revegetation plan and the

50-foot minimum buffer vegetation zones, there will be a less than significant impact to spawning gravels and aquatic vertebrates.

Impact 4.5.4 has been revised as indicated below.

Impact 4.5.4 Implementation of the Shasta Ranch Mining and Reclamation Plan could result in indirect impacts to federally-protected jurisdictional wetlands and other waters of the United States. This impact is considered *potentially significant subject to mitigation*. (PSM)

Construction and operation of the project could result in indirect impacts to waters of the United States within and adjacent to the project site. Project indirect effects could result from modification of local hydrology and degradation of water quality through operation and construction activities. *The levees will be designed to maintain a minimum 50-foot buffer for all wetlands, with a 100-foot buffer provided for approximately 85 percent of all the wetland features. These buffer areas will remain vegetated and provide for adequate filtering of potential contaminants.*

The disturbance of soils on the site is not expected to increase toxic concentration levels of dioxins in groundwater. A thorough discussion of dioxin and furans with respect to water quality and public health are included in Section 4.9, Hydrology and Water Quality and Section 4.12, Hazards and Hazardous Materials, respectively, of this EIR.

Response S-4b: Following input by CDFG and other responsible agencies, the design plans for the proposed ponds in the Phase 2 and Phase 3 areas have been modified. The slope of the pond banks will range between 3:1 and 4:1 to allow for greater vegetation growth and habitat development. Page 4.5-43 of the DEIR states that "Phase 2 and Phase 3 areas will be specifically reclaimed so as to provide habitat to riparian and wetland species (details are provided in Section 5.4 of the Shasta Ranch Aggregate Reclamation Plan). The Reclamation Plan also provides for monitoring of the restoration areas to ensure successful revegetation."

Response S-4c: In response, the Office of Mine Reclamation and Department of Water Resources were both consulted in regards to the design and construction of the levees. Letters of response to the Initial Study were included under Appendix 3.0-2, in the DEIR. (Attachment 2 and Attachment 5 are included in the FEIR letters of response to both agencies.) Two separate applications were filed in 2006 with the Reclamation Board. One for mining operations within the Reclamation Board jurisdictional area and one for construction of the fish exclusion levees and Spur Dike within the Reclamation Board jurisdictional area. The Reclamation Board cannot take action until CEQA is complete. The Reclamation Board Encroachment Permit Application has also been included under Attachment 5 (contained in this FEIR) following the letter to the Department of Water Resources for more information.

Response S-5: See response O-2. All fish exclusion levees will be constructed as specified above and as amended in the final mining and reclamation plan. Initial

discussions regarding fish exclusion levees with NMFS has evaluated 10-, 25- and 50- year requirements. We apologize for the confusion.

Response S-6: Comment noted. The Department of Fish and Game states that a portion of the Shasta Ranch proposed for mining may be State lands because the river channel occupied the project site at the time the river channel was deeded by the Federal government to the State of California. No information has been provided to verify that claim. State Lands Commission did comment on this issue in December 2005. This is primarily a title question. The status of ownership of the property has no bearing on the type or severity of potential environmental impacts associated with the proposed project or the CEQA review process. In the event the property is owned by the State, the State Lands Commission may review the Shasta Ranch project and require an agreement with the property owner(s) for the use of state property and resources. The project proponent will undertake review of this issue, but it is not an environmental issue and, as such, is outside of the scope of the Environmental Impact Report.

Letter T

COUNTY OF TEHAMA
DEPARTMENT OF PUBLIC WORKS
9380 SAN BENITO AVENUE
GERBER, CA 96035-9701
BUS: (530) 385-1462
FAX: (530) 385-1189

ROAD COMMISSIONER
SURVEYOR
ENGINEER
PUBLIC TRANSIT
FLOOD CONTROL AND
WATER CONSERVATION DISTRICT
SANITATION DISTRICT NO. 1

RECEIVED
SEP 27 2006
COUNTY OF SHASTA
PERMIT COUNTER

September 28, 2006

R-06-603

Mr. Bill Walker
Shasta County Department of
Resource Management
Planning Division
1855 Placer Street
Redding , CA 96001

REC'D SEP 28 2006

RE: Tullis Shasta Ranch Use Permit 05-010 & RP 05-001 & DEIR

Dear Mr. Walker

Tehama County Public Works has reviewed the Draft Environmental Impact Report (DEIR) for a use permit and reclamation plan for the Shasta Ranch gravel operation submitted on behalf of Tullis Inc. The project intends to transport gravel materials from the Shasta Ranch site to a site on Bowman Road in Tehama County.

The Transportation and Circulation Element of the DEIR indicates an increase of truck traffic on Tehama County roads (Main Street, Bowman Road and Draper Road) on the order of 120 average daily trips. This additional truck traffic impacts the life of the existing pavement along the routes to and from the two sites and also effects the safety of traffic movements at the intersection of Draper and Bowman Road. **T-1**

We have evaluated the decreased life of the pavement on Bowman Road and Main Street created by the increased truck traffic that will result from the operation under this use permit. The owner has proposed to offset this impact by giving 500 tons of asphalt annually to Tehama County Public Works as a fair share of the cost of maintaining these roads.

The present configuration of the intersection of Bowman Road and Draper has been evaluated by Tehama County Public Works. In consideration of the present Average Daily Traffic and vehicle speeds on Bowman Road and the turning movements of slow moving truck traffic from Draper to Bowman Road proposed under this Use Permit we find that the safe operation of this intersection will be affected. The intersection is on a curve on Bowman Road and Bowman Road is super elevated creating additional movement difficulties. The owner has proposed to pay for the construction of a right hand turn lane on Bowman Road to Draper and provide an acceleration lane on Bowman Road to the east of Draper Road.

1

Letter T Continued

We are concerned with the materials to be hauled from Phase 3 of the Shasta Ranch site. Further evaluation for potential hazardous material needs to be reviewed prior to the transport of gravels from Phase 3 site into Tehama County.

Based on this information we respectfully request the following mitigation measures be included in the Environmental Impact Report:

1. The owner shall compensate Tehama County Public Works 500 tons of asphalt concrete annually for the life of the Use Permit as a fair share for the improvements needed to offset impacts of truck traffic on Tehama County roads. An agreement between Tehama County and the owner shall be signed to address this mitigation measure.
2. The owner shall compensate Tehama County Public Works for the construction of improvements on Bowman Road/ Draper Road intersection (i.e. right turn lane and acceleration lane) as conceptually shown on the enclosed Intersection Detail sheet. An agreement between Tehama County and the owner shall be signed to address this mitigation measure.
3. We suggest that materials hauled from Phase 3 of the site to locations in Tehama County have prior approval from Tehama County.

T-1 cont.

Incorporation of these mitigation measures will adequately address our traffic and safety concerns.

Thank you for the opportunity to provide comments on the proposed project. If you have any question, please call Gary Antone (530) 385-1462.

Sincerely,

Gary Antone, P.E., P.L.S.
Director of Public Works

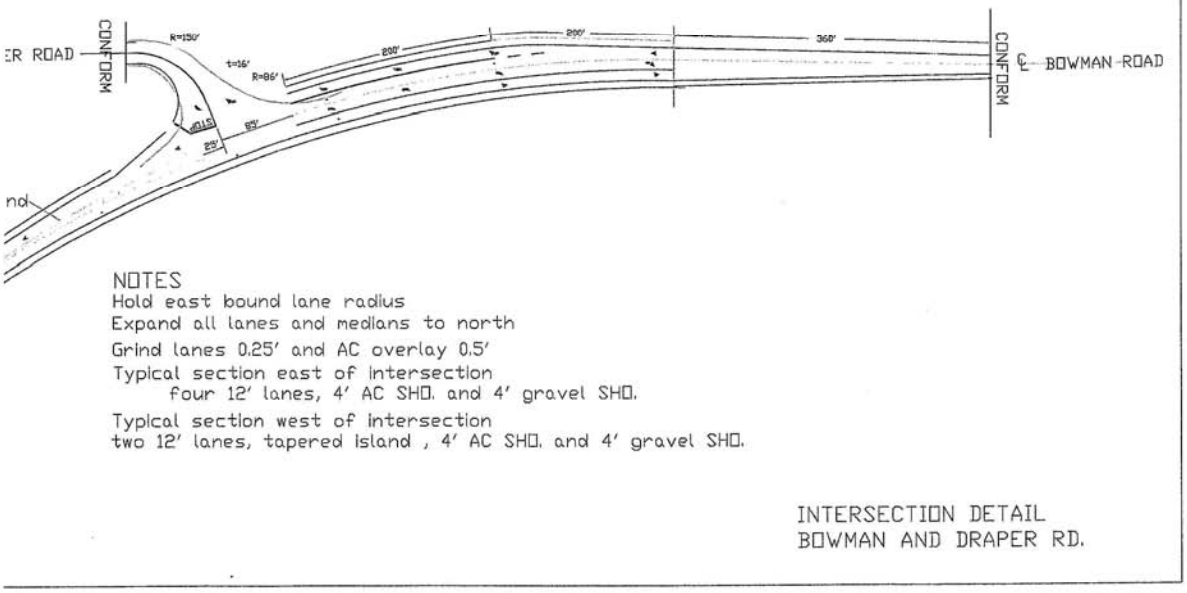
By: Gerald Brownfield
Gerald Brownfield, Deputy Director

Enclosure: Intersection Detail

cc: Dori Blackman, Pacific Municipal Consultants
John Stauffer, Planner

2

Letter T Continued



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Letter T

Gerald Brownfield, Deputy Director; County of Tehama Department of Public Works, September 28, 2006

Response T-1: In response to the mitigation measures requested, see below:

1) Rather than incorporating it as a mitigation measure, the project description in Section 3.0, Revisions to the DEIR has been updated to reflect a signed agreement as requested by Tehama County Public Works Department. This provision of the project description states:

Tullis, Inc. will furnish Tehama County 500 tons of asphalt concrete per year from our Cottonwood Sand and Gravel location to be used at your discretion. This will serve as compensation for our use of Bowman and Draper Roads as delivery routes of gravel from the Shasta Ranch to our Cottonwood Creek Sand and Gravel location.

The agreement has been added and referenced as Attachment 1 to this FEIR.

2) The project will add five westbound and five eastbound trips (after the passenger car equivalent adjustment of 3.0) during the AM and PM peak hours to the Bowman Road/Draper Road intersection. This is not a substantial increase in traffic and was therefore not identified as a significant impact. No mitigation is required. See Response I-3.

3) The commenter suggests that materials hauled from Phase 3 of the site to locations in Tehama County should be required to have prior approval from Tehama County. See responses to comments M-1 and M-2 respectively. The proposed Phase 1 and Phase 2 mine areas did not receive treated effluent from the paper mill and further soil testing is not warranted. The issue of the possible release of Dioxin compounds due to use of treated mill effluent for irrigation is an issue on the proposed Phase 3 mining area. Phase 3 soils were sampled by both Geomatrix and VESTRA Resources in 2005 and 2006 respectively. Dioxin levels were below regulatory screening levels and no additional actions were proposed.

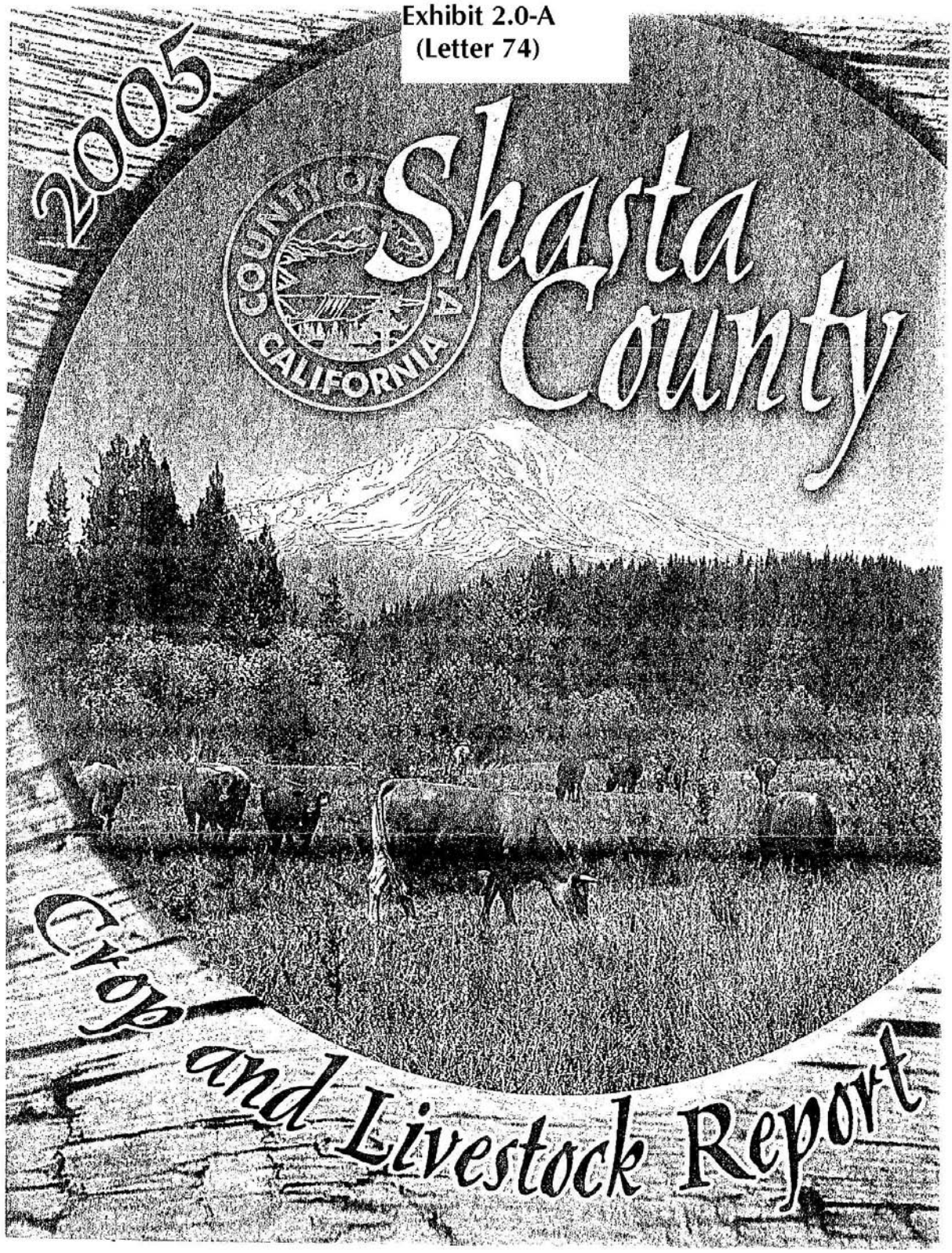
As noted in the DEIR, Section 4.12, Hazards and Hazardous Materials, an air toxics evaluation was conducted to estimate the potential non-cancer and cancer health risks associated with exposure to dioxin and furans that may become airborne during future quarry operations in Phase 3 of the proposed project. The Office of Environmental Health Hazard Assessment (OEHHA) guidelines for estimating potential exposure to chemical emissions were used to assess the potential human exposure to airborne chemicals from a variety of exposure pathways. The toxicity, exposure and risk assessment levels were all found below the levels that typically require emission controls by the California Air District. See response 24-1 for more information regarding dust and fumes.

Since the material to be transported will meet State and Federal criteria by which to consider the material to be hazardous, there is no basis for giving that County discretionary control over the commerce of the material.

Exhibits 2.0-A – E
(See enclosed CD)

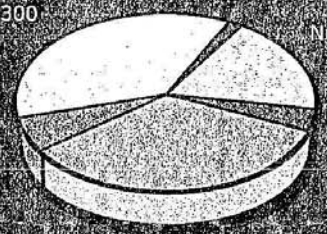
Attachments to Comment Letters

Exhibit 2.0-A
(Letter 74)



Shasta County Livestock & Crop Summary

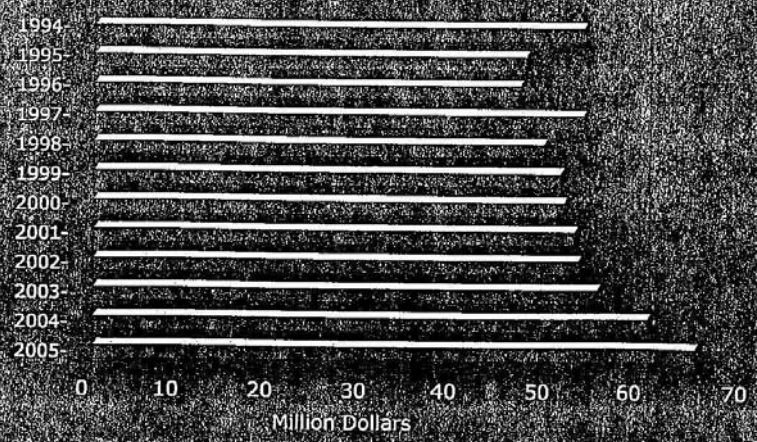
2005 Total Production Value: $64,204,000

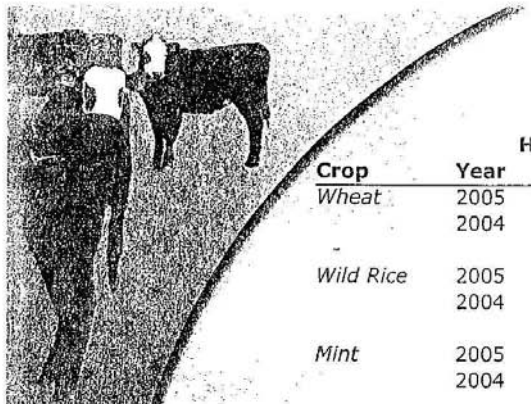


Production Summary

	2005	2004	2003	2002
Livestock	$22,894,300	$21,096,700	$18,380,100	$16,760,100
Livestock Products	885,000	873,000	845,800	840,000
Apiary Products	3,568,300	3,329,000	5,081,700	3,001,500
Field Crops	22,826,600	22,253,100	19,892,200	20,517,500
Nursery Stock	11,774,200	9,994,800	8,017,500	8,756,900
Orchard Crops	2,255,600	2,076,100	2,000,300	2,321,800
TOTALS	$64,204,000	$59,622,700	$54,217,600	$52,197,800
Timber	0*	$29,827,785	$27,731,361	$39,261,247
Other Forest Prods	$20,889,700	$14,453,100	$11,221,200	$15,269,000

* Not Available
Totals may not add due to rounding





Field Crops

Crop	Year	Harvested Acres	Per Acre	Total	Unit	Avg/ Unit	TOTAL
Wheat	2005	*					
	2004	500	1.5	750	ton	$93.00	$69,800
Wild Rice	2005	4,600	1,220	5,612,000	lb	.50	2,806,000
	2004	4,500	1,350	6,075,000	lb	.42	2,551,500
Mint	2005	1,800	92	165,600	lb	12.00	1,987,200
	2004	2,400	81	194,400	lb	13.00	2,527,200
Misc Crops	2005						616,100
	2004						401,000
Hay							
-Alfalfa	2005	5,700	4.7	26,790	ton	127.00	3,402,300
	2004	5,600	4.9	27,440	ton	115.00	3,155,600
-Other Hay	2005	15,000	2.9	43,500	ton	117.00	5,089,500
	2004	14,600	3.4	49,640	ton	103.00	5,113,000
-Timothy Hay	2005	2,500	4.6	11,500	ton	187.00	2,150,500
	2004	2,000	5.0	10,000	ton	166.00	1,660,000
PASTURE							
-Irrigated	2005	33,000			acre	100.00	3,300,000
	2004	33,000			acre	100.00	3,300,000
-Improved	2005	100,000			acre	12.00	1,200,000
	2004	100,000			acre	12.00	1,200,000
-Rangeland	2005	325,000			acre	7.00	2,275,000
	2004	325,000			acre	7.00	2,275,000
TOTAL FIELD CROPS	2005						$22,826,600
	2004						$22,253,100

*Included in Misc Crops

Orchard Crops

Crop	Year	Harvested Acres	Per Acre	Total	Unit	Avg/ Unit	TOTAL
Walnuts	2005	924	.77	711	ton	$1,430.00	$1,016,700
	2004	923	.70	646	ton	1,260.00	814,000
Fruit & Nut Crops (Apples, Olives, Stone Fruit, Grapes, Kiwis, Pistachios, etc.)	2005						1,238,900
	2004						1,262,100
TOTAL ORCHARD CROPS	2005						$2,255,600
	2004						$2,076,100

Apiary Products

Apiary Products

Item	Year	Production	Unit	Avg/Unit	TOTAL
Honey	2005	64,000	lb	$1.00	$ 64,000
	2004	275,000	lb	1.00	275,000
Beeswax	2005	*			
	2004	20,000	lb	1.16	23,200
Package Bees	2005	40,400	lb	10.47	423,000
	2004	29,600	lb	7.28	215,500
Queens	2005	97,000	ea	10.56	1,024,300
	2004	103,000	ea	10.02	1,032,100
Nuclei	2005	3,250	ea	43.65	141,900
	2004	7,640	ea	41.94	320,400
Pollination	2005	23,360	col	81.06	1,893,600
	2004	27,280	col	53.62	1,462,800
Misc Apiary Products	2005				21,500
TOTAL	2005				$3,568,300
APIARY PRODUCTS	2004				$3,329,000

*Included in Misc Apiary Products

Sep. 12. 2006 10:21AM SC BLDG PLAN OMNI MEANS **Exhibit 2.0-B (Letters 77-81)** 530 245 6468 P.003 No. 3405 P. 2

omni·means
ENGINEERS·PLANNERS

TECHNICAL MEMORANDUM

To:	Patrick Minnum - Shasta County	Date:	June 14, 2005
Attn:	Steven Preszler – Shasta County Russ Mull – Shasta County Marcelino Gonzalez – Caltrans District 3 Richard Barchus – City of Anderson Bill Goodwin – Tehama County Jerry Brownfield – Tehama County	Project:	Shasta Ranch Gravel
From:	OMNI-MEANS: Larry Wymer, T.E.		
Re:	Draft Letter Report	Job No.:	25-7303-01
CC:	Lyle Tullis – Tullis, Inc. Chris Handley – Tullis, Inc. Frank Sawyer – SDS Engineering	File No.:	C826MEM005.DOC

INTRODUCTION

This technical report summarizes our analysis of traffic operations associated with the proposed "Shasta Ranch Gravel" development located within the unincorporated south-central Shasta County. The term project as used in this report refers to the proposed "Shasta Ranch Gravel" development. The project site lies generally between Balls Ferry Road and the Sacramento River, southeast of Deschutes Road. The main purpose of this study is to quantify the trips associated with the proposed project that would be added along the roadways and intersections. For reasons described later within this report, this study does not analyze the intersections and roadways which would be impacted due to the addition of the trips generated by the proposed project. However, a future Transportation Impact Analysis Report (TIAR) is planned which would analyze the operations at these intersections and roadways.

ANCILLARY SITES

The proposed project will work in conjunction with other nearby "ancillary sites," some of which currently exist, and some of which are planned for the future. Although these ancillary sites will directly affect the operations of the Shasta Ranch Gravel site, particularly in terms of where trips to and from the project site will be distributed, these other sites are not considered directly within this study. They are important, however, because the new Shasta Ranch Gravel site will result in the rerouting of a number of trips in the vicinity of the project site, resulting in adjustments to traffic volumes at intersections and roadways in the vicinity of the project site. It is for this reason that operations at these nearby intersections and roadways are not analyzed within this study since the resulting operations requires an accurate accounting of these changes in travel patterns, which has not yet been finalized as part of final traffic study. However, these other sites are described briefly below.

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June 14, 2005

Current ancillary facilities which are in operation in the vicinity of the proposed project include the following:

- 2 asphalt plants
  - (1) Cottonwood Creek Asphalt Plant
  - (2) Northstate Asphalt Plant
- 3 gravel extraction sites (where unprocessed gravel is extracted)
  - (1) Cottonwood Creek Sand and Gravel Site
  - (2) Blacks Lane Road Gravel Extraction Site
    (Note: was will depleted of gravel in Spring, 2005)
  - (3) Gas Point Road Gravel Extraction site
    (Note: will not be utilized upon opening of Shasta Ranch Gravel site)
- 1 gravel processing site (where raw gravel is crushing, screened and washed).
  - (1) Cottonwood Creek Sand and Gravel Site \

Within this report, these facilities will be referred to as "Ancillary Sites." Per information provided by Tullis, Inc., the build out of the proposed project would occur following either abandonment or depletion of gravel at two of the three existing gravel sites (as noted above). As a result, the operations at the "Ancillary Sites" in the area would be transferred to (or effected by) the project site. A description of "Ancillary Sites" and their operations in the area which will be transferred to (or effected by) the project site, and future potential operations in the area which will effect the operations at the project site is provided in the appendix.

Note again that this study does not take into account the potential trips along the study roadways and intersections that are associated with the operations of the "Ancillary Sites," but rather focuses exclusively on the trips generated by the proposed project.

PROJECT DESCRIPTION

The proposed project is located within unincorporated south-central Shasta County. The project site lies generally between Balls Ferry Road and the Sacramento River, southeast of Deschutes Road. **Figure 1** is a project vicinity map which illustrates the project location. Access to the proposed project site will be exclusively off of Balls Ferry Road, via a proposed driveway approximately 100 yards NW of the Balls Ferry Road/Kimberly Road intersection. The subject property is currently zoned IMR (Interim Mineral Resource). The Shasta County Zoning Code states:

> *"The Interim Mineral Resource (IMR) District is intended to be combined with any principal district to protect mining operations which are short term (i.e. less than 30 years of expected operation), and to allow for compatible land uses while protecting the potential for mineral resource development."*

Per information provided by the project proponent (Tullis, Inc.), the planned lifetime of the proposed project is 29 years. The proposed project would involve the extraction (or harvesting) and processing of raw gravel from the site into a useable or sellable commodity. Following the extraction of raw gravel, the gravel would be prepared for use in nearby asphalt plants, or to sell on the open market. The preparation of the raw gravel would involve the crushing, screening and washing of raw aggregate to ready it for delivery to other locations by either "semi-bottom dump trucks" or "double-bottom dump trucks." Most of the harvested and processed gravel would be transferred to nearby asphalt plants, while a portion of the harvested and processed gravel would be sold on the open market, with dump trucks transferring the materials to other areas throughout northern California. It is presently estimated that approximately 60%

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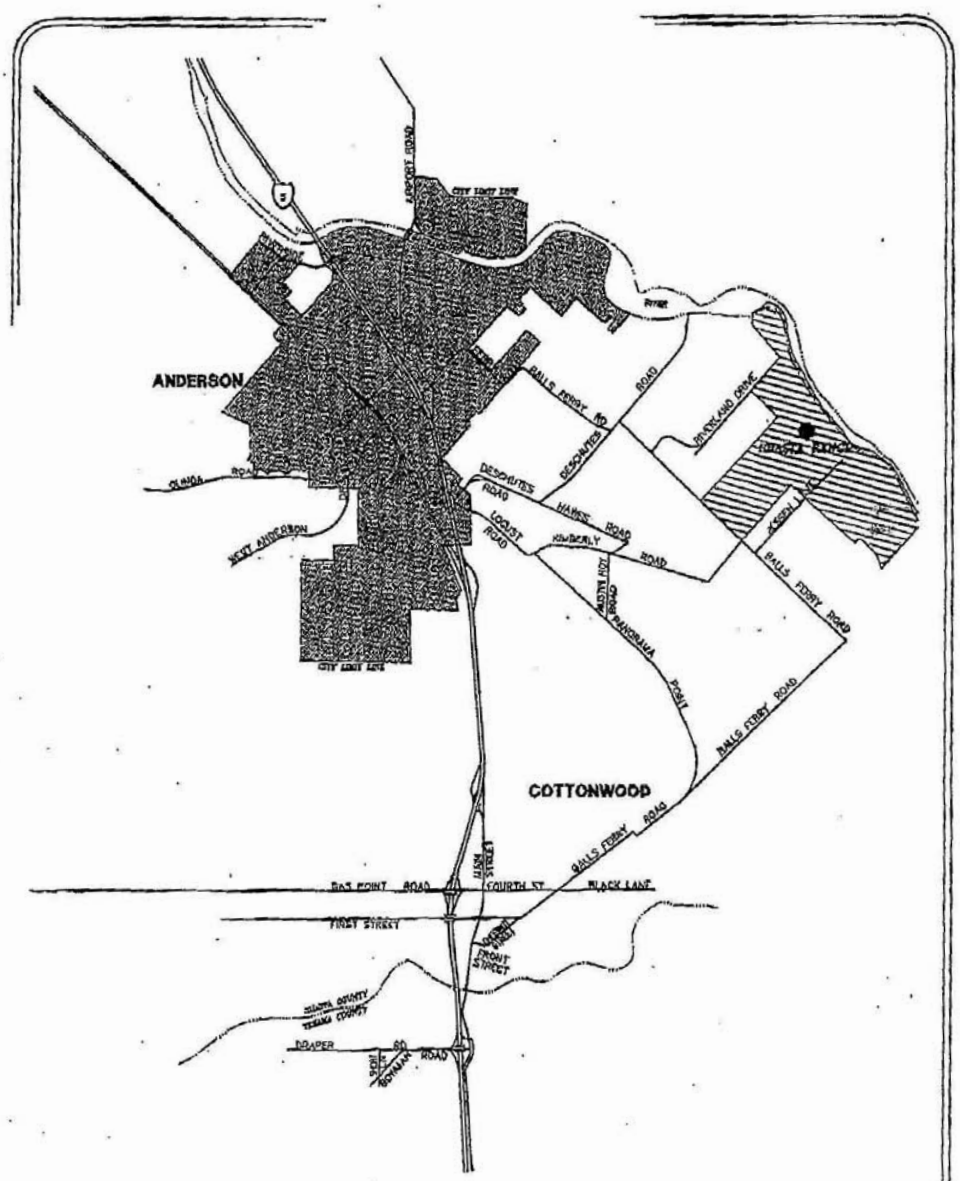
No. 3405 P. 4



Shasta Ranch Gravel Operations TIS

Figure 1

Project Vicinity Map

of the harvested and processed gravel would be transferred to nearby asphalt plants, while approximately 40% would be sold (and delivered to) the open market.

OFF-SITE CIRCULATION AND PROJECT SITE ACCESS

Study intersections and roadways, which are listed below, were established through consultations with Shasta County, City of Anderson, and Caltrans staff. This traffic study only illustrates the project volumes which will occur at these locations. However, since this traffic study does not provide for the reallocation and redistribution of trips due to the ancillary facilities associated with the project, this traffic study does not include level of service operations, or total volumes at these locations for the various scenarios included within this study. The future Transportation Impact Analysis Report (TIAR) will include an analysis of level of service operations at the intersections and roadways listed below (complete with tables), while figures will be provided which show existing (and future) intersection lane geometries and control at study intersections, and peak hour and daily traffic volumes at study intersections and roadways for existing conditions, short-term conditions, and long-term cumulative conditions.

Study Intersections

1. Deschutes Road / Balls Ferry Road
2. I-5 / Deschutes Road ramps
3. I-5 / Riverside Avenue ramps
4. SR-273 / Ox Yoke
   {Note: New counts still need to be collected at some of these intersections}

As noted before, the main focus of this study is to identify the "project" trips that would be added to the roadway network. As such, peak hour trips generated by the proposed project at the four study intersections identified above will be quantified within this study.

Although initially identified for possible analysis, the I-5/Bowman Road ramp intersections were eliminated as intersections requiring analysis after consultations with Tullis, Inc. revealed that the interchange already had vested trips associated with the Cottonwood Creek site which would likely be significantly reduced following the opening of the Shasta Ranch site.

Study Roadways

- Balls Ferry Road
  - between Deschutes Road & Kimberly Road
  - between Kimberly Road & Panorama Point Road
  - between Panorama Point Road & 4th Street
- Deschutes Road
  - between Balls Ferry Road & Locust Road
  - between Locust Road & SR-273
- Kimberly Road
  - between Balls Ferry Road & Locust Road-Panorama Point Road
- 4th Street
  - between Balls Ferry Road & Main Street
- Panorama Point Road *(added per information from Tullis, Inc.)*
  - between Kimberly Road & Balls Ferry Road
- SR-273
  - north of Ox Yoke Road *(revised from "north of Deschutes Road" per information from Tullis, Inc.)*

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{Note: New counts still need to be collected along some of these roadways}

Although initially identified for possible analysis, the following roadway segments were eliminated as roadways requiring analysis, for reasons explained below:

- Bowman Road
  - between I-5 Ramps
  - west of SB I-5 Ramps
- Main Street
  - between 4th Street & 1st Street
  - between 1st Street & Bowman Road
- Balls Ferry Road
  - between 4th Street & 1st Street
- 1st Street
  - between Balls Ferry Road & Main Street

All of these roadway segments were eliminated as roadways requiring analysis after consultations with Tullis, Inc. revealed that the roadways already had vested trips associated with the Cottonwood Creek site which would be either remain unchanged, or likely be reduced, following the opening of the Shasta Ranch site.

PROJECT OPERATIONS

Hours of Operations

It is planned that the proposed Shasta Ranch site would operate generally as the current gravel extraction sites (described earlier within the *Ancillary Sites* section) operate. The extraction of gravel is planned to occur 5 days per week between the hours of 7 AM and 5 PM for most of the year. During the summertime peak demand, it is planned that the plant will operate 6 days per week from 6 AM to 6 PM. However, it is not planned that materials would be hauled on Saturday, thus Saturday traffic would be confined to the arrival or departure of primarily employee vehicles only. Between Monday and Friday, gravel will be hauled from the site between the hours of 6 AM to 6 PM (excluding holidays). Thus, it is assumed that employee vehicles would be present on area roadways approximately 300 days per year, and both employee vehicles and gravel trucks would be present on area roadways only approximately 250 days per year.

Average Dump Truck Loads

To perform the traffic analysis, it is necessary to establish how many trucks operate on an average day. As described above, it is assumed that trucks would be in operation 250 days per year. Information from the project proponent established that on average, a single dump truck contains an average load of 25 tons.

SHORT TERM PROJECT OPERATIONS

As noted before, the opening of the Shasta Ranch Gravel Operations site would occur after the depletion of materials at one of the "Ancillary Site" and abandonment of an another "Ancillary Site." The Shasta Ranch site will generally serve as the replacement for these two sites.

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June 14, 2005

Trip Generation

For Short Term conditions, all gravel extracted from the Shasta Ranch site will be processed on site before being transferred to the nearby asphalt plants, or before being sold on the open market. It is planned that permitted operations at the Shasta Ranch Gravel site will result in the extraction and processing of 400,000 tons of gravel per year from the site. Processed gravel from the site will be distributed as follows:

- 25% of the processed gravel will be transferred to the Northstate Asphalt Plant
- 25% of the processed gravel will be transferred to the Cottonwood Creek Asphalt Plant
- 50% of the processed gravel will be sold on the open market.

Based on the use permit which will be obtained for the new Shasta Ranch site in which 400,000 tons of gravel will be extracted, processed, and exported from the site, an average total of 64 daily roundtrips (with 6 round trips during both the AM and PM peak hours) will be generated by the new site as gravel is exported from the site. As described above, it is planned that ½ of this exported gravel will be sold on the open market resulting in 32 daily round trips, 3 AM peak hour round trips, and 3 PM peak hour round trips to/from the open market. It is assumed that the other half will be split evenly between the two nearby asphalt plants, resulting in 16 daily round trips, 1½ AM peak hour round trips, and 1½ PM peak hour round trips to/from each asphalt plant. Since each roundtrip is comprised of two trip ends, this results in a total of 128 daily trips, 12 AM peak hour trips, and 12 PM peak hour trips for trucks to/from the Shasta Ranch site.

Table 1 provides a summary of the quantities and trips associated with the extraction, processing, and transfer of gravel from the Shasta Ranch site for Short Term conditions.

TABLE 1
PROJECT TRIP GENERATION – GRAVEL TRUCK TRIPS (SHORT TERM CONDITIONS)

	Processed Gravel Exported from Shasta Ranch Site (Outbound Trips = Loaded Trucks) (Inbound Trips = Empty Trucks)					
SR-CC	Processed gravel exported from Shasta Ranch to Cottonwood Creek Asphalt Plant	100,000	400	16	16 (1 / 2)	16 (2 / 1)
SR-NS	Processed gravel exported from Shasta Ranch to Northstate Asphalt Plant	100,000	400	16	16 (2 / 1)	16 (1 / 2)
SR-OM	Processed gravel exported from Shasta Ranch to Open Market	200,000	800	32	32 (3 / 3)	32 (3 / 3)

Notes: *(1) Routes are designated on corresponding figures.*
(2) Gravel hauling operations assumed for 250 days/year
(3) Dump truck load averages 25 tons per truck
(4) AM and PM peak hour volumes assumed to each be approximately 1/12 of daily since hauling occurs over 12 hour period.

Note that all the trips from the proposed project would not necessarily be new trips added to the roadway network. Some trips associated with the "Ancillary Sites" that already exist on the roadways would be altered by the proposed project site as a result of the shifting of existing traffic patterns to and from the new site. As such, these trips should be discounted from the trips generated by the proposed Shasta Ranch project as they already exist on the roadway network. However, the "net" increase/decrease in

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trips associated with the proposed project along the study roadways and intersections that would occur as a result of discounting the trips associated with the "Ancillary Sites" are not quantified in this report, but would be addressed in the future Transportation Impact Analysis Report (TIAR).

In addition to the trips associated with transfer of processed gravel from the project site, additional trips associated with the exportation of asphalt product from the nearby asphalt plants ("Ancillary Sites") to the open market would exist along the study roadway segments and intersections for Short Term conditions. As noted in the *Ancillary Sites* section of the report, this study does not take into account the potential trips along the study roadways and intersections that are associated with the operations of the "Ancillary Sites," but rather focuses exclusively on the trips generated by the proposed project.

Non Dump-Truck Trip Generation

Project site trip generation for traffic studies is typically established based on trip generation rates contained in the Institute of Transportation Engineers (ITE) Publication *Trip Generation (Seventh Edition)*. However, there are no land uses which correspond to the proposed project, therefore non-truck trips are estimated based on the number of employees proposed for the site, and other trips which would be typical for the site. Based on information from Tullis, Inc., it is assumed that the project site will employ 5-6 people. The hours of operation for the site are projected to be between 6 AM and 6 PM. However, it is assumed that work hours will be staggered for some, if not all employees. For purposes of this analysis, to be conservative, it will be assumed that the site will employ 8 people. Also to be conservative, it will be assumed that all 8 employees will arrive during the AM peak hour and leave during the PM peak hour. Additionally, to be conservative, it will be assumed that 2 employees (1/4 of employees) will be dropped off at work during the AM peak hour (with the vehicle then departing the site), and that the same 2 will be picked up from work at the end of the day (with the vehicle arriving at the site). Additionally, it will be assumed that all 6 employees who were not dropped off will make a round trip in the middle of the day for lunch, meetings, personal errands, etc., which will total 12 trip ends. Based on information from Tullis, Inc., the only other trips which are made on a typical day are those associated with fuel delivery. To account for this delivery, and other miscellaneous trips, such as miscellaneous deliveries, etc., it will be assumed that an average of 4 other visitors will come to the site each day, accounting for 8 additional trips. All of these extra trips are assumed to occur during non-peak hours, and are assumed to be distributed in the same manner as employee trips.

When added together, it is assumed the project would generate non-truck trips as outlined within Table 2. As Table 2 shows, in addition to 10 AM peak hour trips (8 inbound + 2 outbound) and 10 PM peak hour trips (2 inbound + 8 outbound), it is assumed that the proposed project will add a total of 40 daily trips to area roadways when accounting for these peak hour trips and mid-day trips.

TABLE 2
PROJECT TRIP GENERATION – NON DUMP-TRUCK TRIPS

AM Peak Hour	8 employee arrivals (6 parking + 2 drop offs)	2 departures after employee drop offs	10
PM Peak Hour	2 arrivals to pick up employees	8 employee departures (6 which parked + 2 pick ups)	10
Mid-Day	6 mid-day employee arrivals 4 mid-day delivery, etc. arrivals	6 mid-day employee departures 4 mid-day delivery, etc. departures	20
Total Daily	20 Inbound	20 Outbound	40

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Total Short Term Trips (Transfer of Gravel and Non-Truck Trips)

It is projected that the Shasta Ranch site would produce 128 daily truck trips, 12 AM peak hour truck trips, and 12 PM peak hour truck trips. In addition, there will be 20 daily non-truck trips, 10 AM peak hour non-truck trips and 10 PM peak hour non-truck trips associated with the Shasta Ranch site.

Dump-Truck Trip Distribution

The truck trips between the Shasta Ranch site and the Cottonwood Creek Asphalt Plant will be distributed along a variety of routes, which are described below and depicted in **Figure 2a**. Truck routes which are assumed to be unutilized by dump trucks are described in the appendix.

Trip Assignment between Shasta Ranch Gravel Operations and Cottonwood Creek Sand & Gravel/ Cottonwood Creek Asphalt Plant (defined in terms of outbound trips)

- 25% north along Balls Ferry Rd. to Deschutes Rd., west along Deschutes Rd. to I-5/Deschutes Rd. interchange, south along I-5 to the I-5/Bowman Rd. interchange, west along Bowman Rd. to Draper Rd., west along Draper Rd. to the Cottonwood Creek Asphalt Plant.
- 10% south along Balls Ferry Rd. to Kimberly Rd., west along Kimberly Rd. to Locust Rd., north along Locust Rd. to Deschutes Rd. and the I-5/Deschutes Rd. interchange, south along I-5 to the I-5/Bowman Rd. interchange, west along Bowman Rd. to Draper Rd., west along Draper Rd. to the Cottonwood Creek Asphalt Plant.
- 65 % south along Balls Ferry Rd. to Chestnut St., continues south along Chestnut St. to Front St., west along Front St. to Main St., south along Main St. to Bowman Rd., west along Bowman Rd. to Draper Rd., west along Draper Rd. to the Cottonwood Creek Asphalt Plant.

The truck trips between the Shasta Ranch site and the Northstate Asphalt Plant will also be distributed along a variety of routes, which are described below and depicted in **Figure 2b**.

Trip Assignment between Shasta Ranch Gravel Operations and Northstate Asphalt Plant (defined in terms of outbound trips)

- 75% north along Balls Ferry Rd. to Deschutes Rd., west along Deschutes Rd. to the I-5/Deschutes Rd. interchange, north along I-5 to the I-5/Riverside Ave. interchange, west along Riverside Ave. to Ox Yoke, west along Ox Yoke to SR-273, north along SR-273 to Clear Creek Rd., west along Clear Creek Rd. to the Northstate Asphalt Plant.
- 25% south along Balls Ferry Rd. to Kimberly Rd., west along Kimberly Rd. to Locust Rd., north along Locust Rd. to Deschutes Rd. and the I-5/Deschutes Rd. interchange, north along I-5 to the I-5/Riverside Ave. interchange, west along Riverside Ave. to Ox Yoke, west along Ox Yoke to SR-273, north along SR-273 to Clear Creek Rd., west along Clear Creek Rd. to the Northstate Asphalt Plant.

The distribution of truck trips to and from the Shasta Ranch site associated with the dispersal of processed gravel to the open market are depicted in **Figure 2c**.

It is assumed that trips from the project site (Shasta Ranch) that would head towards Northstate Asphalt plant are the only trips that would pass through the intersection of SR 273/Ox Yoke Avenue. All other trips from the project site (trips from the project that do not have origin/destination at Northstate Asphalt plant) along 273 are assumed to be absorbed between Deschutes Road and Ox Yoke Avenue. As a result, the project will not add any trips at the intersection of SR 273/Ox Yoke Avenue other than those associated with Northstate Asphalt plant.

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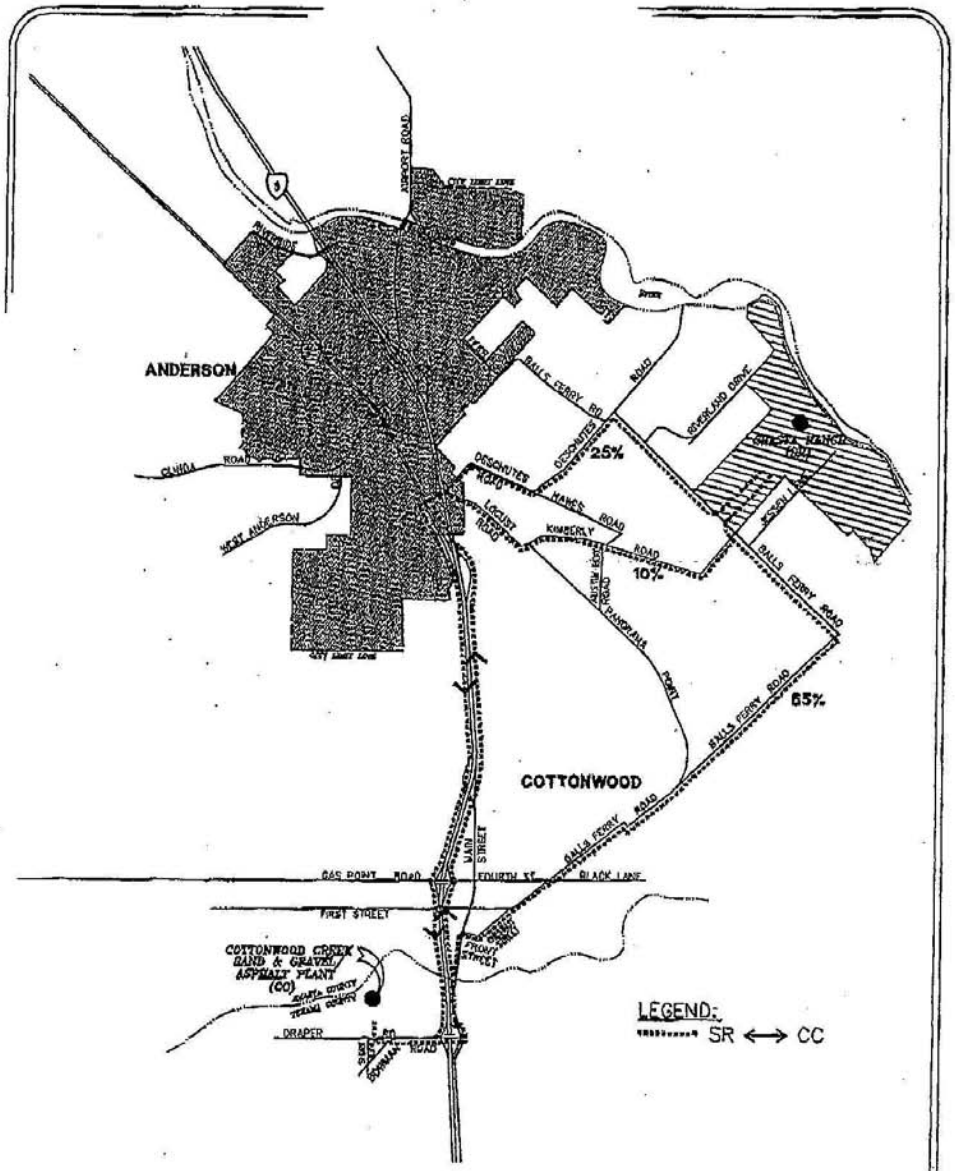

Shasta Ranch Gravel Operations TIS

Figure 2a

TRIP DISTRIBUTION - Gravel Trucks Between Project and Cottonwood Creek

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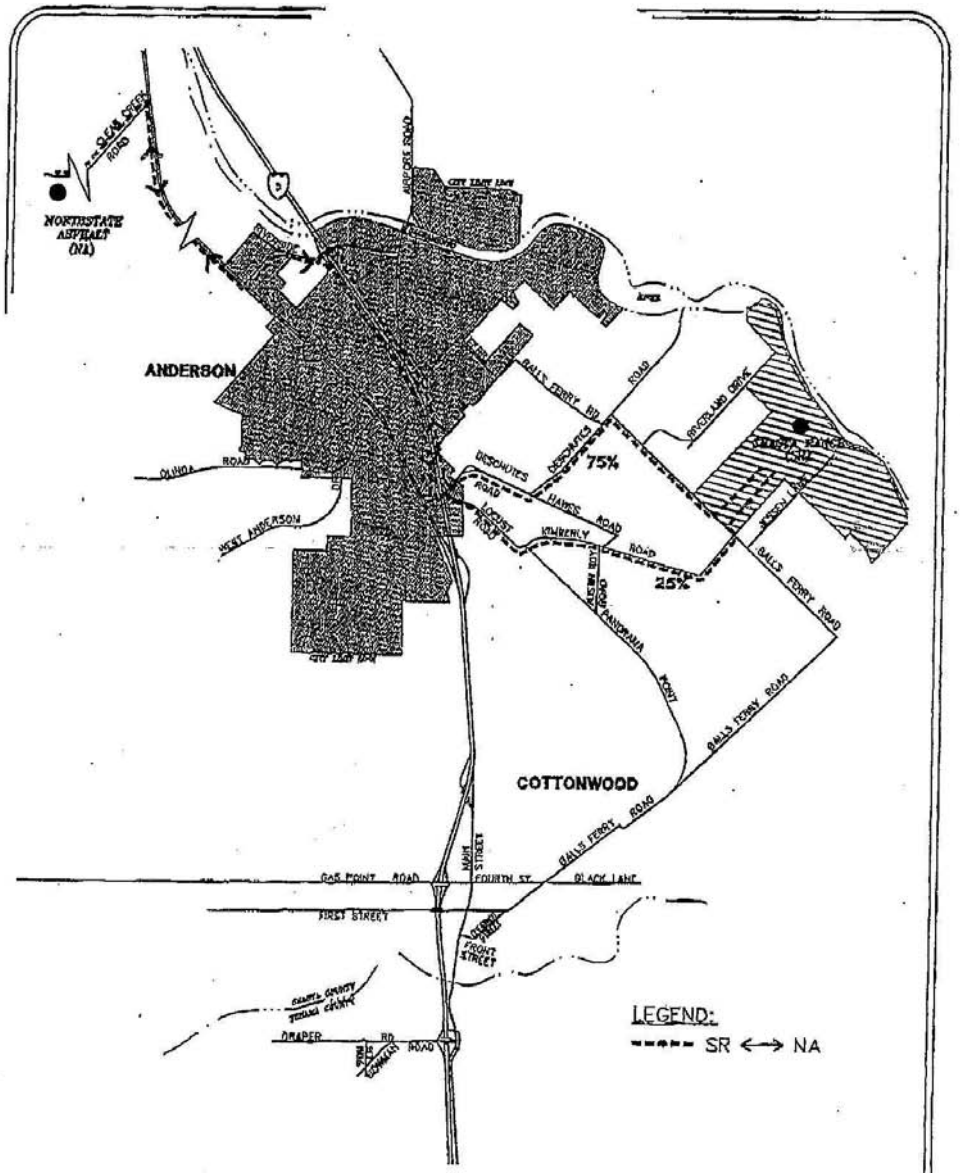

Shasta Ranch Gravel Operations TIS

Figure 2b

TRIP DISTRIBUTION - Gravel Trucks Between Project and Northstate Asphalt

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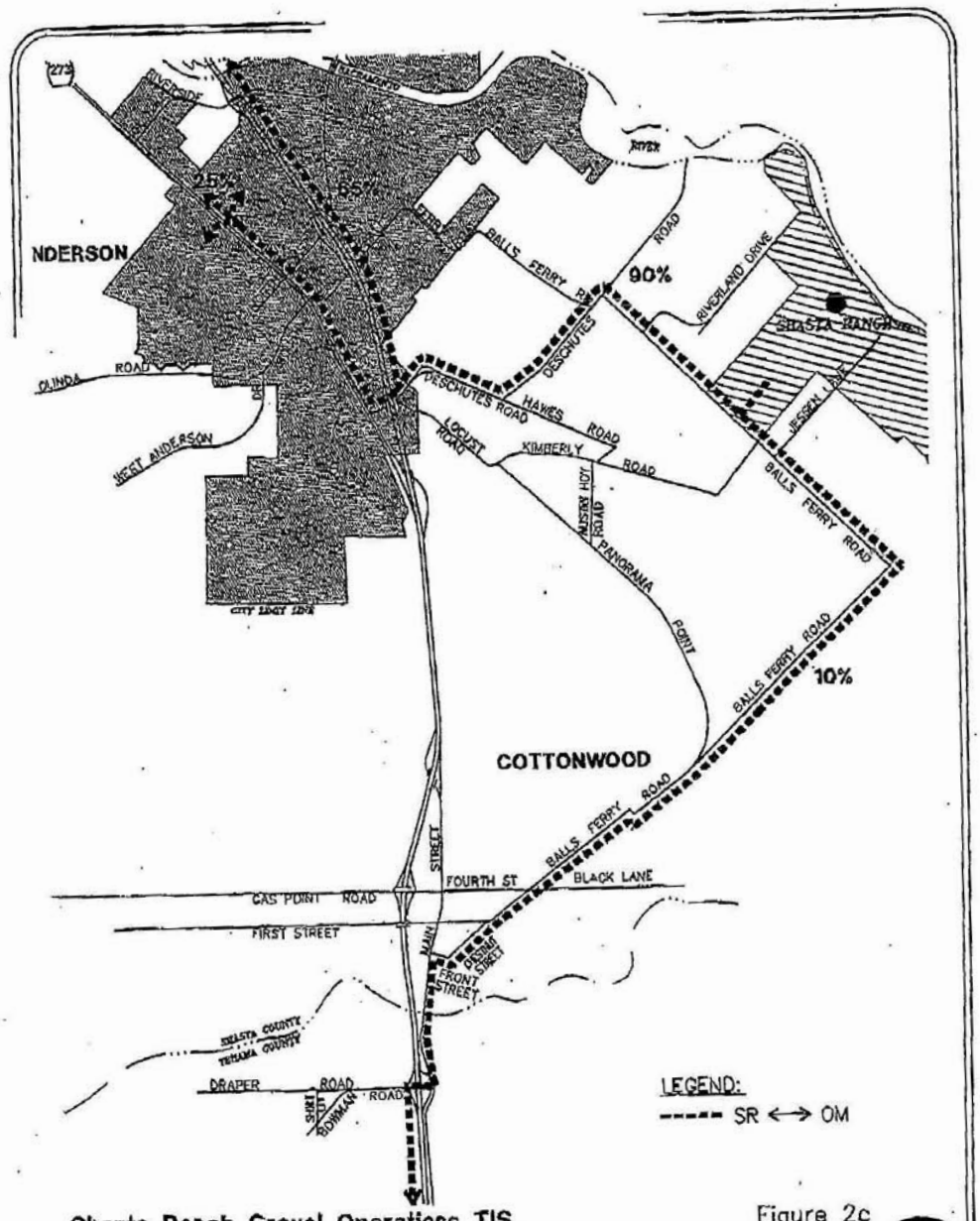

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Figure 2c

TRIP DISTRIBUTION - Gravel Trucks Between Project and Open Market

Routes Assumed as Not Utilized by Dump Trucks

Through the course of this study, a variety of possible routes of travel from the proposed project have been considered and discussed. Among those involved in those discussions besides Omni-Means and Tullis, Inc. are Shasta County, Tehama County, the City of Anderson, and Caltrans. Through those discussions, some potential routes along which trucks might travel were identified. However, these routes were eliminated from consideration following clarifications from Tullis, Inc. Among the routes eliminated from consideration following assurances from Tullis, Inc. that these routes would not be utilized, are described below:

- **Route between Deschutes Road and I-5/Riverside Avenue interchange comprised of Balls Ferry Road, Stingy Lane, North Street, and Riverside Avenue** – This route was raised by Caltrans as a possible alternative route by Caltrans, however discussions between Caltrans and Tullis, Inc. have concluded that this route would not be utilized by gravel filled dump trucks due to the local nature of the roadways, their non-designation as truck routes within the City of Anderson, and the added travel time that would result through use of this route.
- **Route between Fourth Street and Bowman Road comprised of I-5/Gas Point Road Interchange and I-5/Bowman Road Interchange** – Tullis, Inc. has indicated that they would instruct both the truck drivers and employees from using this route. As such, it is anticipated that there would not be trips associated with the "project" along this route and the "project" trips would instead travel along routes as described within the Short Term conditions.
- **Route between Balls Ferry Road and Main Street along First Street** - This route is currently utilized by gravel filled dump trucks transferring materials from the Blacks Lane Gravel Extraction site to Cottonwood Creek Sand & Gravel site for processing. Tullis, Inc. has indicated that they would expect no trips along this route following the depletion of materials at the Blacks Lane Gravel Extraction site, and that they expect truck trips between Shasta Ranch and Cottonwood Creek, and between Shasta Ranch and the open market to avoid this route and instead travel along routes as described within the Short Term conditions.

Non Dump-Truck Trip Distribution

The directional trip distribution and assignment of project-generated trips was estimated based on an understanding of existing and projected future traffic flows and travel patterns within the vicinity of the project site, and the location of local and regional housing and employment/commercial centers in relation to the proposed project site. The directional non dump-truck trip distribution for the proposed project is depicted graphically in **Figure 3**.

"SHORT TERM" ANALYSIS SCENARIO

The "Short Term" analysis scenario identifies only the "project" trips that would be added to the roadway network. Truck trips associated with the proposed project which were established within Table 1 were distributed through the study intersections and roadway segments based on the assumed routes identified under the *Dump-Truck Trip Distribution* section of the report for Short Term conditions. Similarly, the non-truck/employee trips associated with the proposed project as established in Table 2 are distributed through the network using the routes shown on Figure 3.

In order to assess the project impacts to the roadway network later within the TIAR, it is necessary to convert the truck trips into equivalent passenger car trips. For this reason, project volumes as reported within this traffic study shows not only the number of truck trips and non truck trips, but the total Passenger Car Equivalent (PCE) trips. As such, the PCE value represents the number of passenger cars that would consume the same percentage of capacity as one truck would under prevailing roadway and traffic conditions. Considering the rolling terrain present in the vicinity of the proposed project and the

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impact a fully loaded gravel truck would have on traffic flow, a PCE of 3.0 is assumed as appropriate for the analysis. **Table 3** presents the "project only" trips for the AM peak hour, PM peak hour and weekday daily for the Short Term conditions in terms of non-truck/employee trips, truck trips and the equivalent passenger car trips. **Figures 4a, 4b** and **4c** illustrate the "project only" trips during the AM peak hour, PM peak hour and weekday daily, respectively, for Short Term conditions.

TABLE 3
SHORT TERM CONDITIONS – PROJECT TRIPS

AM Peak Hour				
Intersection	Non-Truck Trips (A)	Truck Trips (B)	Equivalent Passenger Car Trips (C) = 3*(B)	Total Trips (A) + (C)
Deshutes Rd./Balls Ferry Rd.	7	7	21	28
Deshutes Rd./I-5 NB On-Ramps	7	8	24	31
Deshutes Rd./I-5 SB On-Ramps	6	6	18	24
Riverside Ave./I-5 NB On-Ramps	0	1	3	3
Riverside Ave./I-5 SB On-Ramps	0	3	9	9
SR 273/Ox Yoke Ave.	0	3	9	9
PM Peak Hour				
Intersection	Non-Truck Trips (A)	Truck Trips (B)	Equivalent Passenger Car Trips (C) = 3*(B)	Total Trips (A) + (C)
Deshutes Rd./Balls Ferry Rd.	7	7	21	28
Deshutes Rd./I-5 NB On-Ramps	7	8	24	31
Deshutes Rd./I-5 SB On-Ramps	3	5	15	18
Riverside Ave./I-5 NB On-Ramps	0	2	6	6
Riverside Ave./I-5 SB On-Ramps	0	3	9	9
SR 273/Ox Yoke Ave.	0	3	9	9
Daily				
Roadway Segment	Non-Truck Trips (A)	Truck Trips (B)	Equivalent Passenger Car Trips (C) = 3*(B)	Total Trips (A) + (C)
Balls Ferry Rd. – Deschutes & Kimberly	16	90	270	286
Balls Ferry Rd. – Kimberly & Panorama	4	27	81	85
Balls Ferry Rd. – Panorama & 4th	4	27	81	85
Deschutes Rd. – Balls Ferry & Locust	16	90	270	286
Deschutes Rd. – SR 273 & Locust	6	64	192	198
Kimberly Rd. – Balls Ferry & Locust	0	0	0	0
Panorama Point Rd – Balls Ferry & Kimberly	0	32	96	96
SR 273 – North of Ox Yoke	0	11	33	33

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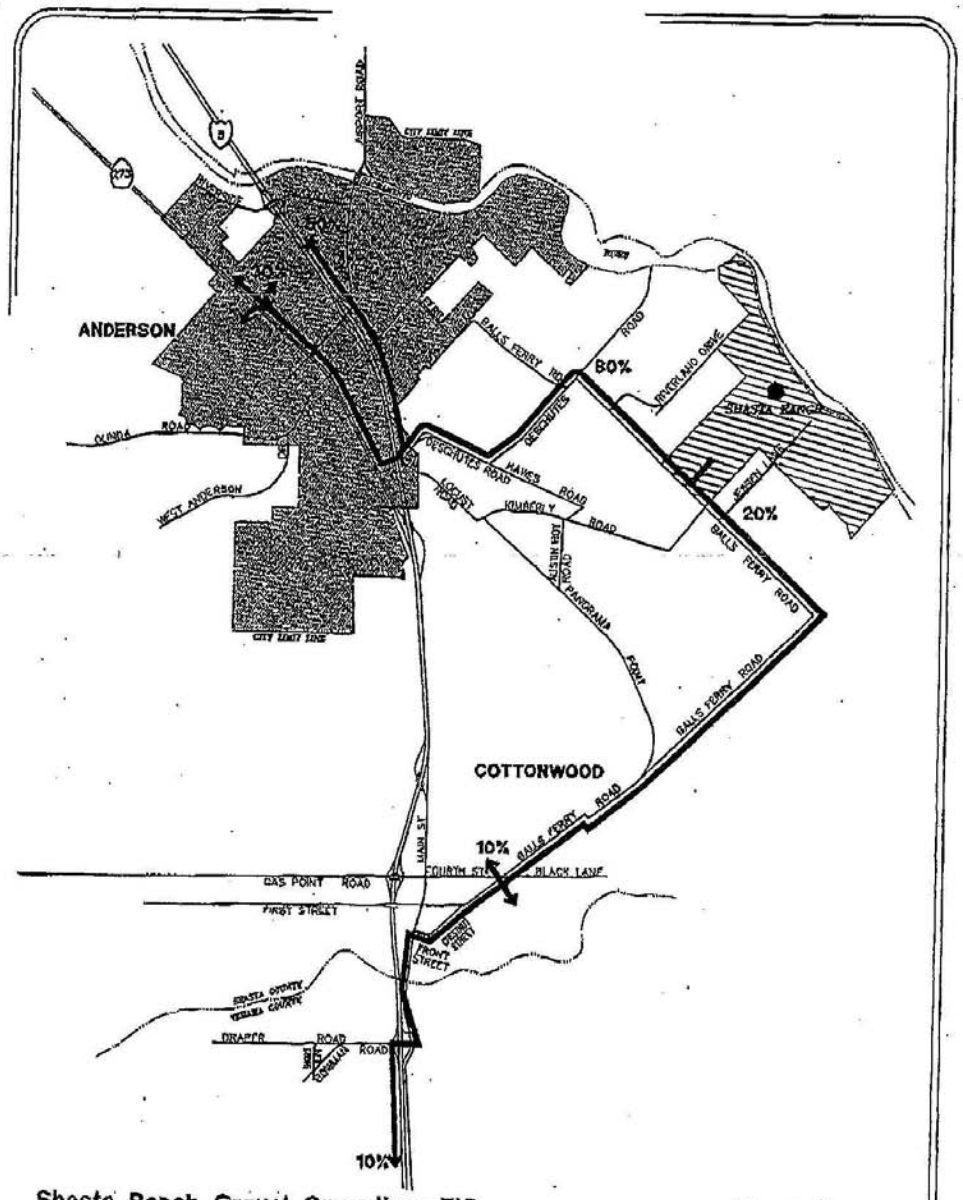

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Figure 3

TRIP DISTRIBUTION - Employee Trips

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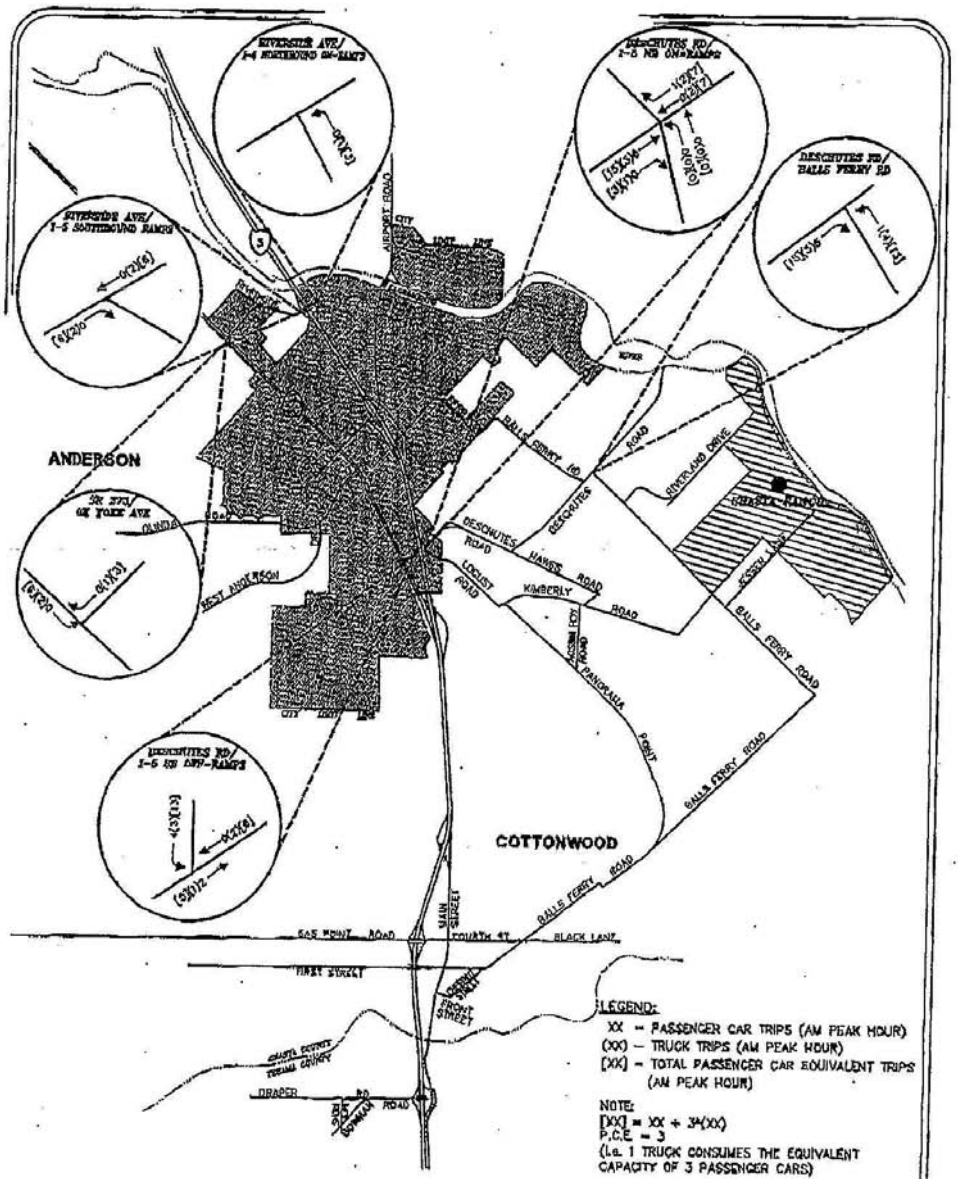

Shasta Ranch Gravel Operations TIS

Figure 4A

Short Term AM Peak Hour "Project Only" Traffic Volmes

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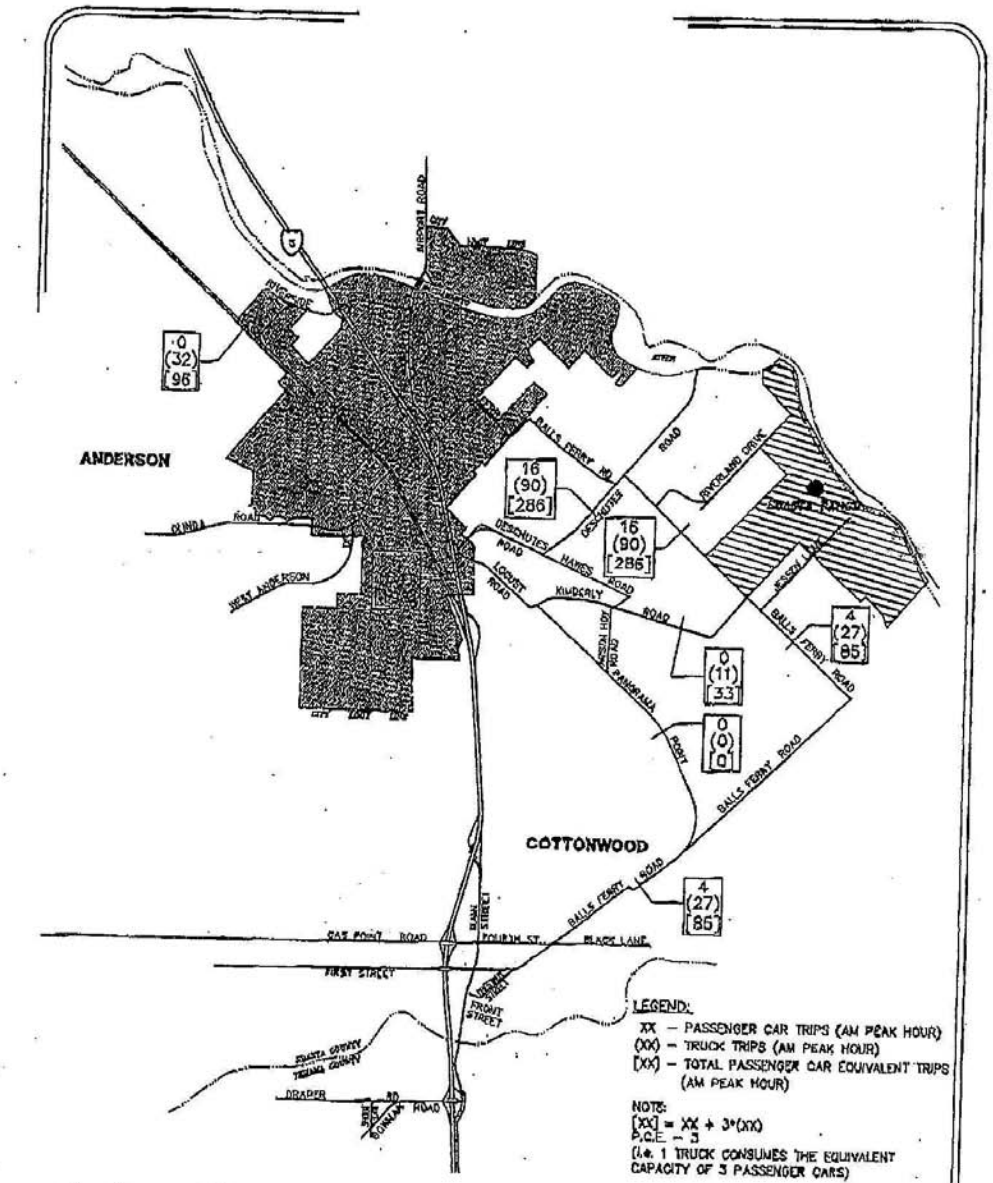

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Figure 4C

Short Term Daily "Project Only" Traffic Volmes

CONCLUSION

It is projected that the proposed Shasta Ranch Gravel project would add 128 daily truck trips, 12 AM peak hour truck trips, and 12 PM peak hour truck trips for the Short Term conditions to the roadway network. Also, for the Short Term conditions, there will be 20 daily non-truck trips, 10 AM peak hour non-truck trips and 10 PM peak hour non-truck trips on the roadway network that are associated with the project. In summary, the project will add 404 daily equivalent passenger car trips, 46 AM peak hour equivalent passenger car trips and 46 PM peak hour equivalent passenger car trips for Short Term conditions.

However, these project trip volumes do NOT include any additional reduction and/or addition of trips associated with "ancillary facilities" which will result at study intersections, and along study roadways, following the opening of the proposed project. Rather, this traffic study focuses exclusively on the trips generated by the proposed Shasta Ranch Gravel project, and illustrates only the project volumes which will occur at these locations. Since this traffic study does not provide for the reallocation and redistribution of trips due to the ancillary facilities associated with the project, this traffic study does not include level of service operations, or total volumes at these locations for the various scenarios included within this study. A future Transportation Impact Analysis Report (TIAR) will include an analysis of level of service operations at study intersections and roadways, and figures showing existing (and future) intersection lane geometries and control, and traffic volumes at study intersections and along study roadways.

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APPENDIX 1

DESCRIPTION OF ANCILLIARY FACILITIES

GRAVEL EXTRACTING SITES

(1) **Blacks Lane Gravel Extraction Site** - This gravel extraction site is located east of the town of Cottonwood off of Black Lane. Black Lane extends east from the intersection of Balls Ferry Road/Fourth Street. It is projected that this site will be depleted of gravel in the Spring of 2005. On an average, 100,000 tons of gravel per year is excavated from this site.

(2) **Gas Point Road Gravel Extraction Site** - This gravel extraction site is located along Gas Point Road approximately 15 miles west of I-5/Gas Point Road interchange near the intersection of Gas Point Road/Happy Valley Road. This site will not be utilized once the Shasta Ranch site is permitted and in operation. On an average, 100,000 tons of gravel per year is excavated from this site.

(3) **Cottonwood Creek Sand & Gravel** – This gravel extraction site is located on the same site as the Cottonwood Creek Asphalt Plant located northwest of the I-5/Bowman Road interchange off of Draper Road, and along the south side of Cottonwood Creek. On an average, 125,000 tons of gravel per year is excavated from this site.

GRAVEL PROCESSING SITES

(1) **Cottonwood Creek Sand & Gravel** – This site also serves as a gravel processing site, and is located northwest of the I-5/Bowman Road interchange off of Draper Road, and along the south side of Cottonwood Creek. This site on an average processes 325,000 tons of raw gravel per year.

ASPHALT PLANTS

(1) **Northstate Asphalt Plant** – This plant is located on Clear Creek Road approximately 2-3 miles west of SR-273.

(2) **Cottonwood Creek Asphalt Plant** – This plant is located northwest of the I-5/Bowman Road interchange off of Draper Road, and along the south side of Cottonwood Creek.

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Exhibit 2.0-C (Letter 86)

Expanded Site Inspection Report 9/13/96 attachment (1)

4.3 Surface Water Pathway

4.3.1 Hydrological Setting. The site is adjacent to the Sacramento River, and slopes gently northeast towards the river. The southwestern and southeastern portions of the site are drained by Anderson Creek, which flows southeast into the Sacramento River approximately 3 miles south of the site. Runoff water generated from the irrigation of site alfalfa fields drains to the return sump pond, where it is pumped back to the alfalfa fields. The Sacramento River borders the eastern site boundary for approximately 2 miles and flows southeast past the site. The Sacramento River flows through mostly rural and agricultural areas for a distance of 15 miles downstream of the site. The 2-year, 24-hour precipitation event for the site and vicinity is 3.0 inches (5,6,20)

4.3.2 Surface Water Targets. There are no drinking-water intakes within 15 miles downstream of the site (21,22,23). The Sacramento River within the vicinity of the site is a popular area for sport fishing. Sport fish species include rainbow trout, steelhead trout, and salmon. Semi-sport fish species include squawfish, suckers, striped bass, sturgeon, and shad. (24) The estimated annual quantity of fish caught from the Sacramento River between Red Bluff and Redding is approximately 140,000 pounds. (25,26) Three endangered or threatened species live within 15 miles downstream of the site: bald eagles, bank swallows, and the winter-run Chinook salmon (27).

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4.3.3 Surface Water Pathway Conclusion. The site adjoins the Sacramento River, which borders the eastern site boundary for approximately 2 miles. There are no drinking-water intakes within 15 miles downstream of the site. The total annual sport and semi-sport fishing catch between Red Bluff and Redding is approximately 140,000 pounds. Three endangered or threatened species live within 15 miles downstream of the site.

4.4 Soil Exposure and Air Pathway

The site is completely fenced except along the Sacramento River. Except for the shop/chemical shed, ranch lab, and ranch house, the entire site consists of exposed or vegetated soil in a rural/agricultural setting. No schools or daycare centers are on, or within 200 feet of the site. Two residents live on site. (6) Approximately 5,449 people live within 4 miles of the site. (28)

5.0 EMERGENCY RESPONSE CONSIDERATIONS

The National Contingency Plan [40 CFR 300.415 (b) (2)] authorizes the EPA to consider emergency response actions at sites that pose an imminent threat to human health or the environment. For the following reasons, a referral to Region IX's Emergency Response Section does not appear necessary:

- The site is completely fenced, except along the Sacramento River.
- No schools or daycare centers are on or within 200 feet of the site.

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Attachment (2)

Results of laboratory analyses positively identified the presence of PCDD and PCDF isomers in sediment samples collected by BEI from the Sacramento River adjacent to the site, near the northern and southern portions of the sludge landfill at concentrations up to 56 pg/g (octa-CDD in sample SD-2).

No PCDDs or PCDFs were detected at or above their respective contract required quantitation limits (CRQLs) in sediment sample SD-1, collected by BEI from the Sacramento River approximately 0.1 mile downstream of the southeastern boundary of the site. See Appendix F for further details regarding these analytical results.

During this field sampling event, MFG collected five split sediment samples on behalf of the Simpson Paper Company. MFG submitted the samples to Pace Incorporated Environmental Laboratories of Indianapolis, Indiana for analyses for PCDDs and PCDFs using EPA Method 161. The analytical results for the split samples are comparable to the analytical results for the samples collected by BEI. (8)

4.0 HAZARD RANKING SYSTEM FACTORS

4.1 Sources of Contamination

The following hazardous substance source is associated with the site:

P4

- Approximately 38,000 tons of sludge deposited in the onsite landfill. During site operations from 1964 until 1971, the site operator deposited approximately 15 tons of sludge per day on site. Analytical results of sludge samples and split sludge samples collected during the August 1995 BEI field sample event indicate the presence of elevated concentrations of dioxins and furans including 2,3,7,8-tetra-PCDD. (Appendix F)

4.2 Groundwater Pathway

Groundwater first occurs beneath the site at approximately 10 feet below ground surface (bgs) and flows east toward the Sacramento River. Three drinking-water supply wells are on site: the ranch house well, the ranch lab well, and the shop/chemical shed well. The ranch house well is screened at approximately 56 feet bgs and the ranch lab well is screened at approximately 52 feet bgs. In 1991 and 1992, 2,3,7,8-TCDD and 2,3,7,8-TCDF were detected in onsite groundwater monitoring wells at concentrations up to 8.7 ppq and 28 ppq, respectively. Well construction details for the shop/chemical shed well and the onsite monitoring wells are not available. (3,16,17) In 1992, groundwater samples were collected from the ranch house well and the ranch lab well and analyzed by EPA Method 1613A for 2,3,7,8-TCDD and 2,3,7,8-TCDF. 2,3,7,8-TCDD and 2,3,7,8-TCDF. These compounds were not detected (15). Two municipal drinking-water supply wells are approximately 3.5 miles west, and hydrogeologically upgradient of the site, and are screened below 300 feet bgs. In 1992, groundwater samples from these wells were analyzed for dioxins and furans. These compounds were not detected. (2,19)

Attachment 3

6.0 SUMMARY

The Simpson-Shasta Ranch site is approximately 4 miles southeast of Anderson on the Riverland Drive Extension in Anderson, Calif. The site is operated in association with a nearby wood pulp/paper mill 2 miles west of the site, known as the Shasta Mill. The Shasta Mill is not part of the site evaluated in this ESI report. The Simpson-Shasta Ranch site consists of an approximately 1,100-acre agricultural property and is bordered to the east by the Sacramento River, and to the west, north, and south by agricultural properties and ranchette style residential properties. The site is used to grow alfalfa, oat hay, wheat, and evergreen trees. Onsite structures include a shop/chemical shed, a ranch lab, and a ranch house.

Historically, the site has been used for the disposal of sludge and effluent generated at the Shasta Mill. From 1964 until 1971, the site was used by Kimberly-Clark, Inc. for the disposal of primary and secondary wastewater treatment sludge. From 1974 until 1975, the Simpson Paper Company continued the disposal of secondary sludge on site. From 1963 until 1972, Kimberly-Clark, Inc. discharged wood pulp/paper mill-generated effluent directly to the Sacramento River from a discharge pipe at the north end of the site. Since 1976, the Simpson Paper Company has used the site for effluent disposal in association with agricultural operations. Current and historic site operations include discharging a portion of the effluent to irrigate alfalfa fields on site, as needed, and discharging the remainder to the Sacramento River. Although the wood pulp mill shut down in May 1993, the paper mill continues to generate effluent.

In 1987, 2,3,7,8-tetrachlorodibenzo-p-dioxin and 2,3,7,8-tetrachlorodibenzo-furan were detected in the tissues of fish caught from the Sacramento River near the site. In November 1988, the California Department of Health Services, Office of Environmental Health Assessment issued a health advisory warning against consumption of resident trout, sucker, and other bottomfish from the Sacramento River in the site vicinity (revised in May 1989 to include squawfish). In February 1996, the Office of Environmental Health Assessment revoked the advisories, stating that the levels of dioxin were no longer elevated above background levels.

The California Environmental Protection Agency, Regional Water Quality Control Board (RWQCB), Central Valley Region requires the Simpson Paper Company to monitor effluent, groundwater, Sacramento River water, and Sacramento River rainbow trout and squawfish for dioxins and furans. The Simpson Paper Company has monitored effluent and fish tissue since the late 1980s, and monitored groundwater in 1991 and 1992. Since May 1993, the RWQCB has allowed the suspension of the Sacramento River water monitoring during the wood pulp mill shutdown. No site-related hazardous substances have been detected in the onsite drinking-water wells.

#4

In August 1995, Bechtel Environmental, Inc., under the direction of the EPA, conducted a field sampling event to collect sludge and sediment samples at the Simpson-Shasta Ranch site. Dioxins and furans were detected in onsite sludge samples at concentrations up to 210,000 picograms per gram. Dioxins and furans were detected at concentrations up to 92 picograms per gram in a sediment sample collected from the Sacramento River 0.9 mile upstream of the site. Dioxins and furans were detected at concentrations up to 56 picograms per gram in sediment samples collected from the Sacramento River adjacent to the site. Dioxins and furans were not detected in

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listed, and many other similar dioxins and furans known to exist (personal communication between Sara Arav of MFG and Janet Sachs of Pace laboratory, Indianapolis). The total concentrations of the eight sets of isomers are provided in the laboratory reports in Appendix B.

Sediment Analytical Results. Most dioxin and furan compounds in the split sediment samples (SR-1 through SR-6) were either not detected, or their reported concentrations are estimates because they are greater than the method detection limits but less than the lower method calibration limits. Only HpCDD and OCDD were found in concentrations greater than the lower method calibration limit (HpCDD in two samples and OCDD in all seven samples). OCDD ranged in concentration from approximately 13.4 pg/g to approximately 137 pg/g. The HpCDD and OCDD concentrations were highest in the upstream sediment sample, SR-6 (Table 1).

For the furans, PeCDF was found at a concentration greater than the lower method calibration limit in one sample, HpCDF was found at concentrations greater than the lower method calibration limit in two samples, and OCDF was found at a concentration greater than the lower method calibration limit in one sample. The PeCDF and OCDF concentrations were highest in the upstream sediment sample, SR-6 (Table 2).

#4

Soil and Sludge Analytical Results. Most dioxin and furan compounds in the split soil and sludge samples (SR-7 through SR-11) were not detected. TCDD was found in a concentration greater than the lower method calibration limit in one soil sample (SR-11) from the former secondary sludge spreading area. HxCDD, HpCDD and OCDD were found in concentrations greater than the lower method calibration limit in two sludge samples (SR-8 and SR-10). The maximum concentrations of HxCDD, HpCDD and OCDD in these sludge samples were approximately 379, 19200 and 201000 pg/g, respectively. HpCDD and OCDD also were found in concentrations greater than the lower method calibration limit in the one soil sample (SR-11) from the former secondary sludge spreading area. The maximum concentrations of HpCDD and OCDD in this soil sample were approximately 7.00 and 30.1 pg/g, respectively (Table 1).

For the furans, TCDF was found at a concentration greater than the lower method calibration limit in one sludge sample (SR-10) and in the soil sample (SR-11) from the former secondary sludge spreading area. The maximum concentration of TCDF in these samples was approximately 31.4 pg/g. PeCDF was found at a concentration greater than the lower method calibration limit in one sludge sample (SR-8), at a concentration of approximately 10.6 pg/g. HpCDF and OCDF were found in the two sludge samples at maximum concentrations of approximately 152 and 488 pg/g, respectively (Table 2).

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EPA's Estimating Exposure to Dioxin-Like Compounds (Review Draft, Volume I, EPA/600/6-88/005Ca, p. 28), indicate that the arithmetic mean background dioxin sediment concentration in North America is 3.91 ppt TEQ.

5. Summary

In summary, the SIP does not demonstrate that there is a threat of actual or potential releases of hazardous substances at the Site. The SIP's claim of groundwater contamination at the Site is insupportable; the data do not suggest a threat of actual or potential release of dioxins or furans from the Site via groundwater. As discussed above, the detections of dioxins and furans in groundwater samples appear unreliable. The mobility of dioxins and furans in groundwater is expected to be very low because of the physical properties of these compounds (mainly, high affinity for sorption onto soil organic matter). Most significantly, 2,3,7,8-TCDD and 2,3,7,8-TCDF have not been detected in downgradient wells at the Site.

The SIP also does not support the conclusion that there is a threat of actual or potential releases of dioxins and furans via the surface water pathway. First, approximately 90 percent of the effluent from the Shasta Mill is discharged directly to the Sacramento River under a NPDES permit, and it is not related to potential releases at the Site. To the extent that some effluent is used to irrigate non-human food chain crops at the Site, there is no compelling evidence that dioxins and furans in effluent used for irrigation are released from the Site through any migration pathway. Second, the levels of dioxins and furans in fish tissues are no longer elevated above existing background levels. Based on this finding, the OEHHA revoked the health advisory against eating certain fish species from the Sacramento River between Keswick Dam and the Red Bluff Diversion Dam. Third, dioxins and furans have not been detected in sediment samples from the Sacramento River.

Attachment #6

3.5 ON-SITE

As previously stated, there are two residences on the Simpson-Shasta ranch property. One on-site dwelling is occupied by the caretaker of the ranch and the other is occupied by a farmer and three other persons. The ranch is otherwise adequately secured from public access by fencing on its southern, western, and northern borders. The Sacramento River runs immediately adjacent to the eastern boundary of the ranch, blocking access to the site from the east (1). The potential for direct human contact with hazardous materials appears low due to heavy vegetation and difficulty of access to the site (1).

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Attachment 7

- Incineration of municipal and industrial wastes at too low a temperature (<800°C) can produce dioxin. (Verschueren, 1983; ATSDR, 1987; U.S. EPA, 1987b).
- Derivatives of pentachlorophenol and other woodtreating wastes (NCASI, 1987; U.S. EPA, 1987b).
- Currently, EPA is investigating possible correlations between dioxin and nearby petroleum refineries that use chlorine or chlorinated solvents in the catalytic reforming process.
- Other sources of dioxin include fires and/or spills involving chlorinated benzenes and PCBs, particularly fires involving transformers or capacitors, burning of wood in presence of chlorine, and automobile exhaust from leaded gasoline (ATSDR, 1987).

FATE OF DIOXIN IN ENVIRONMENT

Partitioning:

B4

- Based on its physical/chemical properties, dioxin is only slightly soluble in water (Aq. sol. = 0.000317) and strongly sorbs to soil (K_{ow} = 10,500,000). It has a high potential for bioaccumulation (BCF = 5,000), although experimental data have shown much higher values (e.g., over 9,000).

Persistence:

B4

- Because dioxin strongly sorbs to sediment, it persists in soils and aquatic systems. Photolysis can occur, aided by photosensitizers in surface water (half-life 1 to 1.5 years) or in the top few inches of soil (half-life 1 to 3 years) (U.S. EPA, 1985b and Freeman, et al., 1986). Hydrolysis is not thought to be important (Callahan, et al., 1979). Biotransformation of dioxin in soils is slow (ATSDR, 1987).

HEALTH EFFECTS

Carcinogenicity:

- Oral exposure causes increased incidence of tumors in liver, tongue, hard palate, and lungs in rats (Kociba et al., 1978a,b) and in thyroid and adrenal glands in mice (NTP, 1982a,b). EPA classification is B2, a probable human carcinogen (IRIS, 1989). IARC classification 2b (IARC, 1982).
- In combination with herbicides such as trichlorophenols, dioxin is classified by the EPA as B1, limited evidence of human carcinogenicity (IRIS, 1989).

C-3

Attachment #8

3. HRS FACTORS

3.1 WASTE TYPE AND QUANTITY

Approximately 15 tons of sludge were generated each day during the period when Kimberly-Clark was using the landfills, 40% of which was primary sludge (6 tons), the remainder being secondary sludge (9 tons). Primary sludge was deposited in several unlined landfills interspersed along the Sacramento River. Secondary sludge was spread across 40 acres of land at the northeastern section of the ranch for land treatment. Primary sludge may contain hazardous constituents; its potential constituents include calcium hydroxide, sodium hydroxide, titanium oxide, and possibly PCBs and phenols (1). The current total quantity of primary sludge generated each year is 2,190 tons. Simpson diverts an average of 1.04 million gallons per day of wastewater effluent to irrigate crops on the ranch. This wastewater has been found to contain over 250 ppq of dioxin (2).

3.2 GROUNDWATER

The ranch is located in an area that is comprised primarily of alluvial deposits, with gravel and boulders lying beneath a 4 to 15 foot layer of loamy sediments (1). The city of Anderson is located within the Redding Groundwater Basin, where groundwater is typically found in the Tuscan-Tehama formation 50 feet below ground surface (bgs)(9). However, the depth to groundwater beneath the landfills may be less than 10 feet bgs (10). The general direction of groundwater flow beneath the site is east toward the Sacramento River (1).

Sludge was deposited to depths of approximately 12 to 15 feet (1). The landfills themselves may be partially inundated with groundwater, so an observed release to this pathway is likely.

Groundwater is the only source of drinking water for the Anderson area. The city's residents are served by a blended system of six municipal wells serving approximately 7,980 Anderson residents. The nearest municipal well is 3.5 miles west of the ranch and is screened at a depth

Attachment #9

(DOHS) issued a health advisory recommending against the human consumption of trout from the Sacramento River within 40 miles downstream of the ranch (2). It appears, therefore, that a release to surface water has been documented at the Simson Ranch, including actual contamination of the human food chain.

#14 Salmon and trout inhabit the river near the site. The annual fish production rate for the Sacramento River within 15 miles downstream of the site is more than 100,000 pounds per year (16).

The Sacramento River supports recreational activity near the ranch. A park located approximately 2 miles downstream may provide stream access to boaters and fisherman (15).

There are two sensitive environments within 15 miles downstream of the ranch. The bald eagle (Haliaeetus leucocephalus), a federally designated endangered species, is known to use the river area for nesting and feeding (17). The winter-run chinook salmon (Oocorhynchus tshawytscha), a state designated endangered species, uses the river for spawning (16).

The 2-year, 24-hour rainfall for the Anderson area is approximately 3 inches (20).

3.4 AIR

#4 There have been no sample results documenting a release of hazardous materials to the air at the ranch. The air release potential for the landfills is low due to approximately 6 inches of soil cover of uncontaminated fill and substantial surface vegetation (1). There are approximately 11,110 people living within 4 miles of the site (19).

Two residences occupied by about five people are situated within 0.25 mile of the ranch's landfills (1). Bald eagles have been known to inhabit the Anderson area (17).

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Exhibit 2.0-D
(Letter 92)

DallasNews.com
The Dallas Morning News

18 wheels and countless dangers

Trucking companies often put non-English speakers, felons, addicts in driver's seat, but rarely take blame in fatal crashes

01:31 AM CDT on Sunday, September 17, 2006

By GREGG JONES, HOLLY BECKA, JENNIFER LaFLEUR and STEVE McGONIGLE / The Dallas Morning News

First of three parts

SMILEY N. POOL/DMN
Traffic moves along State Highway 114 near Paradise. On this stretch of road, Kim Hughes, Shiloh Hughes, Afton Hughes Royse and Joyce Watkins were killed in an accident involving a gravel truck in December of 2002.

On a sunny December afternoon, Kim Hughes turned onto State Highway 114 in Wise County and headed west toward home in Paradise. Christmas was eight days away. Four generations were crammed into her GMC Yukon after a morning of holiday shopping.

In the cab of an 18-wheeler leased to TXI Transportation Co., Ricardo Rodriguez drove east on Highway 114, riding herd on 73,000 pounds of truck and a trailerload of sand. An illegal immigrant from Mexico, Mr. Rodriguez had used a fake Social Security number to get a Texas commercial driver's license six years earlier. He had found steady work around North Texas driving rock trucks and other 18-wheelers, his history of immigration arrests and truck safety violations ignored or overlooked.

Just east of Paradise, on a flat stretch of road, the mom and the trucker met.

Mr. Rodriguez crossed the center line of the two-lane road and barreled head-on toward Ms. Hughes at 60 to 65 mph, a civil jury later concluded. With trees and a creek bed blocking her escape to the right, Ms. Hughes turned left, into the oncoming eastbound lane.

Just then, Mr. Rodriguez turned back toward his lane. Too late, Ms. Hughes swerved right. The Yukon struck the big rig on the driver's side, scraped along the trailer and spun off the back. A Ford pickup behind the truck smashed into the Yukon, injuring the pickup's occupants and nearly tearing apart the SUV.

Ms. Hughes' 14-year-old son, Shiloh, and 70-year-old mother, Joyce Watkins, died almost instantly. Ms. Hughes, 38, and her 17-year-old daughter, Afton Hughes Royse, pregnant with twins, died later in a Fort Worth hospital, without regaining consciousness.

Amid the Christmas presents and holiday treats, the only sounds of life from the shattered SUV were the screams of Afton's 14-month- old son, Jagr Royse, and the frantic

In Texas ...

shouts of a female voice on Shiloh's cellphone.

Mr. Rodriguez climbed from his truck, uninjured.

Trucking companies in Texas often gamble on drivers such as Mr. Rodriguez, a seven-month *Dallas Morning News* investigation has found. They hire illegal immigrants who struggle to read road signs and communicate in English with police and emergency personnel. They hire felons, drunks and drug addicts. Sometimes, they make only cursory checks of work history and driving records, then put the new hires behind the wheel of rigs with the destructive potential of guided missiles.

502 people died in big-truck accidents in 2005.

•9,807 were injured last year.

•344,000 trucks were registered here.

•632 state troopers enforce truck safety on nearly 302,000 miles of roadway.

When accidents occur, trucking companies defend their drivers and often blame the other vehicles -- and in many cases the dead occupants -- regardless of the evidence. They typically fight any release of information about their drivers and vehicles, and wage protracted legal battles to avoid blame.

Beyond that, the companies suffer few consequences, in part because the soaring number of trucks on Texas highways are overwhelming regulators and law enforcement officers. Mr. Rodriguez was never ticketed by the Texas Department of Public Safety or charged with a crime. Federal immigration authorities didn't deport him. State officials didn't suspend his license.

DPS never took action against TXI for its role in putting Mr. Rodriguez on the road that day and continuing to employ him, even after he admitted under oath that he entered the U.S. illegally, exaggerated his truck-driving experience on his job application and had a fake Social Security number. Mr. Rodriguez continued driving for TXI for at least another six months after he made those disclosures in front of a company lawyer.

DPS did not even subject TXI to a compliance review -- a procedure by which trucking companies can be fined or forced out of business for failing to comply with rules and one which regulators say promotes greater road safety.

Ultimately, Mr. Rodriguez and TXI, part of Dallas-based Texas Industries Inc., were held accountable by the recourse of last resort for many truck accident victims: a lawsuit.

On May 13, 2004, a Wise County civil jury unanimously found Mr. Rodriguez, TXI and the owner of the leased truck, Aurelio Melendez, negligent: Mr. Rodriguez for his operation of the rock truck, Mr. Melendez for entrusting the rig to him, and TXI for hiring the truck and its driver. The jury awarded $23.5 million in damages to the victims' families.

TXI, which under federal regulations is responsible for the damages against Mr. Rodriguez and Mr. Melendez, is appealing the verdict. It contends the dead driver, not the trucker, caused the accident.

"We had an experienced driver with a good driving record with good equipment," said Mark Stradley, a Dallas attorney who represents TXI

Road Hazards

Part 1:
• 18 wheels and countless dangers
• Crash took 4 lives, stole 1 more
• After lives are lost, records often go missing
• **Online Only:** TXI trucks involved in 31 accidents over the last two years
• **Multimedia:** Video: Sgt. Chris Smith offers safety tips. Graphics: Safety records of trucking companies you may encounter on a typical commute, statistics on border crossings, heavy traffic and fatal accidents by state. Audio/Photos: Listen to Randy Hughes discuss the accident

in the Wise County lawsuit. He described the 46-year-old Mr. Rodriguez as a hard-working father of three.

Randy Hughes, who lost his ex-wife and children in the accident, feels betrayed by the trucking industry that once was his livelihood and by authorities responsible for enforcing trucking regulations.

"It feels like you've been let down, that people didn't do their job right or he wouldn't have been here and maybe my family would," he said. "I think every day, how many more is out there that's like this guy was? Whose family is he going to run over?"

Profits soar, safety drops

More than 5,200 people died in accidents involving large trucks in the U.S. last year – 502 in Texas. The state consistently leads the nation in fatalities, in part because it has more roadway miles and the second-highest number of registered trucks.

The state's fatality rate, measured in truck crash deaths per 100,000 people, was 24th nationwide. California, the only state whose volume of truck traffic exceeds Texas, ranked No. 38. Another 10,000 people, on average, are injured in Texas each year in crashes involving big trucks.

Responsibility for these accidents is hotly contested; DPS investigators typically don't assess blame. Even the department's database refers only to "contributing factors" not "cause."

The most comprehensive national study, released in March by the U.S. Department of Transportation, found that truck drivers were at fault in at least 44 percent of all accidents between cars and big trucks. The American Trucking Associations, which represents the industry's biggest companies, says trucks cause only about 25 percent of fatal accidents involving cars.

When trucking companies are to blame, records show, it's because truckers drive too fast, don't pay attention, work too many hours or take to the road in poorly maintained equipment – sometimes with the knowledge and encouragement of their employers.

Many Texas trucking companies and their drivers also flout safety laws with little fear of punishment. Only about 1,000 of the state's more than 64,000 registered trucking companies faced compliance reviews last year. And only about 37 percent of the trucks inspected in Texas last year underwent the most thorough inspection, known as a Level 1. The majority of those were done on Mexican trucks that travel only a few miles north of the border before returning home.

Nationwide, the rates of fatal crashes and fatalities have declined about

that killed his family members.
• **Documents:**
- Hughes trial transcripts
1 |2 |3 |4 |5 |6 |7 |8 |9 |10 |11 |12 |13 |14 |15
- Rodriguez deposition
- Federal Motor Carrier Safety Administration Large Truck Crash Causation Study

Part 2:
• In Wise County, truck accidents killed 56 people in 6 years
• For years, state noted firm's safety violations
• **Multimedia:** Truck inspection video and statistics on fatal crashes involving large trucks in Texas and locally
• **Documents:**
- Texas Department of Public Safety compliance reviews of Pat's Trucking

Part 3:
• Reviews make roads safer but rarely happen
• With missing data, research tough
• **Database:** Search trucking company safety profiles by company name or DOT number
Documents:
- Government Accountability Office report: Highway Safety: Further opportunities exist to improve data on crashes involving commercial motor vehicles
- Department of Transportation Inspector General audit report: Improvements needed in the motor carrier safety status measurement system
- Texas Department of Public Safety compliance reviews of SDS Trucking

24 percent in the last decade, in part because of rising seat-belt usage and safety innovations, such as airbags and anti-lock brakes. But the number of deaths in large-truck accidents is about the same as it was in 1994 because more trucks are on the road, driving more miles than ever.

• **Graphics:** Contributing factors in fatal accidents, fatal accidents by carrier

En español

Tell Us: Share your encounters with big trucks on the road

"If you have enough trucks on the road, I don't care how confident your safety director is and how closely you adhere to the guidelines, you're going to have accidents," said Tom Fee, a Dallas lawyer who defends trucking companies. "It's unfair to paint with a broad brush that this is a dirty industry that is cutting corners just to put money in their pocket. But there are bad apples, fly-by-night operators that spoil the whole apple cart."

In Texas, the number of intrastate carriers increased 43 percent in the past five years, with a similar increase in the number of interstate carriers based here. The number of registered large trucks in the U.S. increased 24 percent from 1994 to 2004. Business is so good, in fact, that U.S. trucking companies reported a record year in 2005: They generated $623 billion in revenue while hauling nearly 70 percent of the nation's freight.

Trucking boom costly

The Dallas-Fort Worth area is both an important hub for the nation's trucking companies and a crossroads in the movement of goods. On the streets and highways of Dallas and surrounding counties, long-haul, interstate trucks moving food, appliances and other commodities vie for space with short-haul, intrastate trucks carrying rock, sand and gravel to area construction sites.

The trucking industry's growth has overwhelmed law enforcement agencies. The problem is especially acute in Texas, where U.S.-based trucks pick up loads at the Mexican border and fan out across the country. U.S.-Mexico trade has more than doubled since the North American Free Trade Agreement was implemented in 1994, according to federal data. About 68 percent of truck traffic from Mexico enters the U.S. at the Texas border.

In the late 1990s, DPS asked the state Legislature for additional enforcement officers to keep weigh stations open and conduct roadside inspections. The Legislature cut in half one department request. Two years later, it slashed DPS' request for 127 more troopers to five.

Since then, DPS has had to rely on federal money for additional truck inspectors, almost all of whom have been assigned to the border. That has left staffing throughout the rest of Texas stagnant, at slightly more than 300 inspectors.

"The whole attitude is the industry will regulate itself," said Alan Powers, a Decatur attorney who represented victims in the TXI accident.

Maj. Mark Rogers of the DPS Commercial Vehicle Enforcement service in Austin said his force had no permanent presence in 128 of the state's 254 counties.

He also said some trucking companies openly taunt the state's overwhelmed commercial vehicle officers.

Trooper Randy McDonald, based in Decatur, northwest of Fort Worth, said that when he recently

ticketed a big-rig driver for a local oil company, the trucker passed on a message from his boss: The troopers could write all the tickets they wanted, but it wouldn't change anything. The company was willing to break truck weight limits and other safety rules to maximize profits.

"I've been here a long time," said Maj. Rogers, "and they've been saying that same thing for a long time."

Pressures of low pay

One of the chief legacies of the federal government's deregulation of shipping rates in the early 1980s, which made it possible for virtually anyone with a truck to go into business, is that trucking has become fiercely competitive. The vast majority of trucking companies operate along the margins of profitability, and about 40,000 go out of business every year, said Jerry Donaldson, senior research director for the nonprofit Advocates for Highway and Auto Safety.

Corporate America has leveraged this competition to push shipping rates even lower. It has also put more pressure on trucking companies to deliver loads at a specific time, as part of "just-in-time" inventory management that lets companies keep fewer products and spare parts on hand and use trucks as rolling warehouses. Late drivers can lose a load, money, even a customer.

In response, trucking companies push their truckers hard.

"The managers, the owners of trucking companies unquestionably put the dollar above the safety of the traveling public," said Frank Branson, a Dallas plaintiff's attorney who has handled hundreds of truck accident cases. "They treat mutilations and deaths as the cost of doing business."

Trucking companies say a shortage of drivers, not safety shortcuts, is the biggest problem facing their industry. Long-haul trucking companies need 20,000 additional drivers, and that could exceed 100,000 drivers over the next eight years, according to a 2005 study commissioned by the American Trucking Associations.

Industry experts and independent truckers say the problem is a lack of drivers willing to work for such low pay in a business notorious for long hours, extended time away from home, delivery deadlines that don't accommodate bad weather or traffic and unpaid downtime waiting for loads.

Some of the biggest carriers have tried to stem the declining pool of experienced drivers by increasing wages and benefits. They pay drivers by the hour rather than by the load or mile, a practice safety experts say encourages drivers to speed and drive fatigued.

Drivers for J.B. Hunt Transport Inc. had fewer accidents after the Arkansas- based company increased driver pay in 1997, University of Michigan researchers found. A 1 percent increase in pay rate resulted in a 1.33 percent decrease in crash risk, said Daniel Rodriguez, one of the study's authors who is now a professor at the University of North Carolina at Chapel Hill.

Lax vetting of drivers

Regardless of pay, companies are supposed to hire safe drivers and make sure they follow the rules.

Federal regulations require prospective drivers to disclose in writing such information as the previous three years' employers, motor vehicle accidents and traffic tickets, and the reason for leaving a job. The

company is supposed to verify that information and check a driver's motor vehicle and safety performance records for the previous three years. Although the law doesn't require companies to do criminal background checks, it does ban truckers convicted of certain crimes from driving for a period of time.

Every driver a company hires is supposed to read and speak English well enough to converse with the general public, understand highway traffic signs and signals, respond to official inquiries and make entries on reports and records.

Texas doesn't require intrastate truck drivers to speak English and doesn't enforce the English- language requirement on interstate drivers unless "it becomes a true safety issue," said Maj. Rogers. He said the law was never intended to be enforced in roadside inspections, rather by the companies themselves.

The employer's responsibilities also apply to leased trucks and drivers, which companies often use to lower overhead costs.

But some companies do nothing more than make a phone call or send a fax to one of the former employers listed, court documents reviewed by *The News* show. If the former employer doesn't respond, the company is supposed to make a note of that in the driver investigation file and report the failure to the Federal Motor Carrier Safety Administration, but that often doesn't happen.

Clay Miller, a Dallas lawyer who has sued trucking companies in dozens of wrongful death and injury cases, said inadequate vetting of drivers "is a huge issue," especially with smaller companies. Larger companies often subscribe to a service that does a cursory background check on a driver, he said, allowing companies to say they've fulfilled their legal obligations.

Trucking's day laborers

Driver vetting is especially lax in the sand and gravel hauling business, an industry crucial to North Texas' booming construction sector. Dallas County leads the state in the number of active gravel pits and rock quarries, with 40. Nationally, Texas ranks second to California in construction sand and gravel sold or used.

Many sand and gravel haulers are the trucking industry's equivalent of undocumented day laborers. Paid by the load, they are frequently hired by homebuilders and construction contractors, even though they often lack proper insurance or registration.

"You can sit outside any rock quarry in Texas and find them," said Bill Webb, former president of the Texas Motor Transportation Association, the state's largest trucking industry group.

Questions about a trucker's training and experience surfaced soon after Wise County resident Pamela Nielsen sued Aggregate Haulers Inc. in 2002, two years after being seriously injured when one of the company's 18-wheel rock trucks forced her off the road on Highway 114 between Boyd and Paradise.

The truck driver, Esteban Hernandez, was ticketed for an improper lane change at the accident scene. He testified in a deposition that he had driven a bus for the El Conejo line in Texas before buying a big truck and signing an exclusive lease agreement with Aggregate Haulers to transport sand and gravel.

The San Antonio-based company hired Mr. Hernandez in violation of its own guidelines that required drivers to have a minimum of two years of verifiable experience, Ms. Nielsen's attorneys argued in court

filings. Mr. Hernandez testified he had only 10 months of experience driving a rock hauler in the U.S.

Aggregate also didn't verify his previous three years' experience, as required by federal law, but played down the importance of that requirement.

"We don't get responses very often, in fact, and we put people to work every day that we get absolutely no response from previous employers," testified Jay Griffin, Aggregate's director of safety. "The fact of the matter is we still put them to work. We still feel confident that we're putting a safe driver on the road."

The company contended that Ms. Nielsen caused the accident by suddenly passing its truck in the right lane. But in October 2003, it agreed to pay the woman an undisclosed amount and to set up $100,000 trust funds for each of her two daughters. The company did not admit liability.

JTM Materials of Denton broke no laws in employing Jerry Lee Largent as a rock hauler under a lease agreement with Hammer Trucking Co., but was apparently unaware of his criminal record and traffic violations, court records show.

In his job application for JTM, Mr. Largent noted his 15 years of experience driving rock trucks for small Wise County companies. He disclosed that he had been involved in a fatal accident in November 1993, had received a speeding ticket in June 1996 and temporarily lost driving privileges for not having insurance on his personal vehicle. He checked "no" beside the question: Have you ever been convicted of a crime?

JTM used a private service to obtain a driver's record report that stated Mr. Largent's driving record contained "no reported convictions or accidents" in the three years preceding Sept. 12, 1996.

The trucking company didn't obtain a DPS report on Mr. Largent's driving record or run a criminal background check on him, according to court documents. If it had, JTM would have learned that Mr. Largent had been arrested for burglary in the early 1970s, convicted of driving while intoxicated in 1980 and convicted of methamphetamine possession in 1984 and sentenced to three months in jail. He was charged with driving while intoxicated in February 1994 but pleaded guilty to reckless conduct, received deferred adjudication and was sentenced to community service. He also had been ticketed five times between 1982 and 1990 for driving without liability insurance, a DPS report showed.

Mr. Largent was hired in September 1996 to haul crushed rock from a JTM quarry in Wise County to Dallas-area construction sites. Late one Saturday evening two months later, Mr. Largent's 18-wheeler collided with a car driven by Grant Morris on a Bridgeport street. Mr. Morris was seriously injured; Mr. Largent pleaded guilty to driving while drunk. After a protracted legal battle, Mr. Morris received a $1.9 million settlement.

Cutting corners

An attempt to require quarries and concrete plants to check the insurance and state registrations of trucks picking up loads failed last year when sand and gravel producers used their political clout in Austin to defeat legislation proposed by the Texas Motor Transportation Association.

Leading the effort to kill the legislation were the Texas Aggregates and Concrete Association and the Associated General Contractors, said Mr. Webb.

"When we start talking to them about policing the unregistered trucks, they say they can't do it – it would drive up their costs," he said.

Jennifer Newton, a spokeswoman for the Associated General Contractors in Austin, said she was unfamiliar with the legislation cited by Mr. Webb and would have no comment on it.

Michael Stewart, executive director of the Texas Aggregates and Concrete Association in Austin, said operators of quarries and concrete plants already check the insurance and registration of haulers to protect themselves from liability. "If they don't they're foolish, and they're playing Russian roulette with the system," he said.

Maintaining big trucks also drives up costs, so some companies try to run the rigs as long as possible between overhauls. They seek maximum mileage from tires. They ignore worn brake pads or maladjusted air brakes. They overlook or miss loose lug nuts and cracked trailer frames, as seen in recent spot truck inspections in Wise County.

State and federal inspectors ordered off the road about one-third of the trucks they stopped in each of three recent crackdowns. Some drivers said they had reported the maintenance problems to their employers but were told to keep driving.

With an 80,000-pound rig, the consequences of ignoring a problem are sometimes deadly.

In March 2002, Nelta Osborn was driving her rig for Celadon Trucking Service Inc. west along Interstate 30 in southwest Arkansas when another trucker radioed that a hose on her trailer was dragging the ground. Ms. Osborn pulled over and found a tiny hole had been worn in one of her air brake hoses. Her co-driver, husband Tom Osborn, stuck a toothpick in the hole and wrapped it with electrical tape, according to court records.

Back on the road, Mr. Osborn described the fix to a Celadon dispatcher. The dispatcher advised the trucker to get the hose fixed at a garage but remarked on his ingenuity: "Were you a Boy Scout?"

As they roared southwest along I-30 into Texas, the Osborns passed truck garages where they could have had the brake hose repaired or replaced, but they drove on. Just west of Texarkana, the hose failed, and the air brakes locked. The 18-wheeler screeched to a stop in the interstate's passing lane. Matthew Giuliano, a 23-year-old newly commissioned Army second lieutenant driving to Fort Hood for his first assignment, slammed into the back of the truck and was killed.

"If you look behind the curtain, you tend to see an industry that is paying truck drivers less because of the fierce competition," said Fort Worth attorney Steve Laird, who represented the Giuliano family in a lawsuit against Celadon. "And when truck drivers are not paid as well as they once were, they feel that there is an incentive to not only push the envelope but to sometimes break the rules."

In April 2005, a Waco jury found Indiana-based Celadon at fault and awarded the Giuliano family $17.5 million. Celadon settled the case by agreeing to pay the family $1.25 million, with no admission of liability. After the jury trial, Celadon chairman and chief executive officer Steve Russell extended condolences to the family and defended his company's business practices.

"This tragic situation was an isolated incident and is not reflective of the way our company does business," he said in a statement. "The owner-operator team involved was immediately suspended after the accident and never drove for the company again."

A history of problems

In the December 2002 accident that killed four members of the Hughes family, investigators determined the TXI-leased truck was properly maintained. Driver log records showed that Mr. Rodriguez was under the state daily driving limit of 12 hours at the time. His driving record wasn't even particularly alarming by rock hauler standards: He overturned an 18-wheeler leased to TXI and got three speeding tickets in the late 1990s.

The case against TXI came down to whether the company had fulfilled its legal obligations to check the driver's qualifications and prior work history. Regulations didn't require TXI to road-test Mr. Rodriguez.

There were several problems with the application Mr. Rodriguez filled out for TXI. For starters, he didn't say why he had left three trucking jobs in three years, as federal regulations required. There were also questions about his experience.

Mr. Rodriguez later testified he had 20 years of experience in trucking and had driven for "many, many companies" in Mexico over several years. But he could identify only one by name.

On his TXI application, Mr. Rodriguez listed a series of truck-driving jobs in the U.S. dating to 1994. However, he told U.S. immigration officers on two occasions that he didn't enter the U.S. until 1996. He testified in his civil trial deposition that he had worked in the U.S. in the 1980s and returned in 1996. But state records showed he didn't obtain a Texas commercial driver's license until October 1996.

TXI's transportation manager, Jonathan Kennemer, testified that he believed the company had tried, but failed, to confirm Mr. Rodriguez's claim to have worked for a Coronado Trucking in Dallas from 1994 to 1996. "If I remember correctly, they were out of business," said Mr. Kennemer, who recently left the company.

Mr. Rodriguez also stated that he had driven for a company called Data Documents from February 1996 to January 1997. It turned out he had worked at the company, but not as a truck driver. And he had claimed to have driven a truck for Aggregate Haulers from December 1999 until May 2001; Aggregate later informed TXI that Mr. Rodriguez had driven for the company for only three months, according to court records.

Mr. Rodriguez also stated on his job application that he left a job with Aggregate Haulers for a better paying job, when actually he had been deported by U.S. immigration authorities.

Mr. Kennemer would later describe Mr. Rodriguez's job application as "incomplete," but said it didn't raise concerns.

The trucker testified that he used the fake Social Security number to take his commercial driver's license test in Texas in 1996. Under state law, he was allowed to take the test in Spanish. Even in his native tongue, Mr. Rodriguez failed the general knowledge and air brake tests on his first try, according to DPS records.

His shaky knowledge of trucks and spotty English didn't hurt his ability to find work driving 18-wheelers in the Dallas area. After six years of driving, interrupted only by two arrests by U.S. immigration authorities as he went back and forth to Mexico, Mr. Rodriguez went to work driving trucks for a Dallas man named Aurelio Melendez in 2002.

Mr. Melendez owned nine trucks at the time, all leased to TXI. He testified that he road-tested Mr. Rodriguez but didn't make any record of it, as federal rules require. He also testified that he wasn't familiar with the Texas Motor Carrier Safety Regulations, which govern trucking companies.

Mr. Rodriguez was hauling his last load of the day to a construction site in Richardson when he collided with the Hughes family. He told the lead DPS investigator that the SUV was in his lane and that he tried to avoid it by steering to the right. Mr. Rodriguez was the only eyewitness. The trooper working the case had never been lead investigator on a fatal accident, and she accepted Mr. Rodriguez's version of events as fact. The trooper found Ms. Hughes at fault, and no charges were filed.

TXI stands by its driver

Attorneys for TXI and the plaintiffs continue to contest most of the key facts as to what happened, and an appeal is pending.

TXI blames Ms. Hughes, suggesting that she crossed the center line either because she was eating, talking on a cellphone or had a tire blow out.

The judge hearing the civil case, however, rejected the company's request to introduce phone records showing that Ms. Hughes' ex-husband had called her around the time of the accident. The court ruled there was no evidence that a phone call might have caused the accident.

Attorneys for the family said Ms. Hughes' son, Shiloh, was the only person in the Yukon on a cellphone at the time of the accident. When a motorist approached the Yukon to render assistance, she heard Shiloh's friend screaming through the open line.

Another crucial point of dispute is who crossed the center line first. At the accident scene, and in a later deposition, Mr. Rodriguez said it was Ms. Hughes. He said he steered to the right "for two or three seconds" in an attempt to avoid the Yukon. The DPS investigator and experts for the plaintiffs and TXI all agreed that a gouge mark 6 inches inside Mr. Rodriguez's lane was a point of impact. But they disagreed over whether it was the initial point of impact.

Plaintiffs' attorneys argued that if Mr. Rodriguez had steered to the right for two or three seconds, or even one second, and if initial impact was just 6 inches inside his lane, he must have started his turn on the wrong side of the center line.

Mr. Rodriguez changed his statement when he took the witness stand, now saying he had turned to the right for only one second. Under questioning from plaintiffs' attorneys, Mr. Rodriguez testified that he never crossed the center line while driving, on this or any other day.

Mr. Rodriguez continued driving for TXI after the accident, using his fraudulently obtained commercial driver's license. DPS and U.S. immigration didn't file charges against him, and the state didn't revoke his license.

In July 2003, as part of a broader security check following the 9/11 terrorist attacks, DPS notified Mr. Rodriguez by form letter that the Social Security Administration had noticed a discrepancy in the number he used to obtain his commercial driver's license and asked him to report to his local driver's license office to verify his information or risk losing his license.

Mr. Rodriguez didn't respond, DPS spokeswoman Tela Mange said.

In July 2005, Mr. Rodriguez went to a Dallas-area DPS office to renew his commercial driver's license. But he could not verify his Social Security number and was denied. He was allowed to renew his regular driver's license, which according to DPS is valid until May 2, 2011. The *News* tried to find Mr. Rodriguez at four Dallas addresses listed for him in public records but was unsuccessful.

TXI's attorney said Mr. Rodriguez stopped driving for TXI in late May or early June 2004 after the company was convinced he was in the U.S. illegally.

"I think everybody would have assumed that he would be deported," said Michael Simpson, the attorney who represented the victims' families. "But he kept driving, just like nothing occurred."

Online at:
http://www.dallasnews.com/sharedcontent/dws/news/texassouthwest/stories/091706dnproTrucks1main.3317233.h

SOTA03 County Report

Page 1 of 1

SHASTA County, CALIFORNIA

HIGH OZONE DAYS

	2003 Report (1999-2001)	(1998-2000)	(1997-1999)	(1996-1998)
Ozone Grade:	F	F	F	F
Weighted Average:	5	20.5	22.3	22.7
Orange Ozone Days:	15			
Red Ozone Days:	0			
Purple Ozone Days:	0			

AT-RISK GROUPS

Pediatric Asthma:	2,360
Adult Asthma:	8,676
Chronic Bronchitis:	5,843
Emphysema:	2,221
Total Population:	163,256
Population 14 & Under:	34,530
Population 65 & Over:	24,861

http://lungaction.org/reports/sota03_county.html?fcc=06089

9/29/2006

Prioritization of Toxic Air Contaminants - Children's Environmental Health Protection Act
October, 2001

Particulate Emissions from Diesel-Fueled Engines

I. Physical and Chemical Properties

Diesel exhaust is a complex mixture of thousands of gases, vapors, and fine particles. At least 40 components are listed by the Air Resources Board (ARB) as toxic air contaminants (see Table 1).

Table 1 - Toxic Air Contaminants Found in Diesel Exhaust

Acetaldehyde	Chlorobenzene	Methanol
Acrolein	Chromium compounds	Methyl ethyl ketone
Aniline	Cobalt compounds	Naphthalene
Antimony compounds	Cresol	Nickel
Arsenic	Cyanide compounds	4-Nitrobiphenyl
Benzene	Dibenzofuran	Phenol
Beryllium compounds	Dibutylphthalate	Phosphorus
Biphenyl	Ethyl benzene	*POM (including PAHs)
bis [2-Ethylhexyl]phthalate	Formaldehyde	Propionaldehyde
1,3-Butadiene	Hexane	Selenium compounds
Cadmium	Lead compounds	Styrene
Chlorinated dioxins and dibenzofurans	Manganese compounds	Toluene
Chlorine	Mercury compounds	Xylene isomers & mixtures

* Polycyclic Organic Matter (including Polycyclic Aromatic Hydrocarbons)

Particulate emissions from diesel-fueled engines (hereinafter referred to as diesel exhaust particulate matter or DEPM) was identified by the Air Resources Board as a Toxic Air Contaminant (TAC) in 1998. Typical diesel exhaust particles have mass-median aerodynamic diameters ranging from 0.1 to 0.25 micrometers (μm) (Groblicki and Begeman, 1979; Dolan et al., 1980; NRC, 1982; Williams, 1982). More than 90 percent of the particles are smaller than 1 μm (Pierson et al., 1983; Cal/EPA, 1998), and are mainly aggregates of spherical elemental carbon particles coated with organic and inorganic substances. The particles have a sponge-like structure and large surface area which attracts compounds of low volatility to the inside or surface of the particles. The primary organic compounds associated with the particles include aliphatic hydrocarbons, polycyclic aromatic hydrocarbons (PAHs), and PAH-derivatives (Zielinska, 1990). Methylated PAHs appear to be the most abundant PAH derivatives, and more than 50 nitro-PAHs have been identified in diesel exhaust (Cal/EPA, 1998; Part

Diesel Exhaust Particulate Matter - 1

A, Appendix III). Limited data indicate PAHs and PAH derivatives are about 1% by weight of diesel exhaust particles (CE-CERT, 1997).

II. Overview

There are several lines of evidence indicating that infants and children may be disproportionately affected by diesel exhaust particulate. This includes direct evidence, such as the enhancement of allergic response and some of the truck-traffic studies evaluating respiratory health, and indirect evidence, such as health effects associated with particulate matter.

- Diesel exhaust particulate matter (DEPM) enhances allergic responses in the nasal and airway epithelium. DEPM has been reported to facilitate the development of new allergy to aeroallergens. Accumulating evidence suggests that immunological memory and the development of an allergic phenotype are established within the first few years of life, so that exposures occurring in early childhood may determine whether a child will develop allergies or not. DEPM appears to potentiate allergic responses in susceptible individuals, though the impact of DEPM on the development of an allergic diathesis has not been established. Most childhood asthma, a condition characterized by chronic airway inflammation, is associated with allergy. Airway inflammation has been demonstrated in humans after controlled exposures to diesel exhaust and DEPM. Animal studies provide strong support for the enhancement of allergic responses, and airway inflammation seen in human studies. Experimental animals also develop airway hyperresponsiveness, the functional hallmark of asthma, after exposure to DEPM.

- Several epidemiological studies conducted in Europe have reported associations between truck traffic density (largely diesel-powered) and adverse respiratory symptoms, including atopy, in children living along busy roadways. In one study examining the relationships between general traffic density and respiratory health, children appeared to be more sensitive to traffic-related pollution (e.g., cars, trucks, and buses) than adults.

- Diesel exhaust particles contribute to ambient airborne particulate matter (PM, specifically measured as PM_{10} – particles 10 microns or smaller in mean aerodynamic diameter – and $PM_{2.5}$, a subfraction of PM_{10}). PM_{10} and $PM_{2.5}$ have been associated in numerous studies with adverse respiratory health effects in children, including exacerbation of asthma, bronchitis, cough, and wheeze. As a constituent of PM, DEPM would be expected to contribute to PM-associated health effects, although the extent of the contribution has not been directly studied and would likely vary with concentration. To the extent that asthma is more common among children than adults and that, because age-related anatomic and physiological differences can render children's airways more quickly susceptible to obstruction, one may characterize PM-associated asthma attacks as disproportionately affecting children. In some circumstances in which DEPM constitutes a significant fraction of PM (e.g., on school buses), this observation could be extended to DEPM as well. Recent epidemiological studies have also provided some evidence that exposure to PM_{10} is associated with increased infant mortality, and DEPM may contribute to this effect.

- Diesel exhaust contains polycyclic aromatic hydrocarbons (PAHs). Immunosuppressive effects have been reported in animals as a result of PAH exposure, and have been found to be more severe and to occur at lower doses early in life, especially *in utero*. Analogous effects may also occur in exposed infants and children. In addition, human fetal exposure to PAHs results in elevated levels of PAH-DNA adducts in the neonate. In experimental animals, neonates are more sensitive to such genotoxicity than their mothers. Exposure early in life to genotoxic carcinogens, which are important constituents of diesel exhaust particles, may result in higher cancer risks than when exposure occurs later in life. This represents another mechanism by which diesel exhaust particles may disproportionately impact children. PAHs have also been associated with intrauterine growth retardation and low birth weight in animals and humans. PAHs in diesel exhaust may contribute to these effects.

- Children experience higher particle doses per lung surface area than adults in the same environmental setting (see Introduction Section III.A.1.). In addition, in young children hand-to-mouth activity results in greater consumption of household dust and dirt, which in an urban setting would be contaminated by settled traffic particulates, than occurs in adults. Thus, oral exposures to PAHs (and other constituents of diesel exhaust particles) are also higher in children than adults. Differential exposure patterns are one of the criteria evaluated to prioritize the TACs for listing under SB 25.

Key studies are discussed in Section IV below.

III. Principal Sources of Exposure

Diesel exhaust PM is emitted from diesel-fueled mobile sources (on-road vehicles and off-road mobile sources), stationary area sources, and stationary point sources. Based on the 1995 emissions inventory, on-road diesel vehicles contribute approximately 58 percent (15,680 tons per year (TPY)) of California's diesel exhaust PM. Other mobile sources contribute about 37 percent (9820 TPY), and stationary area and point sources contribute the remaining amount (5% or 1400 TPY). Stationary area sources of diesel exhaust include shipyards, warehouses, heavy equipment repair yards, and oil and gas production operations where exhaust emissions result from multiple locations within the site (Cal/EPA, 1998). The primary stationary sources that have reported emissions of diesel exhaust are heavy construction (except highway), electrical services, and crude petroleum and natural gas extraction (Cal/EPA, 1998).

The total emissions of DEPM from stationary sources in California reporting under the Air Toxics Hot Spots program are estimated to be at least 31,000 pounds per year (ARB, 1997).

Emissions of DEPM from on-road mobile sources in California are expected to decline by approximately 50 percent from 1990 until about 2010 as a result of mobile source standards and regulations adopted by the ARB through 1998. The expected reduction is mainly due to diesel vehicle emission and fuel regulations, even though both the number and vehicle miles traveled (VMT) of heavy-duty trucks are expected to increase during this period (Cal/EPA, 1998). Additional efforts to reduce

DEPM emissions include the replacement of diesel-powered heavy- and medium-duty vehicles with clean-fuel alternatives (such as those using methanol or compressed natural gas), and the use of particle traps and other pollution reduction technologies on new and existing diesel engines. In September 2000, ARB approved a Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-fueled Engines and Vehicles (Diesel RRP). The Diesel RRP includes developing regulations that will substantially reduce emissions from diesel-fueled engines.

The ARB has conducted a preliminary estimation of diesel exhaust concentrations for California's 15 air basins using a PM-based exposure method. This method used the ARB emissions inventory's database for PM_{10}, ambient PM_{10} monitoring network data, and the results from several studies, in which chemical speciation of ambient data was performed, along with receptor modeling techniques, to estimate statewide outdoor concentrations of diesel exhaust PM_{10}. The 1995 outdoor statewide population-weighted average diesel exhaust PM concentration is estimated to be 2.2 micrograms per cubic meter ($\mu g/m^3$). The basin-wide average diesel exhaust PM estimates ranged from 0.1 (in the Great Basin Valley) to 2.7 $\mu g/m^3$ (in the South Coast Air Basin) (Cal/EPA, 1998). Estimates for the year 2000 are slightly lower, ranging from 0.1 $\mu g/m^3$ in the Great Basin to 2.4 $\mu g/m^3$ in the South Coast basin, on average. These statewide or basin-wide averages underestimate exposures on a smaller scale near sources of diesel exhaust emissions. For example, the ARB measured DEPM next to a freeway, reporting up to 10 $\mu g/m^3$ five meters from the freeway fence line (Cal/EPA, 1998). In addition, ARB reports a range of 3.3 to 22.9 $\mu g/m^3$ of black carbon soot measured inside a vehicle in Los Angeles under varying driving conditions (ARB, 1998). The measure of soot was strongly influenced by the presence of diesel vehicles in front of the test vehicle. Examining the PM10 measurements taken inside the vehicle under the same driving circumstances, it appears that diesel particles, measured as soot, constitute between 10 and 30 % of the PM10 mass measured inside the vehicle.

IV. Potential for Differential Effects

Several lines of evidence suggest that DEPM has the potential to differentially impact infants and children. In particular, DEPM enhances allergic responses to aeroallergens and may facilitate the development of new allergies in susceptible individuals. This may have implications for the development and exacerbation of pediatric asthma, which is considered to be related to allergy in about 80% of cases (Pearce et al. 1998).

During the past few years substantial evidence has accumulated suggesting that the development of an allergic phenotype (atopy), which can render one susceptible to asthma, allergic rhinitis, and eczema, may be determined by exposures occurring in early childhood (Brehler et al. 1999). People who develop atopy have a genetic predisposition to produce IgE (immunoglobulin E) antibodies against inhaled or ingested environmental antigens. Whether atopy actually develops appears to depend, at least in part, on early-life exposures to certain allergens, particularly those found indoors. Development of sensitivity to aeroallergens is a complex process requiring an orchestrated coordination of antigen-presenting cells (macrophages or dendritic cells in the airways), T-lymphocytes and B-lymphocytes, which produce IgE antibodies against specific antigens. IgE-mediated hypersensitivity to aeroallergens is a key ingredient in the evolution of the chronic inflammation observed in asthma. While the role of

DEPM in the development of atopy is undefined, numerous studies suggest that DEPM exposure enhances IgE-mediated and other responses to aeroallergens in atopic individuals, including worsening symptoms of allergic rhinitis. In addition, to the extent that DEPM exposure may facilitate the development of allergic sensitization, it may enlarge the spectrum of aeroallergens that may cause symptoms in any given individual with allergic rhinitis or asthma.

DEPM is a variable component of ambient PM_{10}, which has been shown in epidemiological studies to exacerbate asthma, and is associated with elevated risk of cough, chronic bronchitis and wheeze. Traffic studies also contribute to the evidence that DEPM affects respiratory function, and one study examining impacts of traffic-related pollution on respiratory function indicates that children were impacted to a greater degree than adults in the same households. In addition, PM_{10} is associated with increased infant mortality in a number of studies, including in areas where diesel exhaust is a major component of urban PM_{10}. The lines of evidence are discussed in the following sections.

A. Summary of Key Human Studies

a) Immunological and Respiratory Effects of Diesel Exhaust PM

There is growing scientific evidence that diesel PM enhances allergic responses to pollen and other allergens. Enhancement of allergic responses in the nasal and airway epithelium may increase rates of allergic rhinitis and possibly asthma in children. Japanese researchers evaluating the prevalence of Japanese cedar allergy found that pollinosis (as manifested by symptoms of allergic rhinitis isolated to the cedar pollen season, and confirmed in individuals seeking medical care by allergy skin and blood tests) was higher among residents living near heavily trafficked roads lined with cedars than in residents living in cedar forests without traffic congestion (Ishizaki 1987). Though these results are striking, they should be considered suggestive, as the researchers didn't control for some important confounders. A number of studies indicate that DEPM can induce immunological allergic reactions as well as localized inflammatory responses in humans (Diaz-Sanchez et al., 1994, 1996, 1997, 2000; Terada et al., 1997, Takenaka et al., 1995). Diaz-Sanchez et al. (1997, 1999) found that in allergic human subjects, nasal IgE antibody response and allergic inflammation were enhanced by co-exposure to diesel particulate matter. They also demonstrated that DEPM can induce sensitization in atopic individuals to a new allergen. Both *in vivo* and *in vitro* studies exploring the mechanisms of enhanced response to allergen have been conducted. Casillas et al (1999) suggest that DEPM may enhance allergic inflammation through increased formation of reactive oxygen species by DEPM-associated PAHs engulfed by phagocytic cells. This in turn may activate intracellular signaling pathways that result in the production and secretion of biochemical messengers (chemokines and cytokines) involved in allergic inflammation. Key studies demonstrating the enhancement of allergic responses by diesel exhaust are discussed below.

(1) Intranasal instillation studies

Diaz-Sanchez et al. (1997) challenged thirteen subjects who had a positive skin test to short ragweed intranasally with ragweed (RW) pollen alone or with diesel exhaust particulate matter (DEPM) (0.3 mg). Nasal lavage fluids were examined for immunoglobulin (Ig) secreting cells, levels of various Igs and

cytokine profile. The number of IgE-secreting cells was significantly elevated in nasal washes (day 4) following exposure to RW alone or RW+DEPM, while the number of IgA-secreting cells was not. Challenge with RW plus DEPM significantly increased the levels of total and RW-specific IgG4 and of RW-specific IgE in nasal lavage fluids compared to RW alone. IgE represents antibodies associated with allergy, while the gene coding for IgG4 is located in close proximity to that coding for IgE; thus, changes in levels of these Igs often occur in concert. On day one, RW-specific IgE levels were 6 times higher in RW + DEPM subjects (62.7 $\pm$ 55.1 Units/ml) compared with RW alone (10.2 $\pm$ 10.2 U/ml). By day 4 the RW-specific levels were 16 times higher in the RW + DEPM subjects (up to 180 U/ml) than in the RW-alone lavage fluids (up to 12 U/ml). These differences were highly significant ($p < 0.005$ and $p < 0.001$ for days 1 and 4 post-challenge, respectively). Levels of mRNA 18 hours post-challenge for the Th-2-type cytokines IL-4, IL-5, IL-6 and for IL-10 and IL-13 were significantly greater ($p < 0.01$ to $p < 0.05$) in cells recovered from the nasal lavage fluid of those challenged with RW + DEPM relative to RW alone. ("Th-2" refers to a subset of white blood cells [lymphocytes] associated with allergic-type responses, in contrast to Th-1 lymphocytes considered to be associated with nonallergic immune responses.) The authors note that the sentinel Th-1-type cytokine interferon gamma (IFN- γ) was significantly decreased by exposure to DEPM +RW but not by RW alone. These results indicate that the activation of Th-2 cells by allergen exposure can be markedly augmented by exposure to DEPM, with striking effects in the production of antigen-specific IgE, which may in turn increase the likelihood of respiratory symptoms. In another study, these investigators found that the messenger RNA (mRNA) for pro-inflammatory cytokines in macrophages and nasal epithelial cells were significantly increased in human volunteers following intranasal instillation of diesel particles (Diaz-Sanchez et al., 1996).

Nasal challenge with DEPM induced sensitization to a neoallergen in atopic individuals (Diaz-Sanchez et al., 1999). In this study, ten atopic (i.e., allergic) subjects were administered a solution of keyhole limpet hemocyanin (KLH) or KLH + DEPM intranasally three times at two-week intervals. IgE anti-KLH antibodies were present in the nasal lavage fluids at 28 and 32 days for those administered KLH + DEPM, but not in the KLH alone group. Anti-KLH IgG4 levels in lavage fluid were higher in the KLH + DEPM group relative to the KLH group ($p < 0.01$). There was no change in IFN-γ pre-challenge and post-challenge in either group, but challenge with KLH + DEPM greatly increased the levels of IL-4 (a cytokine that has a major influence on the synthesis of IgE by B-lymphocytes) in the nasal lavage fluid, whereas there was no increase in the KLH-only group. This study demonstrates that DEPM can induce sensitization in atopic individuals to a new allergen (as measured by production of KLH-specific IgE) under conditions where administration of the allergen alone does not induce sensitization. Production of IgE antibodies in response to inhaled antigens is the hallmark of sensitization. The authors note that exposure to airborne DEPM may cause atopic individuals to become sensitized to materials to which they would not otherwise respond.

In addition, DEPM administration has been shown to potentiate allergic rhinitis symptoms in volunteers (Diaz-Sanchez et al., 2000). In this study, 11 volunteers allergic to dust mite were administered dust mite allergen intranasally to stimulate an allergic response. A single-blind, placebo-controlled cross-over study design was implemented with subjects randomly receiving 0.3 mg DEPM, 0.3 mg carbon black (CB), or saline intranasally at intervals separated by at least 6 weeks. Immediately following

DEPM, CB, or saline administration, a dust mite allergen challenge was performed and the dose necessary to obtain a pre-designated symptom score was determined. (Symptoms included sneezing, nasal itching and congestion, and rhinorrhea.) Co-administration of DEPM markedly increased the symptom scores after nasal challenge. Only about 1/5 the amount of allergen was needed to provoke the same symptom score when given with DEPM as compared with allergen alone. Carbon black co-administration with allergen did not increase the symptom score relative to saline plus allergen. In a second phase of the study, subjects were given allergen alone, allergen plus saline, allergen plus DEPM, or allergen plus CB intranasally. Histamine (a vasoactive amine associated with allergic symptoms and bronchoconstriction) in nasal lavage supernatant was measured. Higher histamine levels were measured in the supernatant of the nasal lavage fluid when DEPM was co-administered with allergen compared to allergen administration with saline or CB. In addition, the investigators showed potentiation of histamine release by DEPM extract in a murine mast cell line. This investigation demonstrates that DEPM can affect mast cells (containing pre-formed histamine) to augment immediate responses to allergen, and can elicit symptoms of allergic rhinitis in circumstances in which exposure to allergen alone would not.

(2) In vitro cell studies

In experiments *in vitro*, extracts of PAHs from DEPMs (PAH-DEPM) enhanced the production of IgE in purified human B cells prepared from blood mononuclear or tonsil cells (Takenaka et al., 1995). Terada et al. (1997) found that DEPM extracts enhanced human eosinophil adhesion to nasal epithelial cells, an event necessary for the infiltration of inflammatory cells from the circulating pool in the blood to tissues, and caused eosinophil degranulation, which plays an important role in nasal allergy. (Eosinophils are a class of white blood cells involved in allergic inflammation and asthma, as well as other conditions.) These same investigators showed that incubation of human nasal epithelial cells and mucosal microvascular endothelial cells with DEPM extract caused an increase in the expression of mRNA for the histamine-1 receptor (HR-1), and increased the amounts of the cytokines interleukin-8 (IL-8 – a chemoattractant or chemokine for neutrophils, white blood cells involved in acute inflammatory reactions) and granulocyte macrophage colony stimulating factor (GM-CSF – a growth factor promoting the development of two types of immune/inflammatory cells) in the incubation medium (Terada et al., 1999). In this study the epithelial and endothelial cells were incubated in the presence or absence of DEPM extract, 0.5 to 50 ng/ml, for 6 to 24 hours. HR-1 mRNA expression was significantly increased at 50 ng DEPM extract/ml relative to controls. Histamine-induced secretion of IL-8 and GM-CSF into the culture medium was significantly increased at 50 ng extract/ml relative to controls. The authors conclude that DEPM enhances inflammation by upregulation of the HR-1 receptor as well as increasing the production of the inflammatory cytokine IL-8 and GM-CSF.

In a similar vein, Bayram et al.(1998) observed that exposure of human bronchial epithelial cells *in vitro* results in the release of the pro-inflammatory cytokine IL-8, GM-CSF, and intercellular adhesion factor molecule-1 (ICAM-1) from these cells, which could influence the development of airway disease. The study utilized cultured bronchial cells recovered from lung cancer patients (from cancer-free areas), and exposed the cells to varying concentrations of suspended DEPM (50 to 100 µg/ml). Analysis of the cell culture medium after 24-hour incubation indicated a dose-dependent release of IL-8 ($p < 0.05$), which was significantly greater than when cells were incubated in the presence of similar concentrations of

activated charcoal or controls. Both ICAM-1 and GM-CSF were increased but only at the middle dose (50 µg/ml). The increase at the high dose or 100 g/ml DEPM (100 µg/ml DEPM) was not significant at $p < 0.05$. Upregulation of ICAM-1 has been observed in human bronchial epithelial cells in culture by others (Takizawa et al., 2000). In another in vitro study, an organic extract of DEPM was evaluated for its ability to modulate production of chemotactic cytokines (chemokines) by peripheral blood mononuclear cells from healthy human donors (Fahy et al., 1999). Polycyclic aromatic hydrocarbons extracted from DEPM were incubated with PBMC at concentrations ranging from 0.5 to 50 ng/ml up to 48 hours. Concentrations of chemokines (IL-8, RANTES [Regulated on Activation, Normal T-cell Expressed and Secreted], and MCP-1) were quantified in the supernatant, and mRNA for the chemokines was evaluated in the cells. Dose-dependent increases in IL-8 and RANTES were observed from 2 to 48 hours; while MCP-1 decreased. The same pattern of mRNA expression (increased for IL-8 and RANTES, decreased for MCP-1) was observed in the cells measured at 24 hrs, indicating that the DEPM-PAH extracts act at the transcriptional level. The authors note that this modulation of chemokine production may favor preferential recruitment of neutrophils (by IL-8), eosinophils and memory T cells (by RANTES) but not monocytes and macrophages (by MCP-1) upon exposure to diesel exhaust.

All these studies *in vitro* support the inflammatory reactions and modulation of inflammatory cells and cytokines observed after intranasal instillation of DEPM and inhalation of whole DE, and provide some potential mechanisms by which DEPM may exacerbate allergies and asthma.

(3) Exposure to diesel exhaust via inhalation

Exposures of humans to whole diesel exhaust via inhalation have also demonstrated inflammatory responses. Salvi et al. (1999) exposed 15 healthy nonatopic volunteers to whole diesel exhaust (0.3 mg/m^3 as particulate) or air on two different occasions for one hour with 15 minute exercise periods. Lung function measurements including peak expiratory flow rate (PEFR), forced vital capacity (FVC), forced expiratory flow in 1 second (FEV1), and forced expiratory flow mid range (FEF25-75%) were taken immediately before and after exposures. Endobronchial biopsy, bronchial wash (BW), and bronchoalveolar lavage (BAL) were also performed 6 hours after exposure. BW and BAL fluids were centrifuged and a differential cell count conducted on the pellet. The supernatant was analyzed for albumin, protein, lactate dehydrogenase (LDH), IL-8, ICAM-1, fibronectin, methylhistamine, and other indicators of injury. There were no differences in lung function measurements between DE-exposed and control subjects. However, a marked inflammatory response was observed in DE-exposed subjects manifested as increased numbers of neutrophils in the BW, and increases in B- lymphocytes, methylhistamine levels, and fibronectin in the BAL, as well as increases in the number of neutrophils in the submucosa (3-fold; $p < 0.003$) and epithelium (4-fold, $p < 0.03$) of the bronchial biopsies. There were also statistically significant increases in mast cell numbers ($p < 0.002$), CD4+ and CD8+ cells (T lymphocytes) ($p < 0.04$) in the submucosa and/or epithelium of the bronchi of DE-exposed subjects. Marked increases in immunostaining for the endothelial adhesion molecules ICAM-1 and VCAM-1, as well as increased numbers of cells expressing ligand for ICAM-1, VCAM-1 ($p < 0.007$ and $p < 0.03$, respectively) and LFA-1 (a leukocyte adhesion molecule) ($p < 0.001$) were observed in the epithelium and submucosa. These adhesion molecules facilitate transfer of circulating inflammatory cells into

tissues. Peripheral blood samples 6 hr after DE exposure showed a significant increase in neutrophils and platelets following DE exposure. This study shows clearly that diesel exhaust exposure results in an acute inflammatory response and that lung function tests, which have traditionally been used to assess responses to environmental insults such as diesel exhaust exposure, may still be normal in the presence of lung injury and inflammation. In another study by the same investigators (Rudell et al., 1999), bronchoalveolar lavage was performed on 10 healthy subjects following a 1-hour exposure to air, diesel exhaust or filtered diesel exhaust. Each subject received each exposure in random order at 3-week intervals. Differential cell counts were performed on the BAL fluid and phagocytosis was measured. As in the previous study, diesel exhaust exposure resulted in a recruitment of inflammatory cells into the airway. The particle filter did not reduce the effect observed, although it should be noted that the particle filtering efficiency was only 50%, and as such may not have been sufficient to separate effects of particles from vapor phase constituents.

Nightingale et al. (2000) also studied airway responses in healthy volunteers following a 2-hr exposure to 0.2 mg DEPM/m^3. As in the study by Salvi et al (1999), there were no measurable changes in lung function in DEPM-exposed subjects, but an inflammatory response was observed, as measured by increases in neutrophil count and myeloperoxidase levels in induced sputum and by increased exhaled CO levels (a measure of oxidative stress).

(4) Epidemiological studies – traffic-related respiratory effects

Several environmental epidemiological studies provide evidence supporting the notion that exposure to diesel exhaust may contribute to the expression of allergic disease, including asthma. Reports also suggest associations between exposure to truck traffic, which consisted largely of heavy-duty diesel trucks, and a variety of adverse respiratory outcomes, including symptoms of asthma and allergic rhinitis. These endpoints are particularly important to children's health, and the studies summarized below specifically included health evaluations of exposed children.

There are observations in children of atopic sensitization (Kramer et al., 2000), asthma and allergic rhinitis (Edwards et al. 1994, Duhme et al., 1996), decreased lung function (Wjst et al., 1993) and various chronic respiratory symptoms (van Vliet et al., 1997, Oosterlee et al., 1996) associated with increased traffic density. In the study by Duhme et al. (1996), truck traffic specifically was associated with wheezing (OR 2.47, 95% CI 1.74 – 3.52 for constant truck traffic on street of residence relative to no truck traffic) and allergic rhinitis (OR 1.96, 95% CI 1.40 – 2.76 for constant truck traffic) in children aged 12 - 15. The more recent report by Ciccone et al. (1998) also found associations of adverse respiratory health impacts in children with heavy vehicular (diesel powered) traffic. In this study, children living in metropolitan centers along streets with frequent truck traffic (in relation to no truck traffic) showed significantly increased risks for bronchiolitis (OR 1.74, 95% CI 1.09 – 2.77), pneumonia (OR 1.84, 95% CI 1.27 – 2.65) and for multiple episodes of bronchitis (OR 1.69, 95% CI 1.24 – 2.30) early in life (0-2 years). There were also increased risks of current respiratory symptoms, including wheeze and cough, in children living along streets with frequent truck traffic compared with those children living along streets with the no truck traffic.

Studies from Holland indicate that diesel particulate is associated with respiratory impacts (Brunekreef et al., 1997; van Vliet et al., 1997). These investigators not only used traffic counts, but also measured carbonaceous particulate material in indoor air in schools, and found a strong association of decreased lung function with black particle exposure and truck traffic density (Table 2). In this cross-sectional study, over 1000 children ages 7-12 years living in six areas in the Netherlands with homes located near major roadways (carrying between 80,000 and 152,000 total vehicles per day, including between about 8,100 to 17,600 trucks/day) were evaluated with respiratory questionnaires and lung function tests. Measures used to assess exposure to traffic-related pollutants included: 1) distance of the children's homes and schools from major roadways; 2) traffic density counts; 3) and indoor measurements of PM_{10} (with conversion to Black Smoke (BS), representing largely soot particles) and NO_2. Multiple linear regression was used to investigate associations between lung function and pollution measures, adjusting for age, height, weight, gender, parental respiratory symptoms, smoking in the home, pets, dampness or mold in home, ethnicity, number of persons in the home, gas cooking, gas-fired unvented heaters, and socioeconomic status (parental education). Truck traffic density was related to forced expiratory volume in 1 second (FEV1), and peak expiratory flow (PEF) for children living within 1000 m of a major roadway. Decrements in lung function were strongly associated with truck traffic density rather than with automobile traffic density. The effect of truck traffic density on FEV1 increased when the analysis was restricted to children living within 300 m of a roadway, enhancing the likelihood of a causal association. For girls, the effects were stronger than for boys. A clear dose-response relationship was observed between truck traffic density and forced expiratory volume in one second (FEV_1) in children living <300 meters from a roadway (see Figure 1 in Brunekreef et al, 1997).

Respiratory symptoms from the same cross-sectional study were reported by van Vliet et al. (1997), based on parental responses to questionnaires for 1068 children. More symptoms were reported for children living within 100 m of the roadway than for those living within 1000 m of a major roadway. BS concentrations decreased with increasing distance from the freeway. The strongest associations between pollution and respiratory symptoms were observed in girls: chronic cough and wheeze were significantly elevated for girls living within 100 m of a major roadway relative to those living between 100 and 1000 m away (OR = 2.45, 95% CI = 1.16-5.16 for chronic cough, and OR=3.05, 95% CI = 1.11-8.41 for wheeze). Van Vliet et al. (1997) also reported substantially elevated point estimates for odds ratios relating density of truck traffic and BS concentrations measured in schools to these symptoms as well as to asthma attacks, rhinitis, and bronchitis in the past year (ORs ranged from 1.93 to 4.34 in girls only, but were not statistically significant).

Table 2. Lung function decrements as percentage changes (95% CI in parentheses) in forced expiratory volume in 1 second (FEV1) and peak expiratory flow rate (PEFR) in children living near major roadways by measures of vehicle-related air pollution

Population and pollution indicator	FEV1 per 10,000 trucks	FEV1per 10 μg BS/m^3	PEFR per 10,000 trucks	PEFR per 10 μg BS/ m^3
All children living within 1000 m of roadway	-2.5 (-5.3, 0.4)	-1.2 (-3.5, 1.5)	-8.0 (-12.2, -3.6)	-2.6 (-6.7, 1.6)
All children living within 300 m of roadway	-4.1 (-7.9, -0.1)	-3.7 (-7.2, -0.2)	-7.7 (-13.4, -1.7)	-5.8 (-11.1, -0.2)
Boys living within 300 m or roadway	-1.8 (-7.5, 4.2)	1.9 (-3.8, 8.0)	-9.7 (-17.8, -0.7)	-2.5 (-11.2, 7.0)
Girls living within 300 m of roadway	-6.2 (-11.5, -0.6)	-8.3 (-13.0, -3.4)	-6.1 (-13.9, 2.4)	-7.8 (-14.7, -0.3)

Source: Brunekreef et al (1997)

Oosterlee et al. (1996) present data indicating that children may be disproportionately impacted by traffic-related pollutants. In this study, the CAR ("Calculation of Air pollution by Road traffic") model was used to estimate pollution levels for each street in the city of Haarlem, the Netherlands. The model accounts for kind of vehicles (car, bus, truck, gas-fueled, diesel-fueled), mean traffic density, emissions rates for each type of vehicle, local topography including buildings, background concentrations, and meteorology to estimate air pollution levels. Validation measures showed a mean error of 6% (SD=9%) for peak NO_2 concentrations. Respiratory symptoms in children (up to 15 yrs of age) living along streets with estimated traffic density of 10,000 to 30,000 vehicles/day (estimated NO_2 concentrations of 62 to 80 ppb) were compared to those of children living in the same neighborhoods on streets with little traffic. Symptoms were ascertained by questionnaires completed by the subjects' parents, who provided information about chronic cough, episodes of cough with phlegm, wheeze, dyspnea, attacks of dyspnea with wheeze, doctor-diagnosed asthma, medication use, allergy, school absenteeism, doctor visits, for 106 children living on busy streets and 185 "control" children. Adjusted odds ratios for girls were significant for wheeze ever, wheeze in the past year, dyspnea with wheeze ever, dyspnea with wheeze in the past year, and respiratory medication use (Table 3). In contrast to the strong effects in girls, none of the symptoms appeared elevated in boys. This is interesting and not easily explained, but consistent with reports by Brunekreef et al. (1997) and van Vliet et al. (1997). Current asthma medication use was significant for all children, boys and girls combined, living along busy streets (OR 2.2 (95% CI = 1.1-4.6)), but not for adults. The authors conclude that the apparent lack of effect

in adults relative to the children indicates a difference in susceptibility to ambient traffic related air pollution between children and adults. While this study did not directly measure DEPM, diesel exhaust is a major component of traffic-related pollution in the Netherlands, including NO_2, the pollutant modeled in this study.

Table 3. Respiratory symptoms in girls (0-15 years of age) living along busy streets (relative to girls living on streets with little traffic).

Symptom	Adjusted OR (95% CI) for girls
Wheeze-ever	4.4 (1.4-13.6)
Wheeze in past year	5.3 (1.1-25.0)
Dyspnea w/ wheeze ever	4.8 (1.3-17.7)
Dyspnea w/ wheeze in past year	15.8 (1.4-17.7)
Respiratory medication	2.9 (1.1-7.9)
Doctor diagnosed allergy	2.5 (0.7-9.2)

Adjusted for age, maternal education, passive smoking, presence of unvented hot water heater, heating type, home humidity, pets, and crowding.
Source: Oosterlee et al., 1996.

b) Epidemiological studies - General Ambient PM_{10} Effects

Diesel exhaust particulate contributes to ambient particulate matter 10 μm in diameter or less (PM_{10}), especially in areas with heavy traffic. The extent of the contribution of diesel exhaust particulate to PM_{10} health effects has not been directly studied. However, health effects of PM_{10} may be, in part, attributable to the diesel exhaust particulate component. Exposure to PM_{10} in ambient air (to which diesel exhaust is a significant contributor in many urban areas) has been associated with a number of adverse effects on the respiratory system, particularly cough, phlegm and other symptoms of irritation, and decline in lung function. Reported adverse effects include both measures of morbidity (symptoms, increased hospital admissions), and increased mortality. These effects are particularly seen for asthmatics and those with other existing respiratory or cardiovascular disease, and the elderly (Thurston, 2000 as included in Cal/EPA, 2000). Although the contribution of diesel exhaust particulate to the statewide average PM_{10} is relatively small in California (5% or so), it is a more significant portion of PM_{10} and $PM_{2.5}$ in urban locations. In addition, in some cities outside the U.S. that have been studied for effects of PM_{10}, diesel is the major contributor to total PM_{10}. Ostro et al. (1996), in a mortality-PM time-series study in Santiago, Chile, cites Sandoval et al. (1985) which indicates approximately 74% of the PM_{10} in Santiago is from diesel sources. Diesel vehicles account for about 87% of black smoke emissions in London (QUARG, 1993). Effects of PM_{10} are quantitatively similar across different cities

throughout the world with varying constituents of PM_{10}. Thus, cardiovascular and respiratory morbidity and mortality that have been repeatedly linked to ambient PM appear to be an effect of small particles in general. There is no reason to expect a priori that particles from a diesel-fueled source would be selectively less toxic than those from other combustion sources which contribute to ambient PM. There certainly is not a protective effect for morbidity or mortality in the cities where diesel exhaust contributes a substantial portion of the PM_{10}.

(1) Effects of ambient PM_{10} pollution on infants and children

Numerous investigators have reported that respiratory symptoms in children can be exacerbated by exposure to airborne particles and sulfates. These effects have greater health implications in children with asthma, and can lead to an increased incidence of asthma attacks. Since the prevalence of asthma is higher among children than among adults (CDC, 1996a,b), PM-related exacerbations may put proportionately more children at higher risk. Diesel exhaust particles contribute to ambient air PM_{10}, particularly in urban areas with heavy vehicular traffic. In the Thurston et al. (1997) study of children with asthma at a summer camp, prescription medication use, as prescribed in physician-verified cases of asthma exacerbation, was a metric of severe air pollution effects associated with sulfate (a measure of particle pollution). Ostro et al. (1995) in a paper published in a peer-reviewed proceedings, found significant associations between PM_{10} and asthma symptoms in 7-12 year old Los Angeles residents. This finding was confirmed and strengthened in a subsequent study (Ostro et al., 2001). Delfino et al. (1998) found significant associations between asthma symptoms in children 9-17 years of age with both 1-hour and 8-hour PM_{10} measurements. In an earlier study, Delfino and colleagues found a significant association between PM_{10} and bronchodilator use in asthmatic children (Delfino et al. 1997). In a re-analysis of published studies, Hock et al. (1998) noted significant reductions in peak expiratory flow rates in children associated with PM_{10} measurements. Pulmonary function has also been associated with measurements of particulate matter 5 microns or smaller in a study in school children (Linn et al., 1996). In a large study in 12 Southern California communities, asthma, bronchitis, cough, wheeze and lung function decrements were associated with PM_{10} pollution, as was deficits in lung function growth in children, though because of pollutant covariation, these effects could not be ascribed exclusively to PM (Peters et al., 1999a,b; Gauderman et al., 2000). In any case, the published literature is replete with findings that PM air pollution can adversely affect children's respiratory health.

Burnett et al. (1994) note that the largest percent increase in hospital admissions associated with PM_{10} is in the 0-1 year old age group of children in Ontario, suggesting that infants may be especially susceptible (see also Introduction section III). Infant and child mortality has also been associated with acute exposures to PM_{10} pollution in time-series studies in Mexico (Loomis et al., 1999), Delhi (Cropper et al., 1997) and Bangkok (Ostro et al., 1998) and in a case-control study in the Czech Republic (Bobak and Leon, 1999). The time-series study design allows the investigator to account for the potential effects of other co-varying pollutants on infant and child mortality, and these studies were able to ascribe the effects to PM_{10} pollution. Other cross-sectional studies have linked infant mortality in the U.S. (Woodruff et al., 1997) and the Czech Republic (Bobak and Leon, 1992) to longer-term exposures to PM, although the influence of other pollutants in these cross-sectional studies can't be easily characterized and thus confounding may exist.

Children are also exposed to more PM per unit body weight and per lung surface area than adults by virtue of their higher breathing rates (see Section III in the Introduction). The studies showing infant and child morbidity and mortality, combined with higher doses due to higher breathing rates of children, as well as higher rates of asthma in children, indicate that children may be disproportionately impacted by PM relative to adults. This conclusion was supported by the review of our prioritization of the Criteria Air Pollutants (CAP) under SB 25 by the Air Quality Advisory Committee. Indeed, PM_{10} was determined to be the highest priority CAP for re-review of the standard (Cal/EPA, 2000).

c) Carcinogenicity

The epidemiological studies of the relationship between human exposure to diesel exhaust and lung cancer involve occupational situations that necessarily involve adults but not children, so direct evidence of differential effects on infants or children is not available from this source. There are a considerable number of studies of adult human exposure to diesel exhaust in an occupational setting and associations with cancer. Lipsett and Campleman (1999) identified 39 independent estimates of relative risk among 30 studies of diesel exhaust and lung cancer, while HEI (1995) summarized more than 35 epidemiologic studies (16 cohort and 19 case-control) of occupational exposure to diesel emissions. Meta-analyses from the existing studies support the observed association between occupational exposure to diesel exhaust and increased risk of lung cancer. These analyses also found that the relationship between occupational diesel exhaust exposure and lung cancer could not be attributed to potential confounding by cigarette smoking (Bhatia et al., 1998, HEI, 1995; Lipsett and Campleman, 1999). The available studies were reviewed in the TAC document *Health Risk Assessment For Diesel Exhaust* (OEHHA, 1998).

It has been noted in the introductory chapter of this report that cancer risks may generally be more severe when exposure occurs *in utero* or early in postnatal life. Additionally, it is known that diesel exhaust particulate contains PAHs and PAH derivatives. These are suspected of being substantial contributors to the observed carcinogenicity of diesel exhaust. In a separate section of this report, evidence is presented that benzo[*a*]pyrene and other PAHs are not only carcinogenic to adults, but present a significantly greater hazard of carcinogenicity to the fetus and to infants and children. This evidence includes data on DNA adducts following human exposure to PAHs. In addition, developmental toxicity has been observed following PAH exposure *in utero*, including reduced birth weight and dysmorphogenesis. The evidence in this case also is primarily for exposure to PAHs in tobacco smoke and ambient or indoor air pollution. Thus, the presence of PAHs in diesel exhaust poses another concern for disproportionate impacts on infants and children. The reader is referred to the summary of differential toxicity for benzo[*a*]pyrene and PAHs in this report for further details of these effects.

B. Summary of Key Animal Studies.

Animal studies support the enhancement of allergic and inflammatory responses seen in human studies. These studies provide evidence that diesel exhaust can potentiate responses to aeroallergens, which

could facilitate the exacerbation and possibly the evolution of allergic diseases, including asthma and allergic rhinitis.

a) Immunological Toxicity

Studies in mice have shown that intranasal or intraperitoneal co-administration of DEPM and allergen and inhalation of DEPM enhances IgE production in response to Japanese cedar pollen and ovalbumin (Muranaka et al., 1986; Takafuji et al., 1987; Takano et al., 1997; Miyabara et al., 1998). These studies were initially undertaken because of an increase in prevalence of allergic rhinitis caused by pollens in Japan that corresponded to an increase in the number of diesel-fueled cars in Japan, and the higher rates in polluted urban areas relative to nonpolluted areas (Muranaka et al., 1986; Takafuji et al., 1987; Miyamoto, 1997). DEPM can enhance antigen-induced airway inflammation in a mouse model (Takano et al., 1997). Male ICR mice were treated intranasally with either ovalbumin (OVA), DEPM, OVA + DEPM, or vehicle weekly over 6- or 9-week periods. Bronchoalveolar lavage (BAL) and differential cell counts of the lavage fluid, and lung histology were conducted 24 hours after the last treatment. Measurements of eosinophils, lymphocytes, and neutrophils in BAL fluid as well as in the lung tissue were conducted. In addition, the investigators quantified cytokine levels in BAL and lung tissue supernatants. OVA-specific IgE, IgG1, and IgG2a were measured. A 20-fold greater increase in the eosinophil content of BAL fluid was observed in mice instilled with OVA + DEPM relative to OVA alone. The vehicle group showed no eosinophils in the BAL fluid. DEPM co-administration also produced a 10-fold increase in neutrophils and a 4-fold increase in lymphocytes in the BAL fluid relative to OVA alone. A marked infiltration of eosinophils and lymphocytes was noted in the bronchioles and bronchi of DEPM + OVA treated mice compared to OVA or DEPM alone. Goblet (mucous-secreting) cell number in the airway epithelium was increased 13-fold in the OVA + DEPM group relative to the OVA group alone. These results were all statistically significant ($p < 0.05$ to $p < 0.001$). The Th2 cytokine IL-5, which is involved in the pathogenesis of allergic reactions through enhancement of differentiation, recruitment and activation of eosinophils, was highly elevated in BAL fluid and lung tissue supernatants of OVA + DEPM mice relative to those for OVA or DEPM alone. Antigen-specific immunoglobulins IgE, IgG1, and IgG2a were all significantly elevated in the DEPM + OVA group compared to the OVA group alone after 9 weeks of treatment. The authors note that these cellular and cytokine changes demonstrate enhanced allergic airway inflammation from exposure to DEPM, and that the co-administration of DEPM and antigen "established the fundamental traits of asthma, including eosinophilic airway inflammation, airway hyperresponsiveness, and mucus hypersecretion…"

Exposure of OVA-sensitized C3H/HeN mice via inhalation (2-3 mg/m^3) for five weeks also resulted in enhanced eosinophil numbers in the BAL fluid and lung tissue, as well as increased goblet cell counts in the airway epithelium following exposure to OVA aerosol relative to air exposure plus OVA aerosol alone (Miyabara et al., 1998). Diesel exhaust exposure also increased the production of OVA-specific IgE and IgG1, measured in the serum, and the expression of IL-5 in lung tissue. The same investigators evaluated longer term (40-week) exposures to diesel exhaust at 0.3, 1.0, or 3.0 mg/m^3 in OVA-sensitized ICR mice to study the effects on allergen-related airway inflammation (Takano et al., 1998). As in the earlier study, diesel exhaust inhalation exposure enhanced eosinophil recruitment and airway

hyperresponsiveness in mice following challenge with OVA. DE exposure caused a dose-dependent increase in the cellularity of the BAL fluid, including increases in macrophages and neutrophils compared to the clean-air controls. Eosinophilic infiltration into the airways was observed with OVA challenge in the DE exposed mice but not the clean-air controls. DE inhalation also produced a dose-dependent increase in IL-5 in the BAL and lung tissue supernatants, and of GM-CSF in lung tissue supernatants.

Other investigators have evaluated inhalation of diesel exhaust or instillation of DEPM and production of asthma-like symptoms or allergic responses in animal models. Sagai et al (1996) instilled 0.1-0.2 mg DEPM intratracheally to ICR and W/W^v mice once per week for 5, 8, 11, or 16 weeks. Controls received buffered saline or 0.2 mg activated charcoal. Bronchoalveolar lavage fluid obtained at sacrifice was centrifuged and differential cell counts conducted on the pellet. Lung tissue was examined for eosinophils and neutrophils. Airway hyperresponsiveness in response to acetylcholine was assessed in some of the mice. Proliferation of mucus cells, mucus secretion into the bronchioles, and edematous changes in the submucosa were observed after 11 or more instillations. In addition, hyperplasia of goblet cells and thickening of the bronchiolar wall were noted. Neutrophils, eosinophils, and lymphocyte infiltration into the lamina propria of the bronchi and bronchioles and accumulation of eosinophils in the bronchi, bronchioles and alveoli were evident ($p < 0.05$ to $p < 0.001$). Eosinophils reached maximal levels at the 11th week and remained elevated thereafter. Degranulation of eosinophils was also observed by transmission electron microscopy. Sialic acid (an indicator of mucus hypersecretion), and the numbers of neutrophils and eosinophils were significantly elevated in the BAL fluid of the 0.2 mg treatment group relative to controls or charcoal-treated animals ($p < 0.05$ to 0.001). Airway hyperresponsiveness in response to acetylcholine challenge was enhanced in a dose-dependent fashion by intra-tracheal instillation of DEPM. In mice instilled with 0.2 mg DEPM, airway resistance increased with only 10% of the acetylcholine required to induce a response in the control animals ($p < 0.001$). These changes were suppressed when superoxide dismutase bound to polyethylene particles was instilled, indicating a role of reactive oxygen species in the airway inflammatory response and the etiology of hyperresponsiveness.

Kobayashi et al. (1997) used a guinea pig model of rhinitis to evaluate the effects of inhaled diesel exhaust on nasal mucosal hyperresponsiveness to histamine. Guinea pigs were exposed either to air or diesel exhaust (1 or 3.2 mg DEPM/m^3), and intranasal pressure, nasal secretion and sneezing in response to histamine dripped into the nostril were measured. Effects of DEPM or carbon particles on sneezing were also assessed following intranasal instillation. DEPM instilled intranasally increased the frequency of histamine-induced sneezing compared to saline administration ($p < 0.05$), but carbon particles did not. Diesel exhaust inhalation at the higher dose increased histamine-induced sneezing three-fold over air exposed controls ($p < 0.05$), and induced nasal secretion significantly ($p < 0.05$). Intranasal pressure was not significantly different after inhalation exposure to diesel exhaust in this study. This study demonstrates that intranasally instilled DEPM and short-term high inhalation exposures to diesel exhaust can aggravate nasal rhinitis in an animal model.

Kobayashi (2000) demonstrated that longer-term inhalation exposure to diesel exhaust (0.3 or 1 mg DEPM/m^3 for five weeks), with intranasal instillation of ovalbumin (OVA) once per week, augmented the sneezing response to OVA challenge and increased the production of anti-OVA IgG and IgE.

Sneezes were counted for 20 minutes after each OVA administration. By the 3rd week, the high dose DE-exposed animals showed increased sneezing in response to OVA challenge relative to controls, and the response increased in the 4th to 6th weeks. By the 4th administration the low-dose group showed an augmented response ($p < 0.05$), which increased in significance in the following weeks. DE exposure increased the titers of anti-OVA IgG and IgE in the systemic circulation several-fold relative to air-exposed controls. DE exposure also increased the number of eosinophils in the nasal epithelium and submucosa, a hallmark of nasal allergic reaction. These studies show enhancement of allergic reactions by diesel exhaust in animal models and support the human studies indicating the same.

b) Developmental and Reproductive Effects

Developmental toxicity as a result of maternal exposure to diesel exhaust has been reported (Watanabe and Kurita, 2001). The anogenital distance was significantly longer in both male and female fetuses following exposure to diesel exhaust from gestation days 7 to 20. This endpoint is indicative of developmental toxicity on the reproductive tract. Developmental toxicity is one of the endpoints of concern for children's health, as noted in the Introduction Section II.B.1. Although exposure resulted in some changes in maternal hormone levels relative to controls, the authors concluded that the effects observed were the result of exposure-induced changes in the fetus and its interaction with the maternal endocrine system, rather than maternal toxicity or adaptation.

Taneda et al. (2000) report anti-estrogenic activity of diesel particle extracts in a model yeast system. In a study by Meek (1998), diesel particle extracts activated the aryl hydrocarbon receptor (as does dioxin) and induced transcription of reporter genes regulated by the AhR and estrogen receptors. These two studies indicate potential endocrine disruption activity by chemicals bound to diesel exhaust particles. Endocrine disruption is noted in the introduction as a toxicological endpoint of concern for children.

The summary of PAH effects in this report lists extensive developmental effects of PAH exposure, including teratogenesis. It is plausible that such effects would result also from exposure to diesel exhaust due to its PAH content. However, it does not appear that the endpoints observed for PAH developmental toxicity have been adequately evaluated for diesel exhaust exposure.

V. Additional Information

A. Mutagenicity

Diesel exhaust particles have been shown to be mutagenic in a variety of assays *in vitro*, including the *Salmonella* reverse mutation assay and various assays in mammalian cells. Induction of chromosome aberrations *in vitro*, and of sister chromatid exchanges and micronuclei both *in vitro* and *in vivo*, has also been observed. Formation of DNA adducts, in some cases identified as derived from PAHs and/or nitro-PAHs, has been reported both *in vivo* and *in vitro*. Genetic toxicity of diesel exhaust and of particulate material derived therefrom was reviewed in detail by OEHHA (1998). Note that levels of PAH-DNA adducts have been associated with low birth weight in humans (see PAH summary).

B. *Regulatory Background*

Diesel exhaust PM is listed as a toxic air contaminant under California's air toxics program (AB 1807). OEHHA (1998) reported the following cancer potency estimates:

Unit Risk Factor: 1.3 E-4 - 1.5 E-3 $(\mu g/m^3)^{-1}$ (measured as particulate matter)
[Scientific Review Panel unit risk "reasonable estimate" = 3.0 E-4 $(\mu g/m^3)^{-1}$.]

Slope Factor: 1.1 E+0 $(mg/kg\text{-}day)^{-1}$

This estimate was based on human occupational exposure lung tumor incidence in studies of US railroad workers (Garshick *et al.* (1987, 1988), using estimated exposure concentrations (Woskie *et al.*, 1988a,b) and a relative risk model (OEHHA, 1998). Additional analyses by others support this range of risk (Harris, 1983; Steenland et al., 1998).

Diesel exhaust is listed as a carcinogen under Proposition 65, and IARC (1989) lists diesel exhaust as a probable human carcinogen (Group 2A).

OEHHA has adopted a chronic Reference Exposure Level of 5 $\mu g/m^3$. The REL is based primarily on two studies. Ishinishi et al. (1988) showed histological changes in the lung in rats exposed to diesel exhaust at concentrations of 0.96 mg particulate/m^3 and higher, and Mauderly et al. (1988) showed inflammatory, histological, and biochemical changes in the lung of rats exposed to 3.47 mg diesel exhaust particulate/m^3. The NOAEL, after adjustment for dosimetry used in estimating the REL, was 155 $\mu g/m^3$ for the Ishinishi study; application of a cumulative uncertainty factor of 30 led to an REL of 5 $\mu g/m^3$. Statewide average ambient concentrations are about one-half of the REL, while concentrations can exceed that in urban areas and inside vehicles.

VI. Conclusions

From the above discussion, it is apparent that diesel exhaust has the potential to disproportionately impact infants and children, and OEHHA has, therefore, placed diesel exhaust particulate in Tier 1. The development of atopy, a major risk factor for childhood asthma, occurs as a result of exposures in early childhood among individuals with a genetic predisposition to produce IgE. Enhanced allergic and inflammatory responses have been observed in both animals and humans exposed intranasally or via inhalation to diesel exhaust particulate. Numerous studies indicate that exposure to diesel exhaust particles can:

- Increase total IgE and IgG4 in humans and animals.
- Potentiate responses to allergen, producing marked increases in allergen-specific IgE.
- Favor the activation of Th-2 over Th-1 lymphocytes, enhancing the production of Th2 cytokines, which are associated with allergic inflammation.

- Cause degranulation of eosinophils, with increased release of histamine, and worsen symptoms of allergic rhinitis in humans.
- Cause marked acute airway inflammation in humans after controlled exposures.
- In animal models, cause chronic eosinophilic inflammation and airway hyperreponsiveness, two of the principal characteristics of asthma.
- Facilitate the development of allergy in the presence of diesel exhaust particulate where exposure to the allergen alone was insufficient to induce an allergic response.

Studies of DEPM-associated PAHs suggest plausible mechanisms by which diesel exhaust may exert this suite of immunological effects. The adjuvant effects of diesel exhaust exposure may influence exacerbations of, and perhaps the development of atopic conditions, including allergic rhinitis and asthma. While the precise role (if any) of diesel exposure in the development of atopy has not been defined, evidence has accumulated over the past decade that exposures to a variety of agents that impact the immune system during the first few years of life are critical in determining whether an individual will develop an allergic diathesis.

In addition to the mechanistic evidence from human and animal studies, several studies have shown that exposure to ambient PM_{10} leads to exacerbation of asthma, lung function decrements and increased cough, wheeze, and chronic bronchitis in children. Diesel exhaust is a component of PM_{10}. The extent of the contribution of diesel exhaust particulate to PM_{10} health effects in children and adults has not been directly studied. However, exacerbation of asthma and other adverse health impacts from PM_{10} may, in part, be attributable to DEPM exposure. More to the point, a range of adverse respiratory impacts in children has been associated with traffic density, and especially heavy-duty diesel-fueled truck traffic density and measures of black smoke (sooty fine particles). One of these traffic studies suggests that children are more affected by traffic-related pollutants than adults in the same household. Respiratory impacts may be greater in very young children because their developing lung and immune systems are especially vulnerable to chemical insult. Asthma is potentially more serious in children, especially very young children, because of their smaller airways (see Introduction Section II). Thus, decrements in lung function, exacerbation of asthma and possibly induction of allergic asthma facilitated by diesel exhaust particulate exposure may contribute to disproportionate impacts of diesel exhaust on children.

Epidemiological studies have also provided evidence that exposure to PM_{10} is associated with increased infant mortality. Diesel exhaust is a major contributor to PM_{10} in some of the areas studied (e.g., Bangkok, Mexico, New Delhi), but is not as significant in the U.S. Nonetheless, diesel exhaust particulate contributes to PM_{10} and thus may, in part, be responsible for this observed effect; certainly, there is not a protective effect in the cities where diesel exhaust contributes a substantial portion of the PM_{10}.

Diesel exhaust particulate contains approximately 1% PAHs. Several non-carcinogenic effects have been observed following exposure *in utero* to PAHs or to mixtures containing them, and are described in the PAH summary in this report. These included teratogenesis, low birth weight in humans and

rodents, immunotoxicity, loss of fertility in rodents exposed to benzo[a] pyrene *in utero*, and disruption of lymphocyte maturation and hematopoiesis. These occurred at doses at which maternal toxicity (other than long-term effects such as carcinogenesis) is minimal or absent. In several cases the effects observed after exposure *in utero* parallel toxic effects in the adult (e.g. immunotoxicity, reproductive toxicity, myelotoxicity), but whereas the effects are reversible after exposure of the adult, exposure of the fetus results in an irreversible effect. There are many carcinogenic PAHs and several studies showing that potency increases when exposure occurs perinatally. Thus, the presence of PAHs on diesel exhaust particles is another reason to consider that DEPM disproportionately impacts children.

Children have higher exposures to airborne particles than do adults at the same particle concentration due to their higher breathing rates (see Introduction Section III.). In addition, higher particle doses are experienced by children per unit of alveolar surface area due to particle deposition dynamics. Thus, exposures to diesel exhaust particles in the same environmental settings may be greater for children than for adults.

With regard to diesel exhaust carcinogenesis, the evidence indicating that infants and children may be more susceptible than adults is mainly indirect, since studies of this endpoint in children are not available. However, the more extensive data on PAHs and carcinogenesis reported in the summary for PAHs tend to support the expectation that higher risk might be incurred by exposure to diesel exhaust as infants and children than adults.

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e-mail info@ecocenter.org

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Citizens Meet with the Governor on Dioxin Contamination

FOR IMMEDIATE RELEASE -- June 22, 2004

In a meeting yesterday with Governor Jennifer Granholm, Lieutenant Governor John Cherry and Department of Environmental Quality Director Steve Chester, residents of the dioxin-contaminated floodplain in mid-Michigan urged the Governor to protect public health and in particular, the region's children, from dioxin contamination. Residents are concerned about recent attempts by Dow Chemical and several Midland area legislators with ties to the chemical giant to delay and in some cases prevent cleanup of their neighborhoods and homes.

"My husband developed a series of illnesses while we were living in our home in the river. We are now concerned that the dioxin contamination we have been living in for 30 years contributed to his unexplained multiple health problems. Two of our otherwise healthy daughters have battled infertility. Our combined health problems are the same as evidenced in studies on dioxin," said Barb Steinmetz, a long-time river resident. "While we thought we were enjoying our uniquely beautiful location on the river, we have come to the realization that over the years, we have been slowly poisoned by subtle, insidious dioxin exposure."

"I told the Governor that I was worried about the health of my young children, and concerned that we can no longer use our yard without worrying that we are putting them at risk," said Marcia Woodman, river resident and mother of three.

Residents called recent legislative attempts to weaken the state's dioxin cleanup standard an outrage, and urged the Governor to be guided by the mountain of scientific evidence that details dioxin's hazards. Michigan's standard is similar to other states that have dioxin cleanup standards. They are based on well-established scientific methods to protect public health.

"The developing baby is most at risk from dioxin's toxicity. Even

tiny amounts can threaten a baby's development. Weakening our standard will just put more children at risk. Public health must come first in any cleanup. That is the state law, and that is the ethical and right thing to do," said Michelle Hurd Riddick, of the Lone Tree Council.

"Cleanup decisions must be out in the open, and with full public participation," said Diane Hebert, a Midland resident who wants the right to have her property tested, and cleaned up if necessary. "Midland area legislators don't represent me and my interests, even though I live in Midland. I am absolutely outraged that they are working to eliminate my right to get my yard cleaned up."

Residents also criticized legislative attempts to punish the DEQ for doing their job, and following state law. The house recently passed a budget that cuts the Director's salary by 15% and institutes across the board cuts of 8% in the DEQ budget.

Residents also objected to the plan to use taxpayer dollars that are meant for cleanup to fund a study that Dow is already conducting on dioxin. "Dioxin has been studied for more than ten years by dozens of scientists writing hundreds of papers. This is yet another delay tactic to confuse people and make them think that there are major questions about dioxin's toxicity," said Michelle Hurd Riddick.

Dioxin is a known human carcinogen, and has been linked to a variety of health effects including endometriosis, diabetes, cardiovascular disease, decreased testosterone, immunotoxicity, altered sex ratio, delayed breast development, developmental insults including altered thyroid status and neurobehavioral impacts, auto-immune disorders, birth defects, and many other health problems. There is more evidence on dioxin's hazards than almost any other pollutant ever studied. While some areas of uncertainty remain, there is widespread scientific consensus that dioxin is toxic in tiny amounts, and that any additional exposure to dioxin increases our risks.

"This is just like the Hudson River cleanup in New York. The industry fought for years, and continued to claim that PCB's weren't toxic, and that people weren't exposed. But in the end, PCB's are still toxic, and the company was forced to cleanup," said Tracey Easthope, MPH of the Ecology Center.

"There is a massive amount of misinformation circulating about the dioxin cleanup efforts. Dow has done a good job of completely confusing people about the issues. But the facts remain - Dow

contaminated the whole region, and that contamination continues to sweep through the watershed, contaminating our backyards and fisheries and wildlife, and poisoning people who are exposed. Its time, after all these years, to finally clean up," said Gary Henry, river resident.

For More Information Contact:

Michelle Hurd-Riddick (989) 798-5535

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Final

October 2001

Secretary for Environmental Protection
California Environmental Protection Agency
Winston H. Hickox

Director
Office of Environmental Health Hazard Assessment
Joan E. Denton, Ph.D.

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Office of Environmental Health Hazard Assessment
California Environmental Protection Agency

October, 2001

Prepared by:

Amy Arcus-Arth, D.V.M., MPVM
Robert Blaisdell, Ph.D.
Joe Brown, Ph.D.
John Budroe, Ph.D.
James Collins, Ph.D.
Stan Dawson, Ph.D.
Daryn Dodge, Ph.D.
Richard Lam, Ph.D.
David Lewis, Ph.D.
Michael Lipsett, M.D.
Melanie Marty, Ph.D.
Tom MacDonald, Ph.D.
Mark Miller, M.D.
David Morry, Ph.D.
Bart Ostro, Ph.D.
Judy Polakoff, M.S.
Pierre Raymond, Ph.D.
Andrew Salmon, M.A., D. Phil.
Bruce Winder, Ph.D.

Reviewed by:

George Alexeeff, Ph.D.
Melanie Marty, Ph.D.
Andrew Salmon, M.A., D. Phil.

In addition, the following contractors were used to help develop our focused literature reviews:

Dr. Michael Collins, University of California, Los Angeles
Dr. Joe Landolph, University of Southern California
Dr. Thomas Meehan, University of California, San Francisco
Dr. Allan Smith, University of California, Berkeley

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Prioritization of Toxic Air Contaminants under the Children's Environmental Health Protection Act

I. Introduction

In recent years, there have been growing concerns regarding children's environmental health, especially in recognition of children's potentially increased susceptibility to environmental contaminants. Because of these concerns, the California Legislature passed the Children's Environmental Health Protection Act (SB 25, Escutia; chaptered 1999), which requires the California Environmental Protection Agency to specifically consider children in setting Ambient Air Quality Standards and developing criteria for Toxic Air Contaminants (TACs). The Office of Environmental Health Hazard Assessment (OEHHA) is responsible for evaluating health effects information on the criteria air pollutants: ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide, particulate matter, hydrogen sulfide, sulfates, and lead. OEHHA also provides health-based recommendations for Ambient Air Quality Standards (AAQS) for these compounds to the Air Resources Board (ARB), the regulatory board which promulgates the standards. In addition, OEHHA is responsible for conducting health effects assessments of TACs, which are provided to the ARB for use in risk management activities. The new legislation requires OEHHA to consider in its health effects assessments and recommendations: (1) exposure patterns among infants and children that result in disproportionately high exposure; (2) special susceptibility of infants and children; (3) effects of simultaneous exposures to compounds with the same mechanism of action; and (4) any interactions of air pollutants. The law requires OEHHA to evaluate available information on the TACs and develop a list of up to five TACs that "may cause infants and children to be especially susceptible to illness" by July 1, 2001. The purpose of this document is to describe the prioritization procedure used to develop the initial listing. The list is to be updated periodically.

While the statute requires OEHHA to evaluate infants and children specifically, it is important to note that existing risk assessment methodologies use protective assumptions to protect children when evaluating and quantifying risk from exposure to chemicals. These assumptions include use of the 95% Upper Confidence Limit of the slope of the dose-response curve when evaluating cancer potency and use of an uncertainty factor of 10 for interindividual variability in the human population when developing noncancer Reference Exposure Levels. Risk assessors have always known that such assumptions are crude but data have generally been lacking to use anything other than such assumptions for most chemicals. As part of the long-term goals of SB 25, OEHHA will be evaluating available information to assess the adequacy of these assumptions in protecting infants and children from toxic air contaminants.

This document first presents OEHHA's prioritization of the identified toxic air contaminants for the purpose of developing the list of TACs under SB 25 (Section II. A.). We describe particular toxicological endpoints of concern for infants and children and why these endpoints are important (Section II.B.) We then describe the listing under SB 25 and include a second tier of chemicals of concern which did not merit placement in the top 5 at this time (Section II.C.). The document then provides an introduction to the factors that influence the body's responses to environmental contaminants and other toxicants, and that differ between children and adults

(Section III). This section is not meant to be exhaustive; rather it provides an introduction to the issues that should generally be considered, if data are available, when assessing impacts on infants and children. Finally, toxicity summaries for TACs that were candidates for listing under SB 25 in the first list of five are provided in Appendix C-1 (final Tier 1 TACs) and C-2 (other TACs of concern).

It should be noted that OEHHA is precluded from evaluating "pesticides in their pesticidal use" for listing under SB 25. There are several pesticides that are TACs and whose mechanism of toxicity would suggest consideration for listing. However, SB 25 reiterated and confirmed previous statutory provisions specifying that pesticides in their pesticidal use are outside the purview of OEHHA and ARB in administering the Toxic Air Contaminant Program (Health & Safety Code Sections 39655 and 39660). Nonetheless, OEHHA was able to consider methyl bromide, a pesticide, for listing pursuant to SB 25. An appellate court decision (Harbor Fumigation, Inc. v County of San Diego Air Pollution Control District) held that emissions of methyl bromide from fumigation chambers is **not** a pesticide in its pesticidal use. Rather, it is only a pesticide in its pesticidal use while inside the fumigation chamber. The court held that once the use of a pesticide is completed and its waste gas emitted into the ambient air from the facility, then it is subject to the general Toxic Air Contaminant regulatory regimen. Thus, such emissions are properly subject to ARB and Air District regulation, as well as review under SB 25.

In addition, OEHHA would like to note that there are many studies linking environmental tobacco smoke (ETS) exposure to poor health outcomes in exposed children. OEHHA reviewed the health effects of ETS in the document entitled "Health Effects of Exposure to Environmental Tobacco Smoke", published as a National Cancer Institute Monograph (NCI, 1999). ETS is associated with adverse health effects in infants and children including reduced birth weight, intrauterine growth retardation, increased risk of sudden infant death syndrome, exacerbation of asthma and induction of new asthma, chronic respiratory symptoms, increased lower airway infections, and acute and chronic otitis media. (Some of the studies with ETS include data associating some of these outcomes with the PAH component of ETS and are described in Appendix C, PAH summary.) It is estimated (1) that ETS-related exacerbation of asthma affects up to 120,000 children in California annually, (2) that ETS-related otitis media may result in 78,000 to 188,000 doctor visits per year among children under age 3, (3) that from 18,000 to 36,000 cases of ETS-related bronchitis or pneumonia can be predicted to occur in children younger than 18 months, and (4) that from 960 to 3120 new cases of asthma in California per year may be attributable to ETS exposure (NCI, 1999). Since ETS has not been identified as a Toxic Air Contaminant, OEHHA is precluded at this time from listing ETS as a TAC that may cause infants and children to be especially susceptible to illness. However, the ARB has entered ETS into the identification phase of the Toxic Air Contaminant program. Since SB 25 requires consideration of infants and children's health impacts in evaluating candidate TACs, the evaluation of ETS will focus primarily on these adverse health impacts in infants and children.

II. Initial prioritization of all TACs

A. Selection for Focused Literature Review

OEHHA developed a system of prioritizing TACs to assist in identifying up to five substances, which posed a potential hazard to children in California. We began with the entire list of approximately 200 identified TACs and prioritized them based on their toxicity and extent of air emissions or measured ambient concentrations in the state. We then chose 36 chemicals for focused literature reviews. Based on the strength of the toxicity data for the TACs and extent of exposure, we narrowed the list to 17 TACS and provide summaries of those TACs in Appendix C of this document. We also chose five of those TACs for the initial listing under SB 25, which we are statutorily mandated to complete by July 1, 2001. There were four Scientific Review Panel meetings at which the document was discussed. Transcripts are available on the ARB web-site (www.arb.ca.gov). These discussions indicated that the initial proposed list of five (Tier 1) was likely to change. It is also important to stress that we believe some of the other TACs pose a threat to infants' and children's health and need to be evaluated in future updates of the list; however, the statute precludes us from listing more than five by July 1, 2001. We provide in the final document a list of the five that will constitute the initial list of TACs that may cause infants and children to be especially susceptible to illness, as well as a second list of TACs for which there are concerns about impacts on infants and children. The following is a summary of the steps taken in the prioritization.

1. We began with the compound summary table from the ARB document entitled Toxic Air Contaminant Identification List Compound Summaries (CARB, 1997), which lists all TACs with data on ambient air concentrations and chronic Reference Exposure Levels (RELs). (A chronic REL is an airborne concentration at or below which adverse noncancer health impacts would not be anticipated (OEHHA, 2000a).) This table originated from the prioritization of TACs for health effects review conducted by the Air Resources Board. The ARB prioritization process was endorsed by the state's Scientific Review Panel on Toxic Air Contaminants. We updated this information with more recent data on ambient air concentrations in California from the ARB's monitoring network. For those chemicals lacking recent California monitoring data, we used the older monitoring data that were in the original ARB summary table. It should be noted that there are no California-specific data for a number of these compounds. Ambient concentration data reported in the original ARB table that were not from the ARB's monitoring efforts were retained for our purposes. These data came from a compilation of measurements published by the U.S. EPA (Ambient Concentration Summaries for Clean Air Act Title III Hazardous Air Pollutants, 1993). Means of the U.S. EPA-compiled data reported in the table may be from one location, more than one location, and from measurements conducted in different years (many in the 1970s and 1980s). Thus, the data are uncertain in terms of being representative for chronic exposures and in terms of applicability to California. Nonetheless, the data do provide some information on potential exposures.

2. We divided the ambient air concentration by the chronic REL, which provided a noncancer score. Where chemicals did not have an approved chronic REL, we utilized a proposed chronic REL or a previously utilized REL from CAPCOA (1993). This provided us with a score for the chemicals for noncancer toxicity combined with exposure potential.

3. For the carcinogens, we multiplied the cancer unit risk factor (OEHHA, 1999a) by the ambient air concentration. (A cancer unit risk factor describes the additional risk of cancer associated with inhaling air containing one microgram of a specified carcinogen per cubic meter.) This provided an estimate of the cancer risk posed by the carcinogenic TACs.

4. The noncancer and cancer risk scores appear in Table 1A (chemicals chosen for focused literature review) and 1B (chemicals for which focused literature review was deferred) for each chemical in alphabetical order. Note that a high noncancer hazard quotient (ambient concentration divided by chronic REL) would suggest further review. Similarly, a high cancer risk estimate (ambient concentration X unit risk factor) would also suggest further review. This process provided a ranking based on existing health criteria and ambient air concentration data, but did not necessarily include information on differential sensitivity of infants and children. This is because the chronic RELs may or may not have been based on an endpoint for which concern would be raised with regard to infants and children as a more sensitive subpopulation. In addition, not all TACs have been measured in ambient air. Thus, other factors noted in Step 5 were considered during the prioritization. This resulted in the consideration of additional TACs for listing; these TACs are included in Table 1A or 1B but have no cancer or noncancer ranking available.

5. The entire list of all TACs (Appendix A, Table A), not just those with existing ambient air concentration data, was reviewed to identify any chemical that should obviously be considered for listing based on existing knowledge of the toxicity. In particular, we were looking to see if any of these chemicals induced a toxicological endpoint associated with possible increased susceptibility in a developing organism (i.e., neurotoxicity, immunotoxicity, endocrine toxicity, respiratory toxicity, or developmental toxicity; see Section II.B-D.). We also examined emissions inventory data from the Air Toxics Hot Spots program to estimate the extent of emissions from stationary sources in California (1998 data). In this process we identified chemicals for further review (Table 1A) and those of lower priority for which further review would be deferred (Table 1B). Tables 1A and 1B note whether the California emissions data were low, moderate, high or very high and whether California hot spots emissions were a factor in pursuing a focused literature review on those chemicals at this time. Table B in Appendix A contains the TACs that were screened out at this initial stage and indicates whether they were missing ambient air data, chronic RELS or unit risk factors.

   Thirty-six TACs were chosen for focused literature reviews based partly on the ranking process (described in steps 1-4), partly on known emissions information, and partly on the known toxicological endpoints of the chemicals (e.g., developmental neurotoxicity for mercury and lead) (Table 1A). In addition, Table 1A lists lead, for which we had conducted a focused literature review during prioritization of Criteria Air Pollutants (CAP) under SB 25. It was decided to evaluate lead under the TAC provisions of the statute rather than as a CAP.

   Our ability to conduct focused reviews was limited by available resources; this impacted the number of TACs we could evaluate in this first prioritization. Focused literature reviews for the 36 TACs were developed in order to identify the information that may be most pertinent to the question of whether infants or children may be more sensitive or susceptible to those chemicals than adults. The literature reviews were conducted both in house and via contracts with the

University of California Los Angeles, the University of California Berkeley, the University of California San Francisco, and the University of Southern California (see acknowledgements).

6. Based on the information gathered during the focused literature reviews, we chose eleven potential candidates for the initial listing of up to five TACs that may cause infants and children to be especially susceptible to illness. In addition, six more chemicals were added upon request of the Scientific Review Panel. At this stage, this decision was heavily influenced for some of the compounds by the extent of information indicating differential toxicity and adverse consequences for infants and children relative to adults and less so by the estimated exposures to the compounds. For example, while there may be exposures to some compounds which have limited evidence of differential susceptibility of infants and children (e.g., methanol), other compounds may have more limited exposure but extremely strong evidence of differential effects (e.g., lead, mercury, noncoplanar PCBs, dioxins, vinyl chloride). For the purposes of developing the initial SB 25 list, we chose to look closely at those compounds with stronger evidence of differential susceptibility of infants and children. As such, we weighted studies looking at toxicological endpoints heavily. We feel this is warranted for this first round of listing under the statute due to the constraint of listing only up to 5 TACs by July 1, 2001. This initial list does not imply that other TACs are of little or no concern. Instead, this review focused on those chemicals that have more compelling toxicity data. Thus some of the 17 chemicals presented in Appendix C-1 and C-2 have higher exposures than others, but those with lower exposures have very compelling toxicity and epidemiology data indicating more adverse effects from exposure in infants and children than in adults. Table 4 contains a listing of the 17 TACs, and indicates which chemicals we chose to list under SB 25 (Tier 1), and which chemicals are of concern but do not make the first list of five (Tier 2).

The list of TACs that "may cause infants and children to be especially susceptible to illness" must be updated pursuant to the statute by July 1, 2005 (although we are not precluded from updating sooner). We will be conducting further evaluations of TACs over the next few years. This will include an evaluation of criteria for the use of supporting and mechanistic information as a basis for listing.

In evaluating the information obtained during the focused literature reviews for each of the 36 TACs in order to decide whether the TAC merited consideration for placement on the first list of five TACs (step 6 above), we used the following criteria as a guide:

1. Any evidence indicating that infants and children may be more susceptible than adults to the toxicological effects associated with that TAC. The strength of this evidence was weighted heavily in this initial selection of 17 TACs that may disproportionately impact children.
2. The nature and severity of the effect(s), especially irreversible effects.
3. Any evidence indicating that, based on current risk assessment methodology, the existing health criteria may not be adequately protective of infants and children.
4. Any potential difference in susceptibility of infants and children relative to adults to carcinogenesis based on known information or plausible mechanisms.
5. Extent of exposure and/or the magnitude of risk estimated to occur at concentrations typical of California urban ambient air, and any indication that infants and children may be more heavily exposed to materials contaminated by airborne particles (e.g., house dust).

Table 1A. TACs that were chosen for focused literature review; noncancer and cancer risk estimates and reason for conducting literature search.

SUBSTANCE	Ambient Air Conc.(μg/m³) most recent [1]	Ambient Conc./REL	Unit Risk Factor X ambient air conc.	Reasons for Conducting Literature Search
Acetaldehyde	**1.980**	0.2	5.3E-06	Respiratory irritant; possible asthma exacerbation; high California hot spots and mobile source emissions; secondary formation in atmosphere.
Acrolein	(14.3)* 0.15	(238)* 2.5		Conc. above cREL; respiratory irritant; asthma exacerbation; moderate California hot spots emissions
Arsenic compounds	**0.0015**	0.05	5E-06	Developmental toxicity (perinatal mortality); human carcinogen; moderate California hot spots emissions
Asbestos				Recent studies of mesothelioma in environmentally exposed populations; concern about environmental exposures including school premises.
Benzene	**1.978**	0.03	5.9E-05	Hematotoxicity, leukemia; high California hot spots and mobile source emissions
Benzo[*a*]pyrene and other PAHs	**0.0002** (B[*a*]P only)		2.2E-07	Carcinogen, developmental toxicity; immunotoxicity; indoor, moderate California hot spot emissions; mobile source emissions
Butadiene (1,3-)	**0.442**	.02	8E-05	Developmental toxicant; multisite carcinogen; moderate California hot spots emissions
Cadmium compounds	**0.000411**	0.02	1.8E-06	Nephrotoxicity; possible developmental toxicity
Carbon disulfide				Neurotoxicity;
Carbon tetrachloride	**0.693**	0.02	2.9E-05	Developmental and neurotoxicity
Chlorine	**1.490 ** (particulate Cl)**	**		Respiratory irritant; possible asthma exacerbation; high California hot spots emissions
Chromium VI	**0.00011**	.00055	1.9E-05	Potent human carcinogen
Dichlorobenzene (1,4-) (p-Dichlorobenzene)	**0.720**	.0009	7.9E-06	Neurotoxicity; respiratory irritant; household exposures; moderate California hot spots emissions
Diesel Exhaust PM	**1.800** [3]	0.4	5.4E-04	Enhancement of respiratory allergy; possible asthma exacerbation; carcinogen; high mobile source emissions.

Table 1A. TACs that were chosen for focused literature review *(continued)*

SUBSTANCE	Ambient Air Conc.(μg/m³) most recent[1]	Ambient Conc./REL	Unit Risk Factor X ambient air conc.	Reasons for Conducting Literature Search
Formaldehyde	**3.19**	1.1	1.9E-05	conc. near cREL, respiratory irritant; asthma exacerbation; carcinogen; very high California hot spots and mobile source emissions; secondary formation in atmosphere;
Glycol ethers				Developmental toxicity; high California hot spot emissions
Hexane (n-)				Neurotoxicity; high California hot spot emissions
Lead compounds [3]				Well-characterized human developmental neurotoxin; high California hot spot emissions.
Manganese compounds	**0.020**	0.1		Neurotoxicity; high California hot spots emissions
Mercury compounds	**0.0016**	0.02		Well-characterized human developmental neurotoxin; high exposures from fish, but low air exposures; moderate California hot spots emissions.
Methanol	23.100	0.006		Developmental toxicity, very high California hot spots emissions
Methyl bromide (Bromomethane)				Neurotoxicity, potential developmental toxicity; moderate California hot spot emissions
Methyl chloroform (1,1,1-Trichloroethane)	**0.482**	0.0005		Neurotoxicity; very high California hot spots emissions; may appear in consumer products.
Methyl ethyl ketone				Potential increased usage due to exemption as VOC; high California hot spots emissions
Methylene chloride (Dichloromethane)	**2.155**	0.005	2.2E-06	Metabolized to CO; very high California hot spots emissions; carcinogen
Naphthalene				Included w/PAH; carcinogen, developmental tox.; high California hot spots emissions
Nickel compounds	**0.0034**	0.07	8.8E-04	Immunotoxicity; asthma, carcinogen; high California hot spots emissions.
Phosphine	**0.0386**	0.1		Potent toxin; hemolytic poison
Polychlorinated biphenyls (PCBs)				Human developmental neurotoxicity, endocrine toxicity. Exposures may exceed effect threshold. Bioaccumulates.
Propylene oxide				Carcinogen; high California hot spots emissions

Table 1A. TACs that were chosen for focused literature review *(continued)*

SUBSTANCE	Ambient Air Conc.(μg/m³) most recent [1]	Ambient Conc./REL	Unit Risk Factor X ambient air conc.	Reasons for Conducting Literature Search
Styrene	**0.340**	.0004		Very high California hot spots emissions; neurotoxicity
Tetrachlorodibenzo-p-dioxin (2,3,7,8-) and related dioxin and dibenzofuran congeners				Potent immunotoxicity, developmental and endocrine toxicity, carcinogen. Exposure exceeds effect threshold. Bioaccumulates: air is an important transport medium.
Tetrachloroethylene (Perchloroethylene)	**0.747**	0.02	4.4E-06	Carcinogen; very high California hot spots emissions
Toluene	**7.526**	0.025		Developmental tox; very high California hot spots emissions
Toluene diisocyanate (2,4-) and other diisocyanates.				Potent respiratory irritants and sensitizers; moderate California hot spots emissions.
Vinyl chloride				Increase in potency with early exposures; moderate California hot spots emissions.
Xylenes (isomers and mixtures)	**4.465**	0.006		Respiratory irritant; very high California hot spots emissions

1. Based on the year for which the most recent data are available: 1997, 1998 or 1999; numbers in bold are data from the California Air Resources Board. Other numbers are from various sources (as compiled in U.S. EPA, 1993);
   * parenthetical concentration based on U.S.EPA compilation, 1993; value of 0.15 based on USEPA cumulative exposure project modeling for California.
   ** ambient measure is of total particulate Cl; and not chlorine as Cl_2. Because the ARB believes none of this measured particulate Cl is Cl_2, we did not calculate a ratio of ambient concentration to cREL for chlorine.
2. Emissions data based on Air Toxics Hot Spots Stationary Source Emissions Database (ATEDS); low emissions means <10,000 pounds per year statewide from all facilities in ATEDS database; moderate means 10,000 to <100,000 lbs/yr; high means 100,000 to <1,000,000 lbs/year; very high means ≥ 1,000,000 lbs/year.
3. Estimated outdoor diesel exhaust PM10 air concentration for California, year 2000.
4. IARC lists whole diesel exhaust as 2A.
5. Lead was initially to be evaluated as a criteria air pollutant. However, it was decided to evaluate it as a TAC because most of the concerns are from site-specific emissions rather than average ambient concentrations.

Table 1B. TACs that were not chosen for focused literature review; noncancer and cancer risk estimates and reason for deferring literature search.

SUBSTANCE	Ambient Air Conc.(μg/m³) most recent [1]	Ambient Conc./REL	Unit Risk Factor X ambient air conc.	Reasons for Deferring Literature Search [2]
Acrylamide				Low California hot spots emissions
Acrylonitrile	0.660	0.3	1.9E-04	Low California hot spots emissions
Aniline	1.300		2.1E-06	No known California hot spots emissions
Benzidine				No known California hot spots emissions
Benzyl chloride				Low California hot spots emissions
Beryllium compounds	**0.000019**	0.02	4.6E-08	Low California hot spots emissions
Bis(2-ethylhexyl)phthalate (DEHP)				Low California hot spots emissions; no cREL adopted.
Chlordane	0.038		1.3E-05	Banned pesticide; no known California hot spots emissions
Chlorobenzene	**0.270**	.0003		Low California hot spots emissions but some concern
Chloroform	**0.185**	0.0006	9.8E-07	Low California hot spots emissions; some concern for developmental toxicity and carcinogenicity.
Chloroprene	0.290	0.3		Low California hot spots emissions
Cresols/Cresylic acid (isomers/mixtures)				Moderate California hot spots emissions
DBCP (1,2-Dibromo-3-chloropropane)	0.100	0.5	2E-07	Banned pesticide, no known California hot spots emissions
DDE	0.0045		4.4E-07	Metabolite of banned pesticide.
Dichlorvos	0.0032		2.7E-07	Pesticide
Dimethyl sulfate	7.400		3.0E-02	Ambient data uncertain; low California hot spots emissions
Dioxane (1,4-) (1,4-Diethyleneoxide)	0.440	.00015	3.4E-06	Low ambient concentration
Epichlorhydrin (1-Chloro-2,3-epoxypropane)				Low California hot spots emissions
Ethyl acrylate				Low California hot spots emissions

Table 1B. TACs that were not chosen for focused literature review *(continued)*

SUBSTANCE	Ambient Air Conc.(μg/m³) most recent [1]	Ambient Conc./REL	Unit Risk Factor X ambient air conc.	Reasons for Deferring Literature Search [2]
Ethyl chloride (Chloroethane)	**55.700**	0.002		Low toxicity
Ethylene dibromide (Dibromoethane)	**0.040**	0.05	2.8E-06	No longer used as gasoline additive or as fumigant
Ethylene dichloride (1,2-Dichloroethane)	**0.400**	0.001	8.8E-06	Moderate California hot spots emissions; moderate toxicity; some concern for carcinogenicity.
Ethylene oxide				Low California hot spots emissions but some concern re hot spots
Ethylidene dichloride (1,1-Dichloroethane)	0.170		2.7E-07	Low California hot spots emissions; no cREL
Heptachlor	0.007		1.1E-05	Banned pesticide; no known California hot spots emissions
Hexachlorobenzene	0.00021	0.00008	1.1E-07	No known California hot spots emissions
Hexachlorocyclo-pentadiene				No known California hot spots emissions
Hexachloroethane	0.010		1.1E-07	No known California hot spots emissions
Hydrazine				Low emissions; some concern re California hot spots emissions
Hydrochloric acid				Concern about California hot spot emissions; but T1/2 low
Hydrogen fluoride (Hydrofluoric acid)	3.400	0.1		Concern, but ambient data uncertain. Toxicity shows threshold, beneficial effect at lower doses.
Hydrogen selenide				No known California hot spots emissions
Lindane (and other isomers of hexachlorocyclohexane)	0.00023	.0002	7.1E-08 (Lindane): 2.5E-07 (HCH)	Low California hot spots emissions, pesticide (most uses cancelled).
Maleic anhydride				Low California hot spots emissions
Methyl isocyanate				No California hot spots emissions data; principal source in CA is from pesticidal use of Metam Na; short T1/2; but toxicity concern (respiratory irritant, immunotoxicity)
Methyl methacrylate				Low toxicity; low California hot spots emissions

Table 1B. TACs that were not chosen for focused literature review *(continued)*

SUBSTANCE	Ambient Air Conc.(μg/m³) most recent [1]	Ambient Conc./REL	Unit Risk Factor X ambient air conc.	Reasons for Deferring Literature Search [2]
Methylenedianiline (4,4')				Low California hot spots emissions
Nitrobenzene	0.610	0.4		Ambient data uncertain; low California hot spots emissions
Nitropropane (2-)				Low California hot spots emissions
N-Nitroso-dimethylamine	2.400		1.2E-02	Ambient data uncertain; low California hot spots emissions
Pentachlorophenol	0.0009		4.6E-09	No known California hot spots emissions; low ambient conc
Phenol	0.030	.0002		Low ambient concentration
Phthalic anhydride				Moderate California hot spots emissions
Propylene dichloride (1,2-Dichloropropane)	0.750		1.7E-05	No known California hot spots emissions; ambient data uncertain
Selenium compounds	**0.0011**	0.00005		Moderate California hot spots emissions; low ambient concentration
Tetrachloroethane (1,1,2,2-)	0.500		2.9E-05	Low California hot spots emissions
Trichloroethane (1,1,2-) (Vinyl trichloride)	0.300		4.8E-06	Moderate California hot spots emissions; no cREL
Trichloroethylene	**0.167**	.0003	3.3E-07	Low ambient concentration
Trichlorophenol (2,4,6-)	0.300		6.0E-06	No known California hot spots emissions
Vinylidene chloride (1,1-Dichloroethylene)				Low California hot spots emissions

1. Based on the year for which the most recent data are available: 1997, 1998 or 1999; numbers in bold are data from the California Air Resources Board. Other numbers are from various sources (as compiled in U.S. EPA, 1993)
2. Emissions data based on Air Toxics Hot Spots Stationary Source Emissions Database (ATEDS); low emissions means <10,000 pounds per year statewide from all facilities in ATEDS database, moderate means 10,000 to <100,000 lbs/yr; high means 100,000 to <1,000,000 lbs/year; very high means ≥ 1,000,000 lbs/year

B. Critical Systems and Periods in Development

Certain systems have critical periods during their development when they are particularly vulnerable to lasting injury by xenobiotic chemicals or other agents. Among these critical systems are the three information processing systems of the body: the central nervous, the endocrine, and the immune systems.. Each of these complex systems is programmed as it develops, and xenobiotic chemicals can interfere with programming of these critical systems. The central nervous system is programmed to recognize and respond to internal and external stimuli in an adaptive manner that supports the survival of the organism. The endocrine system is programmed to provide signals to the various organ systems enabling them to coordinate their development - not only during early childhood, but also during puberty. The immune system is programmed to distinguish self from non-self, and to respond to non-self antigens in a measured manner in order to combat infection or the emergence of potentially malignant cells. In developing and in mature organisms these three systems work together to control and protect the organism. Effects on one of these systems can be expected to have collateral effects on the others.

The respiratory system is also a critical system because, although fully functional at birth, it undergoes significant development in the first years of life. As with the three information processing systems, interference with the developing respiratory system can have consequences that last a lifetime.

Because these organ systems have long developmental periods and are known to be irreversibly impacted by specific toxicants, any toxicological or epidemiological information indicating impacts on these systems was considered a red flag. We are taking a close look at chemicals that impact these systems in evaluating TACs for listing under SB 25.

1. Developmental Toxicants and the SB 25 List

Developmental toxicants can induce effects that are irreversible and may act on developmental events that occur prenatally, postnatally, or both. Many of these effects are produced in animals and humans without maternal toxicity. Development is a continuum that starts at conception and continues through adolescence. Indeed, even preconceptual exposures have induced effects in the offspring presumably by altering germ cells.

Chemicals may produce a range of developmental effects at different dose levels and periods of development and durations of exposure. For example, lead exposure results in toxicity to the nervous system following prenatal exposure and also when exposure occurs postnatally and during childhood (Thacker et al., 1992; Needleman et al., 1979). Chemicals that are teratogenic may also induce other toxicological effects. Because of the varying effects and timing of sensitivity for developmental toxicity, and a general lack of information on all developmental windows of susceptibility that may be impacted by a chemical, it is necessary to consider both prenatal and postnatal exposures in order to protect infants and children. Effects that occur in early development can dramatically impact children's well-being, quality of life, and survival (Wilson, 1977; Schardein, 1993, Kimmel, 2001). Birth defects are a major cause of infant and child morbidity and mortality in the U.S. Thus, potential for developmental toxicity from both

prenatal and postnatal exposures is considered in the prioritization of the TACs for listing under SB 25. In considering TACs that are developmental toxicants, we determined whether developmental toxicity was the most sensitive endpoint for that compound. If other toxicological endpoints are observed at exposures lower than those necessary to induce developmental toxicity, then the developmental toxicity of the compound was not necessarily a driving force in prioritizing for further evaluation. Since California RELs are based on the most sensitive endpoint, the RELs for chemicals for which developmental toxicity is the most sensitive endpoint would be based on developmental toxicity, and thus are intended to be protective of infants and children. Those chemicals that have other endpoints more sensitive than developmental toxicity would have RELs based on those other endpoints. We used this information to help determine whether there were potential differential effects of exposure to the TACs between infants and children and adults. Thus in considering the overall toxicity and potency of a compound, its propensity to induce developmental toxicity may not be enough to warrant listing under SB 25.

It is the legal opinion of the Office of Environmental Health Hazard Assessment (OEHHA) and the Air Resources Board (ARB) that Toxic Air Contaminants (TACs) that cause developmental or other adverse outcomes for infants or children as a result of prenatal exposure to those TACs are within the scope of SB 25. This legal opinion is based on a comprehensive reading of the statutory language in SB 25, as well as the spirit and purpose of SB 25, and the legislative history of this piece of legislation. In addition, the conclusion that prenatal exposures that lead to developmental or other problems for infants and children is within the purview of SB 25 is consistent with good scientific and public health principles. The statute and accompanying legislative analyses are replete with references to protecting infants and children from the effects or impacts of air pollution. Accordingly, the point in time or means of exposure to a TAC is not determinative of whether or not something is within the reach of SB 25. Rather, the determining factor is whether an air pollutant differently affects infants or children as opposed to adults. If so, it is properly subject to SB 25. It should be noted that this opinion (that prenatal exposure leading to adverse outcomes in infants in children is within the scope of SB 25) is not based on an assumption or determination that a fetus is a child. Rather, as discussed above, it is based on the fact that exposures of the fetus to certain pollutants prior to birth may lead to adverse effects that manifest themselves in infancy or childhood and that such exposures occurring in adulthood would not lead to similar toxicity.

2. Central Nervous System

Critical stages in the development of the central nervous system occur during embryogenesis and development of the fetus and postnatally through adolescence. Damage to the central nervous system is often irreversible (Horner and Gage, 2000). Two key developmental processes in brain development are: 1) increase in brain mass (Dobbing and Sands, 1979) through proliferation of neurons and support cells, and 2) reinforcement of selected neuronal pathways through synaptogenesis.

The developing organism with rapid cell proliferation, migration, and differentiation is uniquely sensitive to disruption. In the brain these processes are unidirectional and occur at very specific times for different structures. Prenatal events include closure of the neural tube, proliferation of neurons and migration of cortical neurons. During infancy and early childhood, proliferation and

migration continue along with synaptogenesis, myelination, and development of the blood-brain barrier. Structural maturation of neural pathways, including an increase in the diameter and myelination of axons, continues through adolescence. During adolescence the rate of synaptic pruning peaks. Chemical exposures can have profound effects on all of these neurologic developmental processes (Rodier, 1994, 1995; Paus et al., 1999; Golub, 2000).

The brain increases in mass during the last month of gestation, and grows from 350 to about 800 grams during the first year of life (Boyd, 1962). Much of this increase is due to increases in the number of neurons and support cells in the brain. Exposures to xenobiotics such as lead or alcohol can interfere with increase in brain mass. Fetal alcohol syndrome is a recognized consequence of maternal-fetal exposure during critical periods of brain development (Clarren and Smith, 1978).

New neurons are produced from stem cells and progenitor cells that appear in the central nervous system very early in development (Jacobs et al., 2000). It was long thought that cell proliferation in the central nervous system ended early in life because stem cells ceased to be present. Recent research is finding that stem cells are present in the adult brain, and that cell proliferation continues into adulthood. Indeed, continued cell proliferation may be essential to maintain the health of the brain (Jacobs et al., 2000). In studies of adult nervous systems, it has been shown that stress as well as xenobiotic chemicals such as some psychoactive drugs can interfere with the proliferation of brain cells in the hippocampus (Jacobs et al., 2000). Since there is more cell proliferation in younger brains, they may be even more sensitive to the effects of stress and xenobiotics.

Another process that is critical for brain development is the selection of certain synaptic connections and the elimination of others. Neurotransmitters, such as GABA and acetylcholine, are essential to this process. Chemicals that interfere with the function of neurotransmitters can interfere with the development of synaptic connections. Such chemicals can also trigger apoptosis which results in the elimination of some neurons (Olney et al., 2000). Autism, an impairment of social interaction along with abnormal speech development and unusual behaviors, is associated with exposure to thalidomide. In humans, thalidomide exposure is linked to a 30 percent incidence of autism when exposure occurs on days 20 to 24 of gestation, but not before or after this time. This period corresponds with the production of the first neurons forming the motor nuclei of the cranial nerves; there is evidence of injury to these forming nerves from thalidomide exposure (Rodier et al., 1997). This represents a clear example of how very specific critical periods exist during which irreversible events program future development. The effect of a chemical is dependent on the cellular process that it affects and the structures that may be undergoing that process at the time of exposure. Chemicals may affect multiple processes and multiple chemicals may affect the same process (see Table 6). Ethanol affects migration, differentiation, synaptogenesis and myelination and is capable of causing massive apoptosis during the period of synaptogenesis/brain growth of the third trimester. Ethanol interferes with multiple neurodevelopmental processes and causes Fetal Alcohol Syndrome in the fetus but is relatively nontoxic or even neuroprotective in the adult brain (Rice and Barone, 2000; Olney et al., 2000).

Arsenic administered orally to Wistar rats decreases acetylcholinesterase activity in the hypothalamus, cerebellum and brainstem, and slows the ability to learn and unlearn tasks. The

effects are more pronounced in younger rats (Nagaraja and Desiraju, 1994). The authors concluded that the developing brain appears to be more susceptible to the neurobehavioral effects of arsenic than the adult brain.

Table 2. Chemicals associated with disruption of neurodevelopmental processes. Based on Rice and Barone, 2000 and Olney, 2000, Environ. Health Perspect.

Process	Chemicals associated with disruption of this process in animals or humans
Proliferation	Ionizing radiation, methylazoxymethanol (MAM), ethanol, methyl mercury, chlorpyrifos
Migration	MAM, x-ray radiation, methyl mercury, ethanol
Differentiation	Ethanol, nicotine, methyl mercury, lead
Synaptogenesis	X-ray radiation, ethanol, lead, triethyltin, parathion, polychlorinated biphenyls (PCBs)
Gliogenesis and Myelination	Alterations in thyroid hormone homeostasis, ethanol, lead
Apoptosis	Ethanol, lead, methyl mercury, barbiturates, glutamine, halothane, ketamine
Neurotrophic Signaling	Aluminum, ethanol, cholinesterase inhibitors, methyl mercury

3. Endocrine System

The endocrine system consists of glands and other structures that secrete hormones directly into the circulatory system that in turn influence other bodily functions including growth and metabolism. Organs with endocrine functions include the pituitary, thyroid, parathyroid, adrenal glands, pineal body, the gonads, and pancreas. The endocrine system works together to coordinate and control development of the organism. Like the CNS, the endocrine system is extremely complex and imperfectly understood. The endocrine system is critical during the first few years of life, and during puberty.

Recently there has been some concern that environmental chemicals may be influencing important endocrine functions during development including changes that occur during puberty as well as influencing the onset of puberty. The evidence for adverse effects from exposure to endocrine-disrupting chemicals is sufficient to prompt action by the U.S. EPA, which has initiated a program to test environmental chemicals for endocrine disrupter effects (Kavlock et al., 1996).

Thyroid hormones are critical to brain development *in utero* and through at least the first two years of life. Certain polychlorinated biphenyls (PCBs) and dibenzo-p-dioxins (PCDD) have been shown to alter the thyroid function during critical periods of thyroid-hormone dependent brain development resulting in neurological impairment in animal models (Porterfield, 2000). Impaired cognitive development has been noted in humans exposed prenatally to high levels of PCB in cooking oil (Chen et al., 1992). Prenatal exposure of children to PCBs from contaminated fish has been associated with lower IQ scores and decreased short-term and long-term memory, and ability to focus (Jacobson and Jacobson, 1996). These effects may be due to thyroid hormone disruption.

Sex hormone disruption that impacts children can also be caused by environmental toxicants. Rogan and others found an inverse relationship between DDE levels in milk fat and duration of lactation in women in North Carolina, possibly due to estrogenic properties of DDE (Rogan, et al., 1987). These results were confirmed in a study in Mexico where exposures to DDT were higher than in North Carolina (Gladen and Rogan, 1995). The same investigators found that boys with high pre-natal DDE exposure were heavier than other boys, and that girls with higher pre-natal PCB exposures were fatter than other girls (Gladen, Ragan and Rogan, 2000). These studies suggest that these xenobiotics act upon endocrine receptors and affect development.

4. Immune System

One of the major functions of the immune system is to protect the organism against infection. The development of the immune system results from a series of carefully timed and coordinated events during embryonic, fetal, and early postnatal life. Chemicals that excite or suppress the immune system during these critical periods can have a lasting effect on the ability of the system to respond to environmental challenges. There is evidence for a number of immunotoxic chemicals that exposure of pregnant animals at doses causing only transient effects in adults produces long lasting or permanent immune deficits in their offspring.

During fetal life, some cells of the immune system (the future T cells) develop first in the liver and then migrate to the thymus. They mature in the thymus and are released into circulation. Other immune system cells develop in the bone marrow. There are critical stages of development prenatally and during the early postnatal period. During these critical stages, the future immune system cells are increasing in number and becoming specialized in function. Endogenous chemicals present in the microenvironment where the future T cells develop regulate these processes. Xenobiotic chemicals that are capable of crossing the placenta, such as chlordane, benzo(a)pyrene, diethylstilbestrol or dioxin, have been shown to impede this development experimentally in rodents, resulting in some cases in early thymic involution and lifelong immunosuppression (Holladay and Smialowicz, 2000; Lai et al., 2000). Immunotoxic chemicals may also alter the ratio between different types of T cells or increase the incidence of autoimmune disease later in life (Holladay and Smialowicz, 2000). The implication is that immunotoxic chemicals that cross the placenta have the potential to permanently affect the development of the immune system (Holladay and Smialowicz, 2000).

Chemical and physical agents that have been found to cause developmental immunotoxicity in rodents include (Holladay and Smialowicz, 2000):

- Polycyclic halogenated hydrocarbons: TCDD, PCB, PBB.
- Polycyclic aromatic hydrocarbons.
- Pesticides: hexachlorocyclohexane, chlordane, diazinon, DDT, carbofuran and hexachlorobenzene.
- Metals: methyl mercury, lead, and cadmium.
- Hormonal substances: estrogens and diethylstilbestrol, testosterone and cortisone.
- Therapeutic agents: acyclovir, busulfan.
- Mycotoxin: T-2 toxin.
- X-rays.

5. Respiratory System

a. Lung Development

The lungs must be functional from the moment of birth, i.e. they must be able to absorb enough oxygen from the air and deliver it to the bloodstream to support the energy requirements of the developing child. Even though the respiratory system is functional at birth, it has only a fraction of the potential that it will develop during the early years of life. Chemical toxicity to the cells that line the alveoli can result in the development of lungs that have reduced alveolar volume and surface area. This will result in an adult with reduced lung capacity. Childhood exposure to such air pollutants as ozone, sulfur dioxide, particulate matter, and nitrogen dioxide is associated with decreased lung function, increased occurrence of respiratory illnesses, and exacerbation of asthma (Bates, 1995).

As discussed in the criteria air pollutant document developed under SB 25, the limited experimental and epidemiological studies currently available identify the early post neonatal period of lung development as a time of high susceptibility for lung damage created by exposure to environmental toxicants (Plopper and Fanucchi, 2000). For example, due to the relatively diminished defenses of their developing immune systems, infants are disproportionately susceptible to infections and other diseases. Indeed, in 1998 in the U.S., the rate (per 1000) of meningococcal disease by age group was 11.47 for <1 year versus: 2.75 for 1-4 years; 0.90 for 5-14 years; 1.27 for 15-24 years; 0.41 for 25-39 years; 0.49 for 40-64 years; and, 1.13 for >=65 years (CDC, 1999). Recent research indicates that there is a relationship between respiratory infections and air pollution effects in children (Sarafino et al., 1998). Thus, the higher rate of infectious diseases among infants is an indicator of diminished defenses against health insults, and is likely to cause them to have diminished reserves, and therefore to be more greatly affected by exposures to air pollution. Indeed, exposure to environmental tobacco smoke, an important source of indoor air pollution, is associated with increased infectious illness in children, such as

middle ear infection (RR ≈ 1.62), and lower respiratory disease in young children (RR ≈ 1.5 to 2) (NCI, 1999).

In addition to their insufficiently developed immune systems, infants are growing rapidly, and limited recent evidence supports the hypothesis that environmental pollution can significantly alter development of the respiratory system at that period of life. In experimental animals, for example, elevated neonatal susceptibility to lung-targeted toxicants has been reported at doses "well below the no-effects level for adults" (Plopper and Fanucchi, 2000; Fanucchi and Plopper, 1997). In addition, acute injury to the lung during early postnatal development causes a failure of normal repair processes, including down-regulation of cellular proliferation at sites of injury in animals (Smiley-Jewel, et al., 2000, Fanucchi et al., 2000). Thus, it may be that both infants' diminished defenses and pollution-induced impairment of repair mechanisms can coincide during infancy, making the neonatal and post-neonatal period one of especially elevated susceptibility to damage by environmental toxicants.

The development of the respiratory system is closely linked with the development of the immune system. The airways and lungs are two of the main points of contact where pathogens can enter the body. Unlike the GI tract, the airways and lungs are not protected by strong acid. The immune system is therefore very active in patrolling the airways and lungs for foreign antigens. Chemicals that evoke immune responses in the airways can interfere with the development of both the respiratory system and the immune system. For example, exposure to environmental tobacco smoke in the home is also associated with asthma induction (RR of 1.75 to 2.25) in children as well as asthma exacerbation (RR of 1.6 to 2) in children (NCI, 1999). These effects may be due to interactions between effects on the immune system and respiratory system in children

b. Asthma and Children

We have included exacerbation of asthma as a toxicological endpoint of particular concern to children. Asthma surveillance data developed by the national Centers for Disease Control and Prevention (CDC) (Mannino et al., 1998) and reports on asthma hospitalization by the California Department of Health Services (CDHS, 2000) both indicate that children, especially young children, are impacted by asthma morbidity more than older children and adults. The prevalence rates statistics indicate that a significantly higher percentage of children have asthma than adults (Mannino et al., 1998). The Centers for Disease Control report asthma prevalence rates per 1000 persons from their National Health Interview Survey by age group of 57.8 for 0-4 year olds, 74.4 for 5-14 year olds, 51.8 for 15-34 year olds, 44.4 for 35-64 year olds and 44.6 for over 65 years. In addition, children have smaller airways than adults. Since the resistance to airflow is inversely proportional to the fourth power of the radius, bronchoconstriction and increased mucin secretion characteristic of asthma greatly increase airflow resistance in a small child relative to an adult. Thus, breathing difficulty is very significant in young children experiencing an asthma attack. The hospitalization rate for children 0 to 4 years is greater than all other age groupings (see Table 3), and is four-fold higher for black children than for white children (CDHS, 2000). Hospitalization, a nondiscretionary event, occurs only in severe cases. While hospitalization rate data are influenced by a number of factors including access to health care, we believe this information supports the concern that asthma impacts children more than adults.

Therefore, TACs that exacerbate or induce asthma should be considered for listing under the Children's Environmental Health Protection Act.

Table 3 Doctor's Office visits, Emergency Room (ER) visits, and hospitalization for asthma by age

Age	Office per 1000	ER per 1000	Hospital per 10,000
0-4 yrs	50.3	120.7	49.7
5-14 yrs	51.5	81.3	18.0
15-34 yrs	22.8	69.2	10.0
35-64 yrs	41.7	64.4	15.2
> 65 yrs	44	29.5	25.5

Data from CDHS (2000)

6. Children's Cancer Risk

Risks of cancer from exposures to carcinogens occurring from conception through puberty can be different than those from exposures occurring in adulthood. There has been a steady, moderate increase in the incidence of childhood cancers (ages 0 to 20) since the 1970s, which has not been fully explained by improved diagnostics (Reis et al., 1999). Each year approximately 150 out of every million children (< 20 years of age) will be diagnosed with cancer. Leukemias, lymphomas and brain tumors are the most common cancers among children; germ cell and testicular tumors are also significant among adolescent children (Perkins et al., 1997; Reis et al., 1999). Trends among these most common forms of childhood cancers over the past 20 years are as follows:

- The incidence of leukemia among children younger than 15 years of age increased by about one percent per year, driven primarily by increases in acute lymphocytic leukemia (Reis et al., 1999). It should be noted that Linet et al. (1999) evaluated the data on childhood leukemia and report that the increased leukemia rates are dominated by a large increase in the early 1980s and appear to have leveled off since then.

- Incidence of Hodgkin's lymphoma has been declining by about one to two percent per year, while the incidence of non-Hodgkin's lymphoma has remained constant among children less than 15 years of age, but has increased from 11 to 16 per million among 15 to 19 year olds (Reis et al., 1999).

- Incidences of central nervous system cancers among children less than 15 years of age appear to have increased in a step-wise manner ("jumped") from a steady rate during 1973-1984 to a higher, but steady rate from 1985-1995. This change has been the subject

of debate as to whether it is due to some environmental factor or due to improved diagnostics (Reis et al., 1999).

- Germ cell, trophoblastic and other gonadal cancers have steadily increased over the past 20 years among males and females 14 to 19 years of age. The reason for the increase among adolescent boys is largely unknown. The increase among adolescent girls can be attributed in large part to inclusion of borderline ovarian cancers, which were not reportable cancers in earlier years (Reis et al., 1999).

Exposures to carcinogens during fetal development and in early childhood have been suggested as possible causal factors responsible for some of the increases in leukemia, lymphoma, brain and testicular cancers (Reis et al., 1999).

Exposure to a carcinogen early in life may result in a greater lifetime risk of cancer for several reasons. Cancer is a multistage process and the occurrence of the first stages in childhood increases the chance that the entire process will be completed, and a cancer produced, within an individual's lifetime. Tissues undergoing rapid growth and development may be especially vulnerable to carcinogenic agents. During periods of increased cell proliferation there is rapid turnover of DNA, and more opportunity for misrepair of damage (e.g., DNA breaks, crosslinks, adducts) or alterations (e.g., altered DNA methylation) to result in permanent changes to the DNA (e.g., mutations) that may ultimately lead to cancer. During early development, a greater proportion of the body's cells are relatively undifferentiated stem cells, and as such represent a large target population of somatic cells capable of passing along permanent changes to the DNA during future cell divisions. During development, a larger percentage of the DNA is transcriptionally active and thus structurally more exposed and vulnerable to damage or alteration by DNA reactive agents. There may be greater sensitivity to hormonal carcinogens early in life since the development of many organ systems is under hormonal control (e.g., male and female reproductive systems, thyroid control of CNS development). Other factors that may play a role in increased cancer risk from exposures during critical developmental periods include differences in immunological activity, intestinal absorption, biliary and kidney excretion, blood and fat distribution, and expression of enzyme systems that activate or detoxify carcinogens.

Evidence in humans of increased cancer risk following *in utero* exposure is provided by increases in the incidence of clear cell adenocarcinoma of the vagina in young women exposed to diethylstilbestrol *in utero* (DES daughters), in the absence of increased risk for this cancer in DES mothers (exposed as adults) (Preston-Martin, 1989). Human evidence of increased cancer risk resulting from exposures at critical periods during childhood is provided by observations of higher rates of radiation-induced breast cancer among women exposed during puberty, compared with those exposed after puberty (NRC, 1990b), and by observations of higher rates of leukemia and thyroid cancer among individuals exposed to radiation as children, compared with those exposed as adults (NRC, 1990b).

There is evidence in the epidemiological literature indicating that exposure to tobacco smoke during puberty may increase risk of breast cancer later in life, particularly among women who are NAT2 slow deacetylators (Marcus et al., 2000; Morabia et al., 2000; Lash and Aschengrau, 1999). Evidence in experimental animals of increased cancer risk following early in life exposure to carcinogens exists for a number of compounds, including urethane, vinyl chloride,

DES, tamoxifen, nitrosourea compounds (e.g., methylnitrosourea), and alkenylbenzene compounds (e.g., safrole and estragole).

Numerous studies in rodents have demonstrated an increased susceptibility of the fetus, neonates and very young animals to urethane-induced cancers (Salmon and Zeise, 1991). Kaye and Trainin (1966) compared the incidence of lung tumors in mice exposed to urethane as newborns to that in mice exposed to urethane at 11-12 weeks of age, and found markedly increased tumor incidence and multiplicity in mice exposed as newborns compared to mice exposed at maturity. Lung tumor incidence in newborns receiving single doses of 50, 100 and 180 mg urethane/kg body weight was 27%, 98% and 100%, respectively, ten weeks post-exposure. Tumor incidence in 11-12 week old mice receiving larger single doses (100, 250, 500, and 1000 mg urethane/kg body weight) was 1%, 0%, 75%, and 100%, respectively. In another study, Rogers (1951) compared the tumorigenic effect of a single intraperitoneal injection of urethane in mice dosed at either two, four, six, eight or ten weeks of age. The author found that lung tumor incidence and multiplicity decreased significantly as the age at exposure increased (e.g., from 100% tumor incidence and an average number of tumors per animal of 6.1 in mice exposed at two weeks of age to 76% tumor incidence and an average number of tumors per animal of 2.8 in mice exposed at ten weeks of age). The basis for this increased susceptibility is thought to be due to the fact that levels of esterases responsible for the detoxification and elimination of urethane are relatively low in newborns. This results in higher blood levels of urethane for longer periods of time, and provides greater opportunity for minor routes of urethane metabolism to occur, metabolically transforming urethane to the ultimate active carcinogen.

Vinyl chloride is another carcinogen for which the effect of age at exposure on tumor outcome has been extensively studied (Maltoni et al., 1981; Drew et al., 1983). In studies comparing the tumorigenic effects of vinyl chloride in rats exposed as either newborns or 11-week old animals, a significant tumorigenic response was observed in the newborn group (liver angiosarcoma and hepatocellular carcinoma), as compared with no increased incidence of these tumors in the 11-week old group (Maltoni et al., 1981). When rats, mice, and hamsters were exposed to vinyl chloride for 6- or 12-month periods starting at two, eight, or 14 months of age, the younger the age at first exposure, the greater the lifetime tumor incidence (Drew et al., 1983). Vinyl chloride has also been shown to induce higher levels of DNA adducts in livers of young animals (e.g, rats exposed at 11 days of age or 10-15 days of age), as compared with adults (Laib et al., 1989; Swenberg et al., 1992). Age-dependent differences in metabolism, leading to increased formation of DNA-reactive metabolites and increased DNA alkylation, combined with differences in cell proliferation rates, are thought to account for the increased susceptibility of young animals to vinyl chloride carcinogenesis. Researchers from the U.S. EPA have suggested a risk assessment framework for vinyl chloride exposure in which exposures to children are given greater weight (i.e., risk) compared to exposures later in life (Cogliano et al., 1996).

DES is a well-characterized transplacental carcinogen in animals, as well as humans (Newbold et al., 1998; Preston-Martin, 1989). DES induces rare uterine adenocarcinomas in mice exposed to DES either prenatally or neonatally, and this carcinogenic effect has been shown to be multigenerational, with the offspring of female mice exposed perinatally also developing uterine adenocarcinomas (Newbold et al., 1998). The induction of reproductive tract cancers following early-in-life exposure to DES is thought to be mediated by the compound's estrogenic properties. This is supported by recent studies demonstrating that neonatal exposure to DES of transgenic

mice over-expressing the mouse estrogen receptor results in an earlier onset of uterine adenocarcinoma, as compared to wild-type mice (Couse et al., 1997).

Tamoxifen is another carcinogen with estrogenic (and antiestrogenic) effects that has been shown to cause cancers of the female reproductive tract of rats and mice when exposures occur earlier, rather than later in life. When tamoxifen was administered to newborn female mice for the first five days of life, incidences of rare uterine adenocarcinomas of up to 50 % were observed (Newbold et al., 1997). An increase in uterine and other tumors of the reproductive tract was also observed in female mice exposed to tamoxifen *in utero* on gestation days 12-18 (Diwan et al., 1997). While no increase in tumors of the reproductive tract was observed in standard long-term bioassays of rats with tamoxifen exposures starting at five to six weeks of age (IARC, 1996), neonatal exposure on days two through five of life resulted in the development of rare uterine adenocarcinomas and squamous cell carcinomas of the vagina and cervix (Carthew et al., 2000). While the carcinogenic mode of action of tamoxifen in young animals remains unknown, these findings, taken together with the studies of DES, suggest that the developing reproductive tract is particularly sensitive to hormonally active carcinogens. The information obtained from studies of DES, tamoxifen, and estrogen may have value in predicting risk from early life exposures to other estrogenic compounds, based on a common mode of action.

The therapeutic agent AZT, used for the treatment of AIDS and to prevent transfer of the virus to the fetus from mothers with HIV, is a transplacental carcinogen in mice and induces genotoxicity transplacentally in mice and monkeys (Olivero et al., 1997; Diwan et al., 1999). There is, therefore, a concern that children exposed *in utero* to this agent may be at higher risk of cancer. A definitive answer awaits long-term studies in humans.

Brain cancer is one of the leading childhood cancers in the U.S. Only a few chemicals are known to cause brain tumors in animals following exposure *in utero*. One class of compounds, alkylnitrosoureas, is the most potent in causing brain tumors following *in utero* exposure in rodents (Maekawa and Mitsumori, 1990). Alkylnitrosourea compounds also seem to be more carcinogenic to the central nervous system following exposure to the fetus compared to exposure of adults. For example, *in utero* exposures to ethylnitrosourea were observed to be more than 60 times more potent in causing brain tumors than exposures during adulthood (Ivankovic, 1979).

Numerous studies have demonstrated that exposure of pregnant animals to nitrosourea compounds results in increases in the incidences of brain and other central nervous system tumors among offspring. These compounds include N-methyl-N-nitrosourea, N,N'-dimethyl-N-nitrosourea, N-ethyl-N-nitrosourea, N,N-diethyl-N'-methyl-N'-nitrosourea, N-propyl-N-nitrosourea, N-butyl-N-nitrosourea, N-methyl-N'-phenylnitrosourea and N-phenylmethyl-N-nitrosourea (CancerChem, 2000). Alkylnitrosoureas (e.g., methylnitrosourea, butylnitrosourea) can be formed in the gastrointestinal tract following ingestion of nitrite and alkylureas, which are present in the diet (Mende et al., 1991). Nitrosourea compounds are direct acting alkylating agents (e.g., mutagens). The reason that the brain is a target organ for nitrosourea compounds is likely due to a reduced capacity of the brain and nervous system tissue to repair O^6-alkylguanine adducts relative to other tissues (reviewed in Maekawa and Mitsumori, 1990). It is not known why the developing animal is more sensitive to the carcinogenic effects of alkylnitrosourea compounds on the central nervous system, but it likely is due to genotoxicity of the nitroso

compounds coupled with the rapid cell division and growth of the nervous system in the fetus and during the first weeks after birth.

Alkenylbenzene compounds such as safrole, estragole and methyleugenol cause a higher incidence of hepatic and other tumors in rodents exposed as newborns compared with rodents exposed as adults (Drinkwater et al., 1976; Miller et al., 1983; Wiseman et al., 1987; Vesselinovitch, 1983). The reason for this finding has not been elucidated. Safrole is a known transplacental and translactational carcinogen in animals (Vesselinovitch et al., 1979). For all three compounds, exposure of newborn rodents (one to four doses only) resulted in high incidences of liver tumors (Miller et al., 1983). Liver tumors also occurred in rodents following long-term exposure of adult animals (Miller et al., 1983). These three structurally similar compounds share a common carcinogenic mechanism of action in rodents (reviewed in Phillips, 1994; OEHHA, 1999b). The alkene moieties of each of these compounds are metabolized by the liver to 1'-hydroxy derivatives and to several epoxide compounds. The 1'-hydroxy derivative is further conjugated with sulfate to form a sulfuric acid ester compound that readily binds to DNA. Metabolism of estragole, and presumably safrole and methyleugenol, through this pathway appears to be quantitatively consistent among humans and rodents (Sangster et al., 1987; Anthony et al., 1987; OEHHA, 1999b). Safrole, estragole and methyleugenol are naturally occurring substances found in a variety of herbs and other plants consumed as foods. Estragole and methyleugenol are also widely added to foods and consumer products for their flavor and fragrant properties.

To summarize, data in humans and animals for a variety of carcinogens suggest that exposures to such carcinogens early in life may result in a greater lifetime risk of cancer compared to exposures later in life. For example, humans exposed to ionizing radiation early in life have greater lifetime risk of leukemia, breast cancer and lung cancer than humans exposed later in life. Data from animal studies provide additional examples of increased sensitivity to early life exposures. These effects span a wide range of target tissues, including the liver (vinyl chloride, safrole), brain (methylnitrosourea), reproductive tract (DES, tamoxifen), and lung (urethane). Generally accepted methods for the assessment of carcinogenic risk from early life exposures are not available, although several approaches have been applied in specific cases (NRC, 1990b; Kai et al., 1997). In the coming year, OEHHA will evaluate the utility of various methods, as it develops guidelines for assessment of cancer risk following exposure to fetuses, infants and children.

C. Development of Tiers

We have placed 17 TACs chosen based on our literature reviews into two tiers (Table 4). Tier 1 consists of the TACs we are listing under Health and Safety Code Section 39669.5(a) as possibly causing infants and children to be especially susceptible to illness. Tier 2 chemicals were thought to be less important for this initial listing of up to five TACs than Tier 1 chemicals for a variety of reasons. Polycyclic organic matter (POM) is in Tier 1 because of evidence of developmental toxicity and increased susceptibility to genotoxicity (including carcinogenicity) in young animals and humans exposed to aromatic hydrocarbons (PAHs), the major components of POM. These effects can have irreversible consequences. Exposure to PAHs is widespread, as these ubiquitous chemicals are products of incomplete combustion. Lead is in Tier 1 because it is a developmental neurotoxin. The increased susceptibility of infants and children is well

established and the neurological effects are extremely prolonged. In addition, lead is a carcinogen. Although airborne lead exposures have dropped due to removal of lead from gasoline, airborne lead exposures still occur as a result of stationary source emissions and re-entrainment of soil contaminated with lead. In addition, deposition of airborne lead onto soil, vegetation, and other surfaces results in exposure via ingestion. Polychlorinated dibenzo-p-dioxins (dioxins) and dibenzofurans (furans) are in Tier 1 because of developmental toxicity, effects on the immune system, endocrine systems, and carcinogenicity. Infants and children appear to be more susceptible to these effects which may result in irreversible changes. Dioxins and furans are also relatively ubiquitous products of incomplete combustion. In the case of acrolein, indoor and outdoor exposures are believed to be high, although data on typical ambient air concentrations are few. Nonetheless, this compound exacerbates asthma and therefore was placed in Tier 1. And finally, diesel exhaust particulate is ubiquitous in urban environments, and exposures are widespread. There are many studies demonstrating that diesel exhaust particulate can enhance allergic responses, and induce new allergies to airborne allergens. This raises concern for enhancement of allergic airway disease including asthma, and for development of new asthma. Diesel exhaust particles contribute to ambient PM_{10}. Ambient PM_{10} has been shown to exacerbate asthma and has been associated with low birth weight and decreased lung function in children. Several studies provide evidence of adverse respiratory health impacts in children living near streets with heavy truck traffic. In addition, diesel exhaust particulate contains PAHs (and other mutagenic polycyclic organic matter). As noted above, PAHs can induce developmental toxicity and there is evidence that the fetus is more sensitive than the adult to genotoxicity of PAHs. Thus diesel exhaust particulate was placed in Tier 1.

We placed twelve TACs in Tier 2. While there is considerable exposure to formaldehyde and benzene exposures are ubiquitous, these chemicals fell into Tier 2. Formaldehyde is in Tier 2 because of some evidence indicating children may be more susceptible to the adverse respiratory impacts induced by formaldehyde exposure. Also, formaldehyde is a suspected human carcinogen and exposure to carcinogens early in life may result in a greater risk. There is widespread exposure to formaldehyde from a number of sources both indoor and outdoor. However, the evidence for differential effects is relatively weak and so formaldehyde was placed in Tier 2. Benzene is in Tier 2 because of the concern that it may be leukemogenic in children and because of widespread exposure. Leukemia is an important endpoint to consider in evaluating impacts on infants and children, since it is the major form of childhood cancer. Some epidemiological studies suggest that parental exposure to benzene is associated with elevated leukemia risk in children, indicating that a heritable mutation occurs in germ cells. However, other studies did not find this effect. Nonetheless, additional work needs to be done to resolve the issue.

While there is evidence that some Tier 2 chemicals may disproportionately impact infants and children, many Tier 2 TACs fell into that tier primarily based on lower potential exposures or inadequate data on exposure. There are limited exposures to vinyl chloride although stationary source (e.g., landfills) exposures may be important. However, the increased susceptibility of infants and children to vinyl chloride carcinogenesis is strongly supported by animal studies. Ethyl and methyl ethylene glycol ethers are developmental toxicants and can have profound irreversible effects. However, exposures are dropping because of the recognition of the toxicity of the methyl and ethyl ethylene glycol ethers and actions taken by industry to reduce the use of these compounds. Unfortunately, data on emissions of specific glycol ethers from stationary

sources are incomplete. Mercury is a developmental neurotoxin, and the increased susceptibility of infants and children to mercury compounds is well established. There are a number of sources of airborne mercury, including combustion of municipal and hospital waste, although measured concentrations in ambient air are very small relative to the California Reference Exposure Level (REL), and the majority of exposure occurs through the consumption of fish contaminated by water-borne mercury. Therefore, mercury has been placed in Tier 2. Polychlorinated biphenyls are important developmental neurotoxicants that may produce irreversible effects, and the co-planar PCBs have dioxin-like toxicity. Exposures to PCBs may be decreasing over time since intentional manufacturing and use of PCBs has ceased in California. Airborne exposures appear to be very small, and thus PCBs were placed in Tier 2. Carbon disulfide is a neurotoxicant and possibly associated with developmental toxicity in animal studies, but exposures are low in California. Thus, carbon disulfide was also placed in Tier 2. Arsenic has potential differential effects in children from the standpoint of carcinogenicity and also potential neurotoxicity. Although there are concerns regarding potential differential toxicity of arsenic, airborne exposures are low relative to the California Reference Exposure Level, and the majority of exposure is through ingestion of water and food. Therefore, arsenic was placed in Tier 2. Chlorine can exacerbate asthma, but exposures are low except in the case of accidental releases. Thus there is some concern for chlorine but not enough to place it in Tier 1. Methyl bromide is a neurotoxicant but little evidence is available to characterize differential effects. In addition, exposures from stationary sources are generally low and not widespread. Thus, it was placed in Tier 2. Methylene chloride is metabolized to carbon monoxide, a substance which differentially impacts infants. The measured ambient concentrations are low, about 0.005 times the chronic REL (which is based on formation of carboxyhemoglobin). Concern still exists because stationary source emissions in California are very high. Nonetheless, methylene chloride was placed in Tier 2. Manganese is a neurotoxic substance, and animal evidence indicates that neonatal animals are more susceptible to the toxic effects of manganese. However, exposures in California are generally low, and so manganese was placed in Tier 2.

All of the Tier 2 substances can be reconsidered for listing, especially if information indicates localized exposures are significant.

Appendices C-1 and C-2 contain summaries of the top 17 TACs broken into Tier 1 (Appendix C-1) and Tier 2 (Appendix C-2) based on the prioritization described above and the results of the focused literature reviews. These summaries also provide a brief justification for our determination that these TACs disproportionately impact infants and children. Public and peer review comments were considered in finalizing the list of the top five TACs pursuant to Health and Safety Code Section 39669.5(a).

Prioritization of Toxic Air Contaminants – Children's Environmental Health Protection Act
October, 2001

Table 4. TACs that may disproportionately impact infants and children.

Toxic Air Contaminant	Endpoints of Most Concern	Major Reasons Why Chosen
Tier 1 TACs		
Acrolein	Respiratory Irritant	Exacerbation of asthma; modeling predictions indicate concentrations in urban air above cREL
Chlorinated dioxins and dibenzofurans (dioxins)	Developmental toxicity, immunotoxicity, endocrine disruption; thyroid effects	Widespread exposure; endocrine disruption, thyroid and immuno-toxicity at low body burden; young animals more susceptible than older animals
Lead and compounds	Developmental neurotoxicity/CNS effects	Children the most susceptible subpopulation due to developmental neurotoxicity.
Particulate Emissions from Diesel-fueled Engines (Diesel exhaust particulate matter)	Enhancement of allergic response; exacerbation of asthma; developmental effects, genotoxicity and lung cancer.	Enhancement of allergic response and implications for exacerbation and possible induction of asthma; Major source of ambient PAHs, PM10; exacerbation of asthma by PM10; PAH developmental toxicity and genotoxicity a concern.
Polycyclic Organic Matter (POM)	Developmental effects, genotoxicity and lung cancer	Animal studies indicate teratogenicity, and fetotoxicity; human studies indicate greater genotoxicity following in utero exposures.
Tier 2 TACs		
Arsenic and compounds (inorganic)	Carcinogenicity; potential neurotoxicity	Evidence of increased susceptibility to carcinogenicity early in life; possible neurotoxicity
Benzene	Hematopoietic effects, carcinogen	Widespread exposure; studies suggest possible increased risk of childhood leukemia in children of benzene-exposed workers.
Carbon disulfide	Neurotoxic effects; possible developmental toxicity	Neurotoxicity a key toxicological endpoint for children; metabolism slow in neonate; lower lethal dose in neonatal mice.
Chlorine	Respiratory irritant	Exacerbation of asthma.
Formaldehyde	Respiratory irritant; carcinogen	Widespread exposure; cREL below urban ambient and indoor levels; exacerbation of asthma; indication that children more susceptible to lung function impacts.
Ethylene glycol ethers (EGEE, EGME, EGEEA, and EGMEA)	Developmental effects including teratogenicity	Teratogenic effects; large emissions of glycol ethers from stationary sources.
Manganese and compounds	Neurotoxicity	Neurotoxicity a key endpoint for infants and children.
Mercury and compounds	Developmental neurotoxicity	Children most susceptible subpopulation due to developmental neurotoxicity.
Methyl Bromide	Neurotoxicity	Infants and children are susceptible subpopulations for neurotoxicity.
Methylene chloride	Metabolized to carbon monoxide	Carbon monoxide has higher affinity for fetal hemoglobin; high emissions from stationary sources.
Polychlorinated Biphenyls (PCBs)	Developmental effects including neurotoxicity; thyroid effects; dioxin-like toxicity	Infants susceptible subpopulation for thyroid effects; infants and children for developmental neurotoxicity
Vinyl chloride	Carcinogenicity	Animal studies indicate much higher potency when exposure occurs in utero or perinatally than as mature animals.

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III. Factors Influencing Differences in Susceptibility Between Infants and Children and Adults

Very few scientific studies in the published literature have explored the toxic effects of environmental chemicals on children. It has been standard practice to base risk assessments on adults, using adult parameters and data obtained from occupational studies, or studies in mature laboratory animals. An exception to this is in risk assessments where the sensitive toxicological endpoint is developmental toxicity. In standard risk assessment practice, health-protective assumptions have been utilized to attempt to account for individual variability in humans, including children, in response to toxicants. Thus as noted in Section I, we have made crude assumptions in most assessments of risk because data are generally lacking to make refined calculations on the difference between infants and children and adults in response to toxicants. More effort is needed to refine these assumptions and to ensure their adequacy in protecting infants and children. Data limitations will always be a problem.

There are a number of reasons to suspect that risk assessments based on adults may underpredict the risks of exposure to infants and children. The potential impact of environmental chemicals on children's health may be affected by behavioral, physiological, and sociological factors that differ from those of adults. Children have more limited diets than adults and higher intakes per body weight of food, fluids and air. These factors change both exposure patterns and responses to toxicants. Differences between infants and children and adults may result in significant illness or disabilities in children but not in a similarly exposed adult. Minamata disease, or methylmercury poisoning, is one example in which prenatally exposed children were profoundly neurologically damaged by an exposure that was insufficient to produce clinical symptoms in the mothers (Rogan, 1995).

Assessments that adequately describe risks from exposures to children present challenges due to the rapid growth, changes in fluid and protein content, organ functions, metabolic rates and enzymatic functions that characterize childhood. Premature infants, term newborns, children, and adolescents are each unique in these parameters.

There is limited scientific information that addresses age-specific differences in sensitivity to toxic effects. A developmental neurotoxicity testing protocol, published by the U.S. Environmental Protection Agency in 1991 and later revised (Makris et al., 1998), has not yet been used extensively to evaluate pesticides for registration or reregistration, much less for chemicals that end up as toxic air contaminants. An analysis by the Office of Pesticide Programs revealed that only nine deve lopmental neurotoxicity studies using this protocol on pesticides had been submitted to the agency between 1991 and 1998 (Makris et al., 1998). Six of the nine studies identified endpoints that suggested a qualitatively different response between young animals and adults, leading to a more conservative risk assessment. These findings could not have been predicted by testing in mature animals only (Makris, 2000).

The vast array of differences that may affect toxicologic response to xenobiotic chemicals among the fetus, newborn and infants, children, adolescents and adults has not been catalogued in full. In the following sections we give examples of such differences that influence exposure and disposition of toxicants, and a few words on pharmacodynamic differences. This latter concept is tied more to the concept that different targets of toxicity are present in infants and children

than in adults. (See the previous section B, which described some critical organ systems where development and maturation are relatively prolonged.) While these examples are in no way a complete listing, they provide a foundation for understanding the variety of information that must be considered in order to anticipate the possible toxicologic risks to the growing and developing human.

A. Differences in Exposures: Infants, Children and Adults

There is a growing body of evidence that children receive greater doses of environmental toxicants on a body weight basis than adults through common exposure pathways (such as inhalation and ingestion). These greater doses stem from greater exposures, from unique exposures, and from factors influencing the amounts of toxicants available at body sites where absorption occurs.

1. Inhalation Exposure

A primary physiological difference between children and adults is the higher oxygen demand and therefore higher breathing rates of children (Figure 1, below). This difference in breathing rates is due to the greater oxygen consumption rates of children, a result of their increased energy expenditure levels. Children expend more energy primarily because of their rapid growth and high levels of physical activity. Children also expend more energy for thermogenesis because they have a larger body surface area relative to their weight than adults.

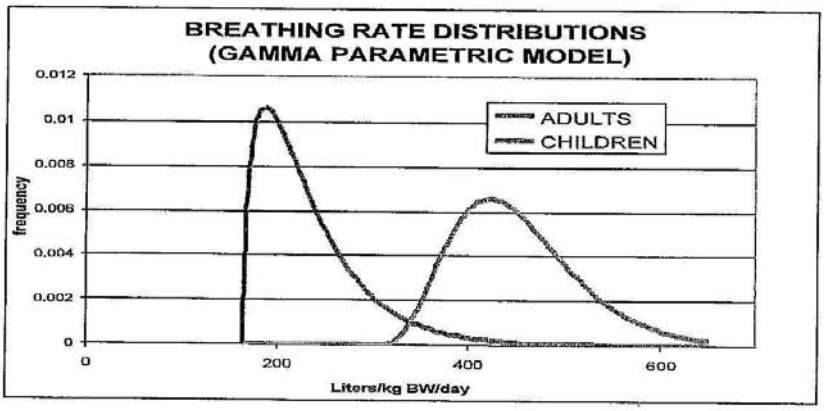
Daily breathing rates are used to evaluate health risks from chronic exposure. Table 2 presents the mean and 95th percentiles of the distributions of estimated 24-hour breathing rates for children and adults illustrated in Figure 1 (OEHHA, 2000b). The mean breathing rate is almost twice as great for children as it is for adults (452 vs. 232 L/kg-day, respectively). Because children inhale a greater volume of air per unit time and body weight than adults, they receive higher doses of airborne contaminants.

Table 2. Daily Breathing Rates in units of L/kg-day

	Children (≤12 yrs)	Adults (>12 yrs)
Mean	452	232
High End	581	381

* from OEHHA (2000b)

Figure 1. Frequency Distributions of Daily Breathing Rates for Children and Adults



* from OEHHA (2000b)
children = 12 years of age or less
adults = greater than 12 years of age

There is also a difference in breathing rates between children and adults, which should be considered in estimating short-term exposures to toxicants. Adams (1993) measured short-term breathing rates (L/minute per body surface area) in the laboratory for different activities and activity levels (Table 3 and 4). The values presented in Tables 3 and 4 highlight the differences in short-term breathing rates between children of different ages and between children and adults.

Table 3. Mean (and Standard Deviation) of Minute Breathing Rates for Resting Protocols in units of L/min per body surface area

	3-5 years of age*	6-12 years of age*	13-59+ years of age, Female**	13-59+ years of age, Male**
Lying	8.47 (1.96)	6.99 (2.67)	4.34 (0.84)	4.64 (0.83)
Sitting	8.89 (1.99)	6.75 (1.58)	4.70 (1.06)	4.84 (0.75)
Standing	9.25 (1.65)	7.79 (1.58)	5.08 (1.19)	5.53 (1.25)

* genders combined because there was no statistical difference between gender once normalized to body weight.
** age groups combined because there was no statistical difference between the age groups of 13-18, 19-59, and 60+ years of age

Table 4. Mean (and Standard Deviation) of Minute Breathing Rates for Walking Protocols in units of L/min per body surface area

	3-5 years of age*	6-12 years of age*	19-59 years of age, Female	19-59 years of age, Male
2.25 mph	15.79 (1.93)	NA	NA	NA
2.50 mph	NA	14.31 (1.92)	11.55 (1.30)	11.49 (1.72)

* genders combined because there was no statistical difference between the two groups

NA= not available

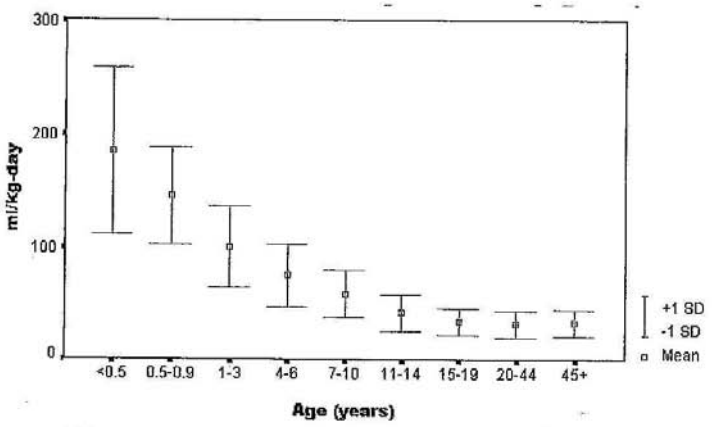
Another factor influencing inhalation exposure and response to toxicants is the pattern of lung development. Bronchioles develop completely prenatally but 85% of alveoli develop in the postnatal period. A newborn infant may have as few as 10 million alveoli while adults have up to 300 million (Plopper and Thurlbeck, 1994). This represents a greater than 20-fold increase in alveolar surface area. The number of alveoli reaches about 90% of adult values by age three. At this point, the alveoli are smaller than in the adult. Growth of the alveoli occurs throughout adolescence to reach adult size. Airway caliber is an important determinant of particle deposition, with a generally inverse relationship between airway diameter and deposition efficiency (Bennet et al., 1996). Children have smaller airways, which would tend to increase particle deposition relative to adults. Phalen et al. (1985) developed a model incorporating airway dimensions measured in lung casts of people (11 days to 21 years) and predicted that particle deposition efficiency would be inversely related to body size.

2. Water Intake Exposure Pathway

Children and adults have significantly different fluid intake requirements. Total fluid intake is estimated at 189 ml/kg-day for an infant 0-6 months of age while that of an adult is 35 ml/kg-day (Ershow and Cantor, 1989). Water consumption rates decrease with age and reach adult values in teenagers (Figure 2).

Infants have greater water requirements than older children. Infants may receive formula as their sole source of calories or in combination with breast milk for the first few months of life. Formula may continue to be fed after solid foods are introduced into the diet, often up to 12 months of age. Water from various sources (tap, bottled, well) is used to prepare formula and may contain toxicants, such as metals, and chlorinated organic compounds. Because formula may be the infant's sole source of fluids and nutrients for at least the first few months of life, and because infants consume greater quantities of fluids on a body weight basis than adults, formula-fed infants may receive greater doses (on a mg/kg body weight basis) of water-borne contaminants than older children and adults.

Figure 2. Mean and Standard Deviation for Daily Water Intake,* by Age Group



* data from Ershow and Cantor (1989)

* total water intake (includes tap, bottled, other sources)

3. Breast Milk Exposure

Breast milk intake is an exposure route unique to infants. It represents an additional source of toxicant exposure that older children and adults do not have. An infant's sole source of nutrients is typically breast milk or formula, for at least the first few months of life. A breastfed infant would thus receive repeated doses of any contaminants present in the breast milk.

A number of factors influence the movement of chemicals from the mother's plasma into breast milk. These include the lipophilicity of the compound (which determines ability to partition into milk fat), protein binding in plasma and milk, and influence of pH of milk and plasma on ionization (Findlay, 1983; Fleishaker et al., 1987). The pH of breast milk (6.6-6.8) is more acidic than plasma. Therefore basic compounds can attain higher concentrations in breast milk than plasma as they become trapped by ionizing at the more acidic pH of the milk (Findlay, 1983). A chemical that is highly protein bound in the plasma may not be available for transport into milk. However, if the chemical has higher affinity for milk protein than plasma protein, then it may be pulled into the milk preferentially (Findlay, 1983). These factors may all apply, and predictions of concentrations of a drug or environmental chemical in breast milk are difficult (Wilson et al., 1985).

Chronic exposure to highly lipophilic, poorly metabolized environmental contaminants results in the concentration of these contaminants in adipose tissue and breast milk lipid. The contaminant levels in breast milk lipid appear to be in equilibrium with those in adipose tissue. These contaminants are eliminated from body adipose stores extremely slowly and through breast milk during lactation. Over time the breast-fed infant may receive a significant portion of the total

maternal contaminant load (Smith et al, 1987; Schecter et al, 1996). For a toxicant such as tetrachlorodibenzo-p-dioxin (dioxin), an infant's intake rate from breast milk may be substantially greater than the mother's environmental intake rate. Hoover et al (1991) estimated an average maternal daily intake of 0.93 pg/kg-day, and calculated that a breast fed infant would receive a daily dose of between 20 and 70 times this amount during the first year of life. Based on measurements of dioxins and PCBs in the diet and in breast milk, the Toxic Equivalent (TEQ) intake of dioxin and PCBs on a picogram/kg-body-weight basis is about 50 times greater for the breastfeeding infant than for the adult (Patandin et al., 1999).

Breast-feeding infants may also be exposed to non-lipophilic contaminants in breast milk. For example, 36-80% of lead blood levels in a breastfeeding infant during the first 60-90 days postpartum may be attributed to lead in breast milk (Gulson et al., 1998). Hallen et al. (1996) demonstrated in rats that lactational transfer of lead is considerably higher than placental transfer in recently or currently exposed animals. Mercury concentrations in breast milk have been shown to correlate with presence of amalgam fillings (Oskarsson et al., 1996). There have been a number of studies demonstrating the presence of drugs in breast milk. Codeine and morphine concentrations in breast milk were over twice those in the mother's plasma (Findlay, 1983), while caffeine and acetaminophen concentrations in the milk and plasma were equal. Salicylate, a weak acid, showed higher peak concentrations in plasma than in milk.

Because the prevalence of breastfeeding has increased significantly, this exposure pathway has become more important in the health assessment of population-wide exposures. In 1999, 67.2% of newborns were breast-fed, which is greater than at any time since the 1940's (Ross Products Division, Abbott Laboratories, 2000; Fomon, 1993). The prevalence of breastfeeding at 6 and 12 months of infant age, a reflection of the duration of breastfeeding, has increased proportionately. In 1999, 17% of all infants 12 months of age were still being breastfed (Ross Products Division, Abbott Laboratories, 2000). Thus, breast milk is a common route of potential exposure of infants to toxicants.

4. Food Intake Exposure

Children's caloric needs are greater than those of adults. The recommended dietary allowance (RDA) for a reference (median of the population) child 1-3 years of age is 102 kcal/kg-day, whereas for an adult male (19 years or older performing light to moderate activity) it is 40 kcal/kg-day and for an adult female it is 38 kcal/kg-day (NRC, 1990a). This results in greater food intake rates per unit body weight for children relative to adults and thus increased doses of contaminants in or on food.

During weaning, when solid foods are introduced into an infant's diet, the foods are often from the same food source (such as apples consumed in the form of both juice and applesauce) or the same food type (such as apples and peaches, both fruits). Thus weaning infants tend to consume more of one particular food source than adults or older children and may receive repeated doses of contaminants that may be in that food source. Although some infants may receive different types of fruits and vegetables, pesticides with a common mode of action that are used on one source of fruit or vegetable may also be used on other fruits and vegetables. Setting of allowable pesticide residue levels attempts to account for this.

Toddlers and young children also tend to consume diets with less variety than an adult's diet. Often this is due to a child's dietary preferences, with some children eating only a few food items for weeks at a time. This results in a dramatically increased consumption of particular food items by children compared with adults. For example, on average, non-nursing infants consume over 16 times the average U.S. consumption of apple juice (NRC, 1993). The greater intake of particular foods by children increases further the difference between child and adult doses to food-borne contaminants.

5. Soil Ingestion Exposure

People's activities largely determine their exposure to soil and dust (Wiley et al., 1991a,b; U.S. EPA, 1997; Kissel et al., 1996), but frequencies and durations of soil exposures are not well characterized. The U.S. EPA Exposure Factors Handbook (1997) used data from Hawley (1985) to estimate that children were in contact with soil 130 days per year compared to 45 days per year for adults.

There is general consensus that children ingest more soil than adults due to their frequency of contact with soil and with objects that have contacted soil (see the section *Location as a Factor Influencing Exposure*, below). Young children likely receive greater doses of contaminants through soil ingestion than older children because their mouthing behavior (see *Behavioral Factors Influencing Exposure*, below) is more frequent, and because differences in hygiene, crawling and other activities result in greater soil contact.

Pica is a behavioral anomaly characterized by the ingestion of nonfood items, including soil. The incidence of pica is not well characterized but is not considered uncommon. It is most prevalent in children three years of age and younger (Barltrop, 1966). The prevalence of soil pica in children is difficult to estimate because soil pica has been arbitrarily defined (the ingestion of more than one gram of soil per day) and because pica is an erratic behavior (pica children do not consistently eat greater than one gram of soil per day). Nonetheless, because soil pica is very rarely seen in adults, it represents an exposure route most applicable to children. Children may thus receive higher doses of contaminants deposited onto soil than adults do.

Children may also receive large single doses of contaminants due to soil pica. The doses may be sufficiently great to cause acute toxicity, including lethality (Calabrese et al., 1997).

6. Behavioral Factors Influencing Exposure

Children are more physically active than are adults. Their high energy expenditure requires these children to consume greater quantities of food, air, and water on a body weight basis than adults. This increases the dose of toxicants the children receive from inhalation, food and fluids. The studies of California children's and adult's activity patterns found appreciable differences in the amount of time spent per day by children and adults in physical activities (Wiley et al., 1991a,b). The mean time spent per day in active sports for children was 50 mins/day compared to 13 mins/day for adults. The mean time spent per day walking or hiking for children was 22 mins/day compared to 5 mins/day for adults. The increased physical activity can also result in increased soil contact (e.g., playing soccer).

Children are more highly exposed to contaminants from soil and dust than are adults. Infants and young children frequently play on the floor. When outdoors, toddlers and young children typically crawl, lie, sit, and play on the grass or soil. They explore their environment by touching and manipulating many different objects. Infants and toddlers frequently put hands, toys, and other objects in their mouths. This is a normal childhood behavior. Infants are born with a suckling reflex that aids in obtaining food and provides them with a sense of security and comfort, as in thumb sucking. Infants will also put hands and objects in their mouths when they are teething. Though children may only mouth body parts and objects for a few seconds, infants 6-12 months of age were observed to spend an average of 44 minutes per day in this activity (Groot et al., 1998). The body parts and objects that are mouthed often have toxicants on their surfaces because they tend to be in frequent contact with ground surfaces such as carpet or soil where pesticides may have been sprayed or where contaminants have settled. This mouthing behavior may lead to significant doses of pesticides and other contaminants (Zartarian et al., 2000) that adults do not receive.

Some older children may be more highly exposed to contaminants than younger children and adults due to their participation in sports and athletic activities. These activities often result in greatly increased breathing rates, sometimes for relatively long periods of time (as in soccer, track, cycling, and swimming). This may result in increased inhalation doses of air pollutants relative to typically less active adults.

7. Children's Immediate Environment as a Factor Influencing Exposures

Children spend more time outdoors and in active play and sports than adults. A study of activity patterns in California found that children under 12 years of age spent an average of 124 minutes per day engaged in outdoor activities, (including sports,) compared with only 21 minutes for adults (Wiley et al. 1991a,b). This study also found that children spend approximately 70% of their time outdoors between 12:00 noon and 8:00 p.m., when outdoor pollutants tend to register at the highest levels in urban areas.

Newborns and young infants spend considerable time in a crib or other single environment as opposed to moving about, as do older children and adults. An infant is likely to receive greater exposure to a substance in a single environment than an older child or adult who moves in and out of that environment. Infants and toddlers may be unable to move away from noxious stimulants and thus receive greater doses of the toxicant than an older child or adult. For example, an infant in a crib may receive greater doses of tetrachloroethylene, a carcinogen, from clothes that have been recently dry-cleaned, and that are in or near the infant's room, than would an adult in the same household. Infants and children are also exposed to environmental tobacco smoke (ETS) which is an important source of exposure to toxic air contaminants indoors such as polycyclic aromatic hydrocarbons, benzene, aldehydes including acrolein and formaldehyde, and metals such as lead and nickel. Summaries of the impacts of some of these compounds on infants and children are in Appendix C-1 and C-2. ETS exposure has been causally associated with respiratory illnesses, including lung cancer, childhood asthma and lower respiratory tract infections (NCI, 1999). ETS exposure may be implicated in 120 SIDS deaths per year in California (RR ≈ 3.5), with a risk of death to 0.1% of infants exposed to ETS in their homes (NCI, 1999).

Vapors that are heavier than air in the indoor environment will be concentrated near the floor, the breathing zone of young children. While the breathing zone for an adult is four to six feet above the floor, the breathing zone for an infant may be a few inches above the floor (Bearer, 1995). In a case in Michigan, a four-year old child became acutely intoxicated from mercury used in indoor paint. A factor thought to be important in this case was that mercury vapor tends to collect at floor level, near a child's breathing zone and where they tend to play. In addition, the breathing rate per unit of body weight is higher in preschoolers than in adults. These factors may have resulted in acute poisoning of the child, even though the adults in the household were not clinically affected (CDC, 1990).

8. Dermal Exposure

Infants and children have a greater body surface area to body weight ratio than adults. This ratio is more than two times greater in a newborn infant than in an adult (U.S. EPA, 1997). The infant's greater body surface area results in increased exposures, on a body weight basis, to dermal toxicants. This increased exposure is likely the primary reason that dermally applied pharmaceuticals are more toxic to infants (U.S. EPA, 1992).

Skin permeability and hence dermal absorption changes as the skin develops. The newborn infant may not have fully keratinized skin (Bearer, 1995) and therefore may have greater skin permeability than at any other age. The age at which keratinization is complete is uncertain, though there is suggestion that it may occur within days of birth. Thus increased skin permeability in the neonate may only last a few days. Child behavior can significantly impact skin permeability. For example, when the skin moisture content is increased above its normal level, skin permeability increases 2-3 fold (Klaassen, 1996). Because young children often mouth their hands or other body parts wetting the skin, these mouthed sites may be more permeable to dermal toxicants.

When skin is covered by clothing or by hair, the dose of toxicant absorbed is generally smaller. Infants often have very little hair for the first several months of life. This results in increased contact with and potential doses of toxicants that may be in pillows, blankets, clothing, and house dust relative to adults. Because children are more active than adults and because they may become overheated during play and periods of high activity, children often wear less clothing than adults. Thus, the percent of skin surface area available for direct contact can be greater for a child than for an adult.

B. Differences in Disposition of Toxicants

1. Absorption

Characteristics of absorption of chemicals show age-related trends from birth through early childhood. A number of factors may result in significant differences in the absorption of environmental pollutants by infants and children versus adults. Ingestion is a major route by which infants and children are exposed to environmental chemicals (U.S. EPA, 2000). Most toxicants administered orally are absorbed into the circulatory system by passive diffusion through the lining of the stomach and intestines. The two factors most affecting this process are gastric pH and emptying time (Milsap and Jusko, 1994), both of which vary with age from birth

through infancy and childhood. At birth the gastric acidity is weak or neutral (pH 4-8) due to the presence of amniotic fluid in the stomach (Avery et al., 1966). Following birth, gastric acid appears in the first several hours to two days of life, decreases for about 10 days, then increases approaching adult levels by three months of age (Miller, 1941). Premature infants may continue to have lower gastric acidity due to immature acid secretion (Agnoud et al., 1969). The pH of the stomach influences the absorbed dose of a chemical by altering its ionization state. This alters the potential dose to the infant of ionizable contaminants that are absorbed from the stomach.

The gastric emptying rate in neonatal infants is variable and prolonged (Siegner and Fridrich, 1975; Siegel et al., 1984) and is affected by both gestational and postnatal age. In 24 infants aged one to ten weeks, gastric emptying of 50 milliliters of milk containing Indium-113m followed an exponential pattern with an average half life of 87±29 minutes. Absorption rates for several chemicals, such as phenobarbital, digoxin, arabinose, and xylose, increase throughout the first year of life. While delayed absorption seen in neonates is partially due to slower gastric emptying and gastrointestinal motility, other factors such as lower pancreatic enzyme function and bile acid secretion, as well as a less developed unstirred water layer on the intestinal mucosa, also play a role (Murphy and Signer, 1974; Heimann, 1980). Bile salt secretion is reduced in newborns compared to adults and may result in decreased absorption of lipid-soluble chemicals (Besunder, 1988).

The lungs are the major point of entry of airborne environmental pollutants into the body. Children may absorb more chemical through the lung in any given setting than an adult because of their increased breathing rate per unit body weight (i.e., $mL/kg/m^2/min$) (Snodgrass, 1992).

Environmental chemicals, which are often lipophilic, may pose a greater risk to children due to the possibility of enhanced dermal uptake due to increased skin surface area and permeability. Dermal absorption may be significantly higher in neonates due to an immature epidermis and increased skin hydration. The surface area/bodyweight ratio is also much higher in infants and children than adults (0.067 to 0.033 m^2/kg vs. 0.025 m^2/kg in adults) (Snodgrass, 1992). Severe toxicity has been observed in infants following dermal application of hexachlorophene (Tyrala et al., 1977) and isopropanol (McFadden and Haddow, 1969). Dermal absorption, as affected by age and related physiological differences, has not been fully characterized.

To summarize, childhood differences affecting absorption of environmental chemicals include:

- Lower gastric acidity in neonates.
- Slower gastric emptying in neonates.
- Lower intestinal absorption in neonates compared to children.
- Higher breathing rates in infants and children than adults.
- A higher surface area/body weight ratio (0.067 in newborn vs. 0.025 in adult).
- More permeable skin surface (in premature infants especially).

2. Distribution

The distribution of absorbed chemicals in the infant and child is affected by the concentration and types of plasma proteins and the relative size of fluid, fat and tissue compartments of the body (Milsap and Jusko, 1994). Total body water may be as high as 85 percent by weight in premature infants and 78 percent in full-term neonates versus 50-60 percent in adults (Friis-Hansen, 1961, 1971). The portion of fluid that is extracellular decreases from gestation (65%) to puberty (20%) (Reed, 1996). The percentage of body water affects the volume of distribution of absorbed drugs and other chemicals. The apparent volume of distribution (Vd) relates the amount of chemical in the body to its plasma concentration. Chemicals that are more water-soluble have higher volumes of distribution and lower clearance rates in infants than in adults. Those that are more lipophilic would have lower volumes of distribution and increased blood concentrations and therefore relatively more rapid clearance in infants. For example gentamycin, theophylline and phenytoin show two to three-fold higher Vd's (L/kg body weight) in neonates versus adults. Conversely, diazepam, which is more lipophilic, had a volume of distribution in neonates only one-third that of adult values (Milsap and Jusko, 1994).

The binding of absorbed chemicals to plasma proteins is an important determinant of toxic response because bound toxicant is not available for action at the receptor. The extent of binding depends upon the quantity of binding proteins available, the binding or affinity constant of the chemical for the protein(s), the number of available binding sites, and the presence of pathophysiological conditions which may alter the binding interaction (Besunder et al., 1988). The affinity of plasma albumin for acidic drugs increases along with total plasma protein concentration from birth into early infancy (Morselli et al., 1980). The reduced plasma protein binding of drugs in newborns is probably due to reduced total plasma protein concentration as well as such qualitative differences as persistence of fetal albumin with lower affinity for drugs and lower levels of γ-globulins and lipoproteins (Morselli et al., 1980). Plasma albumin, total protein concentrations, and α_1-acid glycoprotein do not reach adult values until one year of age (Herngren et al., 1983; Brodersen et al., 1983). Three of the drugs noted above (theophylline, diazepam and phenytoin) exhibit lower protein binding (1/3 to 1/10, respectively) in neonates versus adults (Morselli, 1976; Morselli et al., 1980; Rane and Wilson, 1976). In addition to the quantitative and qualitative differences in plasma proteins during early development, disturbances in acid-base balance and increased blood concentrations of endogenous substances, such as free fatty acids and bilirubin, can affect protein binding of drugs or the release (i.e., displacement) of bound drugs or other exogenous chemicals (Brodersen et al., 1983). Trichloroacetic acid (TCA), a metabolite of perchloroethylene (PCE) and trichloroethylene (TCE), is very highly bound to albumin (Muller et al., 1972). Lower levels of albumin may result in a larger volume of distribution and also higher unbound TCA in the blood. Additionally, bilirubin and free fatty acids, often present at elevated levels during the first weeks of life, competitively bind with albumin and may displace TCA leading to greater potential for acute toxicity (Ginsberg, 2000).

Relative brain mass and brain perfusion in infants and children are greater than in adults. A newborn's brain is one-third the size of an adult brain while its body weight is only about four percent of an adult's (i.e., 3.0 vs. 70 kg) (Snodgrass, 1992). A ten-year old child has a cerebral flow of about 50 L/kg-hr vs. 40 L/kg-hr in an adult (Roberts, 1984). The blood-brain barrier

refers to the multiple anatomic and physiologic factors that prevent or slow the entry of toxicants and drugs into the central nervous system. This barrier is not fully developed at birth, which is why some chemicals are more toxic to newborns than to adults. Morphine is three to ten times more toxic to newborn than to adult rats due to the higher permeability of the newborn brain to morphine (Rozman and Klaassen 1996).

In summary, childhood factors affecting distribution of xenobiotics include:

- Higher total body water/body weight.
- Lower body fat/body weight.
- Lower mass of skeletal muscle/body weight.
- Higher relative brain and liver weights vs. adult (6-fold and 2.5 fold, respectively).
- Albumin and other proteins that bind xenobiotics are found at decreased levels during the newborn period and early infancy.
- Bilirubin and free fatty acids that can compete for protein binding sites are elevated early in life.
- Fetal hemoglobin present in neonates (nitrate/nitrite sensitivity).
- Blood pH is lower in neonates.
- Increased permeability of the blood-brain barrier in early life.

3. Metabolism

The ontogeny of metabolic pathway development during early life may result in important changes in rates of activation to toxic intermediates, detoxification, and clearance of xenobiotic compounds. Many of the hepatic microsomal enzyme systems responsible for drug metabolism are present at birth and their activities increase rapidly to near adult levels early in life (Morselli et al., 1980; Morselli, 1989; Dutton, 1978; Aranda et al., 1974). Liver phase I reactions (oxidation, reduction, hydroxylation) develop rapidly during infancy, with adult levels attained by about six months of age (Neims et al., 1976; Dutton, 1978; Aranda et al., 1974). The total cytochrome p450 content of human liver microsomes is unchanged from fetal life through the first year of post-natal life and is approximately one third the total adult content (Treluyer et al., 1991). In general, the level of inducibility of fetal CYP forms is unknown (Hakkola et al., 1998). The postulated development of individual cytochrome P450 (CYP) forms during infancy and childhood is summarized in Table 5. Except for CYP3A4 and CYP3A7, the values in the table are based on immunological analyses for the presence of CYP mRNA and protein rather than on the metabolism of specific chemical substrates. In general, three groups of P450 could be described: CYP3A7 and CYP4A1 present in fetal liver and active on endogenous substrates; an early neonatal group including CYP2D6 and 2E1 which surge within hours of birth; and a later developing neonatal group, CYP3A4, CYP2C's, and CYP1A2 (Cresteil, 1998). Treluyer observed that treatment of infants with barbiturates resulted in induction of CYP2C activity and increased metabolism of diazepam and tolbutamide (Treluyer et al., 1997).

Table 5. Postulated Developmental Expression of Individual P450 Forms in the Human Liver (adapted from Hakkola et al., 1998; Cresteil, 1998) Values in parentheses are percent of total P450.

Form	Fetus	Neonate <4 weeks	Infant <12 months	Child <15 years	Adult	Substrate or Class Metabolized
CYP1A1	+	?	?	?	+	Aryl hydrocarbon hydroxylations, 2-acetylaminofluorene, phenoxazone ethers (Sonnier & Cresteil, 1998)
CYP1A2	-	+	+	+++	+++ (18)	Aromatic amines, caffeine *N*-3 demethylation (Sonnier & Cresteil, 1998)
CYP2A6	-	?	+	++	++ (6)	Coumarin 7-hydroxylation
CYP2A7	-	?	?	?	?	
CYP2B6/7	-	?	++	?	+ (<1)	Hexane, cyclophosphamide
CYP2C	+/?	++/+	++	+++	+++ (25)	Tolbutamide, diazepam, phenytoin, barbiturates-hydroxylation, demethylation (Treluyer et al.1997)
CYP2D6	+/±	++/+	+	+	+ (2)	NNK, debrisoquine, nortryptiline, sparteine, dextromethorphan (Treluyer et al., 1991)
CYP2E1	±	±/+	+	++	++ (9)	Benzene, halogenated solvents, nitrosamines, styrene, acetaminophen, chlorzoxazone (Vieira et al., 1996)
CYP3A4	+/-	++	++	+++	+++ (40)	Benzo[a]pyrene-7,8 diol, aflatoxin, 1-nitropyrene; hydroxylation of dehydroepiandrosterone (Lacroix et al., 1997)
CYP3A5	+	+	+	++	++ (10-30)	Benzo[a]pyrene-7,8 diol, aflatoxin, 1-nitropyrene; hydroxylation of dehydroepiandrosterone (Lacroix et al., 1997)
CYP3A7	+++ (30)	++	+	+	-	Hydroxylation of dehydroepiandrosterone (Lacroix et al., 1997)

Note: Symbols for detection of CYP mRNA/protein (when different): ? unknown, - not detected, ± possibly present in small quantities, + present in low concentration, ++ present in moderate concentration, +++ present in high concentration.

There has been some study of the development of human p450 enzymes in the liver but very little research about the timing of development of activity in other tissues. In one study, sex and age related differences in CYP1A1 activity in the human brain were documented. During childhood, enzyme activity increased dramatically and reached adult levels by puberty. In the lung, animal studies have shown that exposure to environmental toxicants (side-stream tobacco smoke) can alter the developmental profile of cytochrome P450 enzymes inducing earlier activity (Gebremichael et al., 1995). The role of cytochrome P450 in toxicity of some compounds in the lung may be important in early life. Repair of injured pulmonary Clara cells by toxicants activated by cytochrome p450 enzymes is decreased in the early postnatal period in rabbits and neonatal injury alters bronchiolar organization in the adult (Smiley-Jewell et al., 2000; Smiley-Jewell et al., 1998).

Phase II conjugation reactions are generally reduced at birth (Milsap and Jusko, 1994). Conjugation with glucuronic acid is significantly lower at birth with activities 2.5-fold below adult levels (Levy et al., 1975). Glucuronidation generally matures to adult levels in two months although glucuronidation of some drugs does not reach adult levels until puberty (Snodgrass, 1992). Reduced glucuronidation would result in slower removal of aniline, *N*-hydroxyarylamines, phenol, and benzene metabolites in neonates. Acetylation and sulfation reactions are generally high in newborn infants and rapidly reach adult levels. Thus neonates may conjugate drugs or environmental chemicals with sulfate rather than glucuronic acid (e.g., acetaminophen). *N*-Acetylation reactions occur in neonates (e.g., β-naphthylamine). Glutathione (GSH) sulfotransferases (GSTs) occur in different forms. GST-P_i is prevalent in the fetus and decreases postnatally. GST-mu and GST-alpha are low at birth but develop during the first three to six months of life. GST-mu is involved in arene oxide detoxication. GST-alpha is two-fold more active in children 0.5-4 years of age than in adults. Plasma GSH is similar in children 0.5-4 years of age and in adults (Ginsberg et al., 2000). Blood esterase activity is more depressed in premature infants than in full-term infants and doesn't reach the latter's activity for 10-12 months. Esterase activity in newborns is one-tenth to one-half the adult level. Low esterase activity coupled with lower volume of distribution may account for the prolonged effect of local anesthetics observed during delivery (Ecobichon and Stevens, 1973).

As a result of differing enzyme activity, some chemicals are metabolized by wholly different metabolic pathways at different ages. In infants, theophylline is N-methylated to caffeine. In adults this is a minor pathway, the majority being N-demethylated or C-oxidated to monomethylxanthines or methyl-uric acid. A pattern of metabolism similar to adults is achieved by seven to nine months of age (Reed, 1996). Renwick compared age-related differences in the pharmacokinetics of 36 drugs which are eliminated by different processes (Renwick, 1998; Renwick et al., 2000). His calculation of internal doses as the area under the blood concentration times time curve (AUC) for the same doses (mg/kg) indicated that the major difference from adults occurs in preterm and full-term neonates and young infants. The authors also compared seven drugs which are substrates for glucuronidation, one with substrate specificity for CYP1A2, and four with substrate specificity for CYP3A4 metabolism. Each showed the relatively higher AUC internal doses in neonates and young infants versus adults. The interindividual variation in elimination by these three routes did not differ by age group. Renwick et al. (2000) concluded that the main factor affected by age is the overall difference in clearance and the internal dose in neonates and children compared with adults and not the extent of variability.

In the pediatric medical literature the phenomenon of drug-drug interactions is well documented. These interactions may occur by different pharmacokinetic or pharmacodynamic mechanisms. The resulting clinical and toxicologic effects may be unpredictable. For example, when phenytoin is given with alcohol the toxicity of alcohol is increased. When phenytoin is combined with theophylline the effects of both are decreased. When given with anticoagulants the anticoagulant effects may be either increased or decreased. The corresponding literature on drug-toxicant or toxicant-toxicant interactions needs development and is expected to be equally complex.

While children in general may be at increased risk for pharmacokinetic/dynamic reasons, subsets of children may be yet more sensitive due to genetic susceptibility. In an elegant set of studies, Perera et al. (1999) have shown (1) that there is significant transplacental transfer of polycyclic aromatic hydrocarbons (PAHs) and environmental tobacco smoke constituents from mother to fetus, (2) that PAH DNA adducts in maternal and newborn white blood cells are increased from environmental exposure, and (3) that the fetus is more sensitive to genetic damage than the mother. Newborns with a specific restriction fragment length polymorphism (RFLP), CYP 1A1 Msp1, had elevated numbers of adducts compared to those without the RFLP (Perera et al., 1999).

In summary, childhood differences that affect metabolism of xenobiotics include:

- Children have increasing maximum oxygen consumption/basal metabolic rate (VO_2max/BMR) throughout childhood (ages 7 to 14 years).
- Both Phase I and Phase II enzyme activities are lower in neonates but not universally, e.g., dealkylation, sulfate and glycine conjugation are less affected.
- Blood esterases are lower at birth and rise gradually during the first year (acetyl cholinesterase, aryl esterase, pseudocholinesterase).
- Exocrine pancreatic enzymes are lower at birth; amylase is 10% of adult value; trypsin is also low and develops during the first year.
- Differences in protein binding between infants and adults results in different availablility of toxicant for metabolism.

4. Excretion

Studies with a large number of drugs have shown that the majority of these agents are more slowly eliminated in neonates and infants than in adults. While this may be partly due to an increased volume of distribution for water-soluble drugs and their metabolites, additional factors may also be involved. At birth, glomerular function is more developed than tubular function and this persists for six months (Guignard et al., 1975; Arant, 1978; Hook and Hewitt, 1977). Tubular secretion is decreased for many drugs in newborns and infants (Besunder et al., 1988). At birth, the glomerular filtration rate (GFR) is two to four mL/min and increases to eight to 20 mL/min in the first few days of life. Adult values of GFR are reached by three to five months of age. Premature infants may have GFRs as low as 0.6 to 0.8 mL/min (Plunkett et al., 1992; Milsap and Jusko, 1994). Early increases in GFR are related to: increases in cardiac output, decreases in peripheral vascular resistance, increases in mean arterial pressure, increased surface

area of the kidney for filtration, and increased membrane pore size (Morselli et al., 1980; Plunkett et al., 1992). These age-related changes in renal function lead to decreased body clearance and prolonged half-lives in neonates and infants for any chemical that is eliminated by the kidney.

Studies in animals have shown that newborn and young animals have less capacity to excrete chemicals into the bile than do adult animals. Klaassen (1972) observed that blood concentrations of ouabain, a drug that is primarily excreted in the bile, was seven fold higher in seven-day-old rats than in 39-day-old rats. Ouabain is 40-fold more toxic in newborn than adult rats. Similarly, indocyanine green and sulfobromophthalein and their glucuronides were excreted more slowly in the bile of neonates than in adult rats (Klaassen, 1973). Ballatori and Clarkson (1982) found that the long half-life of methylmercury in neonatal rats was due to their inability to excrete the chemical in the bile, the main elimination route in adults. These findings suggest that deficiencies in the biliary excretion of certain environmental chemicals in infants and young children are likely.

In summary, childhood factors that affect excretion include:

- Lower renal function in neonates and young children with tubular secretion increasing during the first five months of life.
- Slowly developing biliary function despite a larger liver:body weight ratio.
- Generally greater intestinal function in children than in adults.

5. Pharmacokinetic Modeling

Pharmacokinetics (PK) is the description of the disposition of a toxicant. Disposition may differ as noted above among infants, children, and adults due to differences in absorption, distribution, metabolism, and excretion. This can be modeled using physiologically-based pharmacokinetic (PBPK) models. PBPK models give predictions of how the body handles a particular chemical. The models address issues of internal body or tissue dosimetry, route to route extrapolation and interspecies extrapolation. To date relatively few published models for various environmental pollutants address infant and child exposure in a systematic fashion. This is parallel to the bulk of toxicity testing in animals, which is usually initiated in young adult animals. It seems clear from the preliminary studies of PBPK modeling that infants in the first year of life are likely to show increased internal dosages for a variety of agents and their metabolites that may be related to adverse effects. In assessing risks of environmental contaminants to infants and children, the following areas should be adequately addressed by PBPK modeling:

- PBPK modeling for human dosimetry should include a series of infant and child anatomical/physiological profiles to address potentially critical developmental stages, e.g., newborn, 3, 6, 9 months, 1-2 years, 2-8 years, 8-16 years for both male and female. (Additional age profiles may be necessary in some cases).
- Biochemical factors for child-adjusted PBPK models may need to be scaled from animal or human adult values but values based on the child's metabolism of drugs using similar enzymes should be incorporated if available.

- When appropriate, subpopulations that may be at greater risk from exposure to a given environmental toxicant due to a number of factors such as genetic polymorphisms and body composition should also be included in the analysis

C. Pharmacodynamics

Pharmacodynamics (PD) addresses biological responses in tissues or organs not explained by kinetics. Risk assessment currently addresses biological responses in adults (occupational setting) or in mature animals, with the exception of developmental toxicity studies. However, there may be differences in pharmacodynamics as well as pharmacokinetics with age of the animal. Such pharmacodynamic differences can be seen by qualitatively different responses in young and older animals or between children and adults (e.g., for lead or methyl mercury poisoning). Toxic endpoints of special concern with respect to childhood exposures because of potentially different toxicodynamics in children and adults include cancer, asthma, endocrine effects, neurotoxicity and neurodevelopmental effects, immunotoxicity, and developmental and reproductive effects resulting from prenatal and postnatal exposures. Whenever possible, experimental evidence obtained in young animals (or children) should be used to help account for pharmacodynamic differences with age. For example:

- In assessing cancer risks, exposure data involving young animals should be used when available (e.g., vinyl chloride).
- Time to tumor, dose rate and stop exposure data in young animals should also be incorporated into assessments of cancer risk where possible because early-in-life exposure to carcinogens may impact risk due to differing pharmacodynamics between children and adults that influences response to toxicants.
- The possibility of applying a biological dose-response model (e.g., Two-Stage Clonal Expansion Model) should be explored to evaluate the potential impact of excessive early life exposures (e.g., dioxin via breast milk) and concomitant pharmacodynamic differences that impact response to carcinogens.

D. Conclusions

There are a number of physiological and behavioral factors that influence response to toxicants. These factors differ between children and adults, resulting in differences in exposure and response to toxicants present in air, food, water, and soil. Both behavioral and physiological factors influence exposure at each portal of entry. Pharmacokinetic differences between children and adults include factors that influence absorption, distribution, metabolism, and excretion of toxicants. In addition, infants and children may have qualitatively different responses due to different target tissue sensitivities during windows of susceptibility in the developmental process.

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Exhibit 2.0-E

State of California – The Resources Agenc(Letter 97)
DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
601 Locust Street
Redding, CA 96001
(530) 225-2300

SCHWARZENEGGER, Governor

November 29, 2005

Mr. Bill Walker, Senior Planner
Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, California 96001

Dear Mr. Walker:

Notice of Preparation (NOP) of a Draft Environmental Impact Report
Shasta Ranch Project Mining and Reclamation Plan
Use Permit 05-010 and Reclamation Plan 05-001

The California Department of Fish and Game (DFG) has reviewed the subject document. The proposed use permit and reclamation plan are for a 30-year gravel extraction operation which will occupy 268 acres. Approximately 3.43 million cubic yards of overburden and 6.06 million cubic yards of soil and gravel will be removed from the site. Upon reclamation, the document states the land will be returned to active agricultural use or revegetated to create habitat compatible with the adjacent riparian area and surrounding habitat. Pursuant to Section 15082(b) of the California Environmental Quality Act (CEQA), DFG offers the following comments on the project in our role as a trustee agency.

The DFG agrees with Shasta County's (County) determination that the proposed project may have a significant effect on the environment and that an environmental impact report (EIR) should be prepared. Also, information provided in the initial study, combined with our knowledge of the site, indicates this project will adversely affect wildlife resources as defined in Section 711.2 of the Fish and Game Code through impacts to riparian and upland habitat and wetlands. This project should not be considered de minimis with regard to its impact on fish and wildlife resources.

In reviewing the project's initial study we found most of the concerns raised in our comment letter dated May 26, 2005 (see attached), will be analyzed in the EIR. Under "Mitigation/Monitoring" in the "Biological Section" of the initial study (Page 9) the document states mitigation and monitoring requirement "Will be determined by additional data, analysis, and recommendations." If we may provide assistance in

Conserving California's Wildlife Since 1870

Mr. Bill Walker
November 29, 2005
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reviewing biological data or in developing appropriate mitigation measures, please let us know.

In the Agricultural Lands Section of the Shasta County General Plan (Section 6.1) under Section 6.1.4 Policies, policy AG-g A. states "Mineral extraction or mining on lands in the vicinity of a significant waterway where the County has adopted a stream corridor delineation upon consultation with the Department of Fish and Game and subject to all of the following performance standards." The second bullet states "The end result of the land use change is to enhance fish and wildlife habitat within the delineated stream corridor." As stated in our May 26, 2005, letter, under the proposed reclamation plan the Phase 2 and Phase 3 extraction pits will be left as two large deep ponds with vegetation around the edges. If the project is approved, the DFG requests that the Phase 2 and Phase 3 sites be reclaimed in such a way that the majority of the extraction area provides habitat for riparian and wetland dependent species.

Thank you for the opportunity to again comment on this project. If you have any questions regarding these comments, please contact Environmental Scientist Bob Williams at the letterhead address or telephone (530) 225-2365.

Sincerely,

for DONALD B. KOCH
Regional Manager

Enclosure

cc: Mr. Bob Williams
Department of Fish and Game
601 Locust Street
Redding, CA 96001

ec: Messrs. Craig Martz and Harry Rectenwald
Department of Fish and Game
601 Locust Street
Redding, CA 96001

State of California – The Resources Agency
ARNOLD SCHWARZENEGGER, Governor
DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
601 Locust Street
Redding, CA 96001
(530) 225-2300

May 26, 2005

Mr. Bill Walker, Senior Planner
Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, California 96001

Dear Mr. Walker:

Shasta Ranch Project Mining and Reclamation Plan
Use Permit 05-010 and Reclamation Plan 05-001

The California Department of Fish and Game (DFG) has reviewed the subject document. The proposed use permit and reclamation plan are for a 30-year gravel extraction operation which will occupy 268 acres. Approximately 3.43 million cubic yards of overburden and 6.06 million cubic yards of soil and gravel will be removed from the site. Upon reclamation, the document states the land will be returned to active agricultural use or revegetated to create habitat compatible with the adjacent riparian area and surrounding habitat. The DFG offers the following comments on the project in our role as a trustee agency under the California Environmental Quality Act (CEQA).

Under Section 2.3 General Site Characteristics (Page 4) the document states "The project site is located in an alluvial floodplain that was once the original channel for the Sacramento River." DFG has a map (enclosed) which indicates that a portion of the property proposed for gravel mining was occupied by the Sacramento River channel at the time California became the 31st state of the Union (Sheet 15 of 23 in Appendix A of the 1980 Upper Sacramento River Spawning Gravel Study by the State of California Resources Agency). It is our understanding that this area was therefore included as land that was deeded to the State by the U.S. Government and remains the property of the State even though the river channel has shifted from its 1850 location. The project proponent must contact the State Lands Commission to determine the boundary of the land owned by the State to ensure this area is not included as part of the project site.

Under Fish and Game Code Section 1505 the DFG has the right to manage, control, and protect such portions of the spawning areas between obligation Keswick and Squaw Hill Bridge, near Vina, which occupy State-owned lands to the extent necessary to protect fishlife in these areas. If the gravel pit captures the active river channel, it will capture salmon spawning gravel that is in the bed load of the river making it unavailable for spawning fish. Over the past several years spawning gravel has been added to the river by the Bureau of Reclamation at great expense to the public.

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Mr. Bill Walker
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With the proposed removal of gravel near the river, the DFG is concerned with the potential for bank erosion and flood channel instability during flood events that may result in the capture and redirection of the river into the gravel pit and property downstream. This type of event has occurred in the past at gravel operations adjacent to the river. Project plans call for construction of levees to prevent flood waters from entering the mining pit. The document states "The levee for Phase 1 would be designed to prevent flood waters from a 25-year flood from entering the mining pit." For Phase 2 and 3, permanent levees will be "constructed from overburden to prevent flood waters from entering the mining pits and ponds from a 50-year flood event." The project also proposes (Page 44) "All mining operations and associated activities shall maintain a 100-foot separation from the edge of riparian habitat or the top of bank, whichever is greater." Under Section 6.3.4 of the County's 1998 General Plan Update, Policy MR-I states "Mining may be permitted in the floodplain area of a river or stream provided that a plan is prepared by a qualified professional including data and analysis to show that the proposed mining in the floodplain will not alter the course of the adjacent river or stream, will not cause river or stream to flow through the mined area, and will not significantly change the boundaries of the floodplain. Pursuant to this policy, the appropriate distance of the project from the Sacramento River and the height of the levees should be determined by engineering studies that develop specifications to protect against levee or bank failure and inundation of the gravel extraction area during flood events up to and including 100-year events. The Department of Water Resources should be contacted for assistance with this critical element of the proposed project.

As stated in the document, the Sacramento River provides habitat for numerous special status species including State and federally listed winter-run and spring-run Chinook salmon (*Oncorhynchus tshawytscha*) and federally listed steelhead (*Oncorhynchus mykiss*). Osprey (*Pandion haliaetus*), a State species of special concern, are also known to nest in the vicinity of the project. The document states (Page 22) that "Reconnaissance-level biological surveys, wetland delineation, and vegetation mapping have been conducted for the entire project site. Database searches and reviews of various state and federal special-status species lists in support of these activities revealed 15 special-status plant species and 34 special-status wildlife species with the highest likelihood to occur within the project area." According to tables 2 and 3 of the August 2004 Biological Characterization Report prepared for the project by North State Resources, Inc. (Appendix A, pages 7-10), 5 of the 15 special-status plant species and 10 of the 34 special-status wildlife species are State and/or federally listed or candidate species. Protocol surveys will need to be performed in order to determine what sensitive plant or animal species are present on the project site. Mitigation may then be developed to avoid and/or minimize impacts or to mitigate impact on and/or off-site. At that time, a determination can also be made as to whether any of the project's activities will result in unmitigated significant biological impacts.

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If the project has the potential to take a State listed species, the project proponent will be required to obtain an incidental take permit pursuant to State Fish and Game Code Section 2081. For species which are jointly listed by the Federal and State governments an alternative to obtaining a State incidental take permit would be for the project proponent to obtain a Federal biological opinion and incidental take permit or statement and then request a consistency determination from the DFG under Fish and Game Code Section 2080.1. Please note that for the DFG to find a Federal incidental take permit or statement consistent with State law, the biological opinion and take statement must include measures to both minimize and fully mitigate the impacts resulting from the take of the species.

It is DFG's policy to ensure that proposed projects will result in no net loss of wetland habitat values or acreage. The document states "approximately 121.6 acres of jurisdictional waters occur within the project area in the form of seasonal wet meadows, intermittent pools, fresh emergent wetlands, riparian wetlands, fresh emergent/riparian wetlands, agricultural ditch wetlands, and riverine and agricultural ditch waters" (Page 43). To avoid impacting these areas, the project states "Construction avoidance measures and the implementation of setbacks will be necessary to protect sensitive or jurisdictional habitats and special-status wildlife species that occur or potentially occur within these areas" (Page 44). As stated above, the project requires a 100-foot separation from the edge of riparian habitat or the top of bank, whichever is greater. It also states "A 100-foot separation from fresh emergent wetlands and riparian habitat is necessary to preserve the attributes of these habitats and buffer the potential impacts of adjacent activities." It is not clear from these statements whether the project proposes to include this same 100-foot protection zone between the project activities and all wetlands. Adequate buffer distances to protect wetlands from both direct and indirect project impacts should be clearly stated. Also, if the project includes plans to place fill material into a wetland, the U.S. Army Corps of Engineers and the California Central Valley Regional Water Quality Control Board will need to be contacted and all appropriate permits obtained prior to this action.

The document states that surface water flows from the mining operations would be prevented from discharging into the river (Page 41). The document also states that the Phase 1 Environmental Site Assessment found "several Recognized Environmental Conditions at the ranch site" (Page 28). It is critical that all water generated by the project which contains sediment and/or hazardous materials be prevented from reaching the river. Fish and Game Code Section 5650 states that it is unlawful to deposit, permit to pass into, or place where it can pass into the waters of the State, any substance or material deleterious to fish, plant, or bird life. Sediment transported into the river may cover potential spawning gravel and entomb aquatic invertebrates. Depending on the time of year, it may also result in take of listed species by entombing early salmon and steelhead life stages.

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Under the proposed reclamation plan, upon completion of the Phase 1 the gravel extraction pit will be returned to its original elevation and used for agriculture. It is not clear from the document the depth or width of the Phase 2 and Phase 3 extraction pits but it appears the result of restoration will be two large deep ponds with vegetation around the edges. If the project is approved the DFG requests that the Phase 2 and Phase 3 sites be reclaimed in such a way as to provide habitat for riparian and wetland dependent species. We would welcome an opportunity to work with the applicant and the County on a more appropriate reclamation design.

The DFG is also concerned that *Hydrilla verticillata* may be introduced into the resulting ponds. Due to the project's close proximity to the river, the potential would then exist for it to be transported to the river. The project proponent should describe the steps which will be taken to prevent this exotic species from becoming established in the ponds.

From the project description and our knowledge of the site, the project has the potential to adversely affect wildlife resources as defined in Section 711.2 of the Fish and Game Code through removal of vegetation. It therefore should not be considered de minimis with regard to its impact on fish and wildlife resources.

Thank you for the opportunity to comment on this project. If you have any questions regarding these comments, please contact Environmental Scientist Bob Williams at the letterhead address or telephone (530) 225-2365.

Sincerely,

for **DONALD B. KOCH**
Regional Manager

Enclosure

cc: Mr. Dan McMannus
Department of Water Resources
5440 Main Street
Red Bluff, California 96080

Mr. Bob Williams
Department of Fish and Game
601 Locust Street
Redding, California 96001

ec: Messrs. Craig Martz and Harry Rectenwald
Department of Fish and Game
601 Locust Street
Redding, California 96001

3.0 Revisions to the Draft EIR

3.1. INTRODUCTION

This section includes minor edits to the Draft EIR. These modifications resulted in response to comments received during the Draft EIR public review period.

Revisions herein do not result in new significant environmental impacts, do not constitute significant new information, nor do they alter the conclusions of the environmental analysis. Changes are provided in revision marks (*underline and italicized* for new text and ~~strike out~~ for deleted text).

3.2. CHANGES AND EDITS TO THE DRAFT EIR

Table of Contents

The Table of Contents for the Draft EIR has been corrected. The page numbers were added to the List of Tables and List of Figures in Exhibit 3.0-B.

1.0 Introduction

Page 1.0-7, changes were made to the Public Notice/ Public Review section as follows:

Public comment on the DEIR will be accepted both in written form and orally at a public hearing. ~~Prior to consideration of the proposed project, the County will conduct a hearing on the DEIR during the 45 day public review period.~~ Notice of the time and location of a public hearing will be published in the Notice of Availability. At the time of consideration for the Conditional Use Permit and the Reclamation Plan the County will conduct a public hearing as required by Government Code Section 65090.

2.0 Executive Summary

Page 2.0-3, changes were required to Table 2.0-1, Summary of Impacts and Mitigation Measures, to respond to modifications in mitigation measures listed below.

3.0 Project Description

Page 3.0-10, the section titled, "Processing Plant Operations and Transport" has been split into two separate sections, "Processing Plant Operations and Traffic and Distribution" to provide more clarification and consistency. The last paragraph includes the following revisions:

> The number of hours is based upon a truck-hauling rate of 150-300 tons per hour at ~~60~~ **64**-120 truck trips per day for 250 to 300 days per year. *The estimated annual production of material processed would be 400,000 tons. The estimated daily production would range from 1,067 to 2,000 cubic yards.*

Page 3.0-12, **Figure 3.0-6**, entitled "Phase 1 Operations Plan," the levee profile and details have been updated to reflect the changes as requested by the Office of Mine Reclamation and the California Department of Fish and Game. The amended figure is included under Exhibit 3.0-A Revised Figures to the Draft EIR.

Page 3.0-13, **Figure 3.0-7,** entitled **"**Phase 2 Operations Plan," the levee profile and details have been replaced to reflect the changes as requested by the California Department of Fish and

Game and the Office of Mine Reclamation. The amended figure is included under Exhibit 3.0-A Revised Figures to the Draft EIR.

Page 3.0-14, **Figure 3.0-8** entitled "Phase 3 Operations Plan," the levee profile and details have been replaced to reflect the changes as requested by the California Department of Fish and Game and the Office of Mine Reclamation. The amended figure is included under Exhibit 3.0-A Revised Figures to the Draft EIR.

Page 3.0-15, the following changes have been incorporated to clarify the distribution of traffic:

Traffic and Distribution

~~The onsite haul roads will be paved to reduce fugitive dust emissions from onsite and offsite aggregate transport.~~ The project would generate an average of 64 ~~60 truckloads with a maximum of 120 roundtrip per day.~~ *daily inbound and 64 outbound truck trips (a total of 128 one-way trips) with a potential maximum of 120 truck trips (a total of 240 one-way trips). The maximum number 120 truck trips is a worst-case scenario representing peak conditions for specific projects that warrant immediate need (i.e., highway construction). The average truck trips are based on information provided by the applicant. The site access roads between Balls Ferry Road and the processing area will be paved to reduce fugitive dust emissions generated by vehicle traffic. See Photo 3.0-3 for existing conditions of the proposed site access road.* Each truckload estimates 25 tons or 17 cubic yards. ~~See Photo 3.0-3 for existing conditions of the proposed access road. The estimated annual production of material processed would be 400,000 tons. The estimated daily production would range from 1,067 to 2,000 cubic yards.~~

For more information pertaining to traffic routes described above see **Section 4.3, Transportation and Circulation**.

Based on the average number of 64 truck trips estimated to leave the site per day Table 3.0-4 provides a distribution of the projected truck traffic on the following routes.

TABLE 3.0-4
DISTRIBUTION OF TRUCK TRAFFIC

Percent	*Destination*	*Estimated Number*
32	*I-5 North*	*20*
25	*273 North*	*17*
13	*Olinda Road*	*8*
25	*Bowman Road to Draper Road*	*16*
5	*I-5 South*	*3*

Page 3.0-19, **Figure 3.0-11** was revised to include Phases 1, 2, and 3 final reclamation cross-sections which eliminated the need for Figure 3.0-12 in the Draft EIR. Based on the revisions, Figure 17 of the Shasta Ranch Mining and Reclamation Plan was also removed.

Page 3.0-20, there were two species incorrectly identified in the plant palette in Figure 3.0-11 and Figure 3.0-12 of the Draft EIR including Figure 17 and Figure 18 of the Shasta Ranch Mining and Reclamation Plan. This information is noted and has been corrected. However, the changes are no longer reflected in the figures but have been included in Tables 10, 11 and 12 of the amended Shasta Ranch Mining and Reclamation Plan (**Appendix 3.0-3)**.

4.2 Land Use

Page 4.2-3, the following revisions were made for clarification under the Agricultural Resources section paragraph five last sentence:

> According to the *NRCS* ~~Based on this~~ soil survey, ~~the soils found on site are considered to be "farmland of statewide importance", or "prime farmland" if irrigated.~~ t*he total project area, (660 acres), has a total of 406.7 acres of Prime Farmland, 49.7 acres Farmland of Statewide Importance, and 50.9 acres of Unique Farmland.* ***See Figure 4.2-1.*** *A total of 162.8 acres of Prime Agricultural Farmland, 16.2 acres of Farmlands of Statewide Importance, and 12.3 acres of Unique farmland are located within the 268 acres the project area.*

Page 4.2-21 **Impact 4.2.1** was revised to clarify the total loss of agricultural lands conversion.

> **Impact 4.2.1** The proposed project would result in a conversion of *approximately 268 acres* of agricultural land *which includes 162.8 acres of Prime Farmland, 16.2 acres of Farmland of Statewide Importance, and 12.3 acres of Unique Farmland* to non-agricultural land uses, ~~and would convert prime farmland, farmland of statewide importance, and unique farmland on the project site.~~ This impact is considered a ***significant and unavoidable impact.*** **(SU)**

Page 4.2-22, Paragraph two was revised as shown below:

> The proposed mining project will disturb soils and areas that are designated prime farmland, farmland of statewide importance and unique farmland according to the Department of Conservation Mapping and Monitoring Program. T*he total project area, (660 acres), has a total of 406.7 acres of Prime Farmland, 49.7 acres Farmland of Statewide Importance, and 50.9 acres of Unique Farmland. The total disturbed project area including Phases 1, 2, and 3 represents 268 acres. See* ***Figure 4.2-4*** *provided in Section 3.0-A, Revised Figures of the Final EIR.* ***Table 4.2-4*** *below illustrates the total acreage of agricultural soils that may be converted during each phase of the project.*

TABLE 4.2-4

TOTAL CONVERSION OF AGRICULTURAL LANDS

Agricultural Soils Classifications	Phase 1 (acres)	Phase 2 (acres)	Phase 3 (acres)	Total (acres)
Prime Farmland (P)	22.2	92.8	47.8	**162.8**
Farmland of Statewide Importance (S)	7.2	9	0	**16.2**
Unique Farmland (U)	0	12.3	0	**12.3**

Source: NRCS Data Mapping and Monitoring Program and Pacific Municipal Consultants.

Based on ***Table 4.2-4*** *and the overall project area of 660 acres, the total loss of Prime Farmland is 162.8 acres (40%), Farmland of Statewide Importance 16.2 acres (33%), and 12.3 acres (24%) of Unique Farmland.* ~~portions of~~ *Note the majority of the Prime Farmland exists within the* Phase 2 ~~project area~~ and ~~a majority of the~~ Phase 3 project areas ~~are classified as prime farmland~~. ~~There will be a loss of agricultural lands due to the extraction of aggregate material. As noted above,~~ ~~After more~~ ~~detailed~~ Site studies *conducted by Geomatrix and Kleinfelder Inc. in 2004 indicated the NRCS mapping data may be misrepresented in Phase 1 as,* the existing conditions are fallow land covered with natural vegetation, shallow topsoil, and a high aggregate content (cobblestone, gravel, etc.) *concluding the* Phase 1 area does not appear to have special farmland soil characteristics. ~~as the existing conditions are fallow land covered with natural vegetation, shallow topsoil, and a high aggregate content (cobblestone, gravel, etc.).~~

The project applicant has stated that Phase 3 may never be mined based on the timing of the Use Permit and the availability of aggregate in Phases 1 and 2. If Phase 3 is not mined and Phase 1 was inaccurately misrepresented approximately 70 acres of Prime Farmland and 7.2 acres of Farmland of Statewide Importance would not be converted. This would retain approximately 43% Prime Farmland and 44% Farmland of Statewide Importance.

In accordance with the project description, ~~Although~~ the conversion of agricultural land would alter existing conditions, *however* the project would not result in a total loss of agricultural soils.

Figure 4.2-4, titled "Agricultural Soils Map with Project Overlay" was provided to illustrate where the Agricultural Soils existed in relation to the project phases.

4.3 Traffic and Circulation

Changes were required and are noted herein.

Page 4.3-34, the last sentence of paragraph two was modified in Mitigation Measure 4.3.1.

MM 4.3.1 The identified roadway improvements shall meet the Shasta County Public Works roadway development standards as directed by the traffic engineer to ensure that vehicles can be comfortably accommodated on the roadway system with shoulders providing areas for vehicle turn-out. ~~and lane widths adequate such that two vehicles can pass each other in opposite directions~~, ~~etc.~~

Page 4.3-35, the following revisions were made to the conclusion of Mitigation Measure 4.3.1

MM 4.3.1 would ~~require that roadways providing access to the proposed project be brought up to current County Design Standards as specified for road width and shoulders.~~ not include the acquisition or condemnation of road right-of-way nor road improvements which would have the potential for significant adverse environmental effects. As mitigated, this impact is reduced to a ***less than significant*** level.

Page 4.3-40, the following reference was added:

Anderson Union High School District Superintendent, Randy Palomino. Phone conversation December 14, 2006 with Dori Blackburn of PMC.

4.4 Air Quality

Changes were required and are noted herein.

On page 4.4-24, paragraph one under Impact 4.4-2 the normal hours of operation for the proposed project was incorrectly stated between the hours of 7 a.m. to 4 p.m and has been corrected to read, *between the hours of 7 a.m. to 6 p.m.*

4.5 Biological Resources

Page 4.5-36, Figure 4.5-3 "Waters of the United States" has been updated and included under Exhibit 3.0-A Revised Figures to the Draft EIR.

Page 4.5-45, Figure 4.5-4, "Impacts on Waters of the United States" is provided in Exhibit 3.0-A Revised Figures and was unintentionally omitted from the Draft EIR.

Page 4.5-46, Impact 4.5-4, the discussion has been modified to include additional information on the size of the buffer zones implemented to protect wetlands.

> Construction and operation of the project could result in indirect impacts to waters of the United States within and adjacent to the project site. Project indirect effects could result from modification of local hydrology and degradation of water quality through operation and construction activities. As requested by the California Department of Fish and Game letter dated May 2005, *the levees will be designed to maintain a minimum 50-foot buffer for all wetlands, with a 100-foot buffer provided for approximately 85 percent of all the wetland features. These buffer areas will remain vegetated and provide for adequate filtering of potential contaminants.*

Page 4.5-47, Mitigation Measure 4.5.5 was revised so preconstruction surveys for fox sedge would be repeated on a yearly basis so that exclusionary fencing can be erected based on current and newly identified locations of fox sedge:

> **MM 4.5.5** *Preconstruction surveys for fox sedge shall be conducted, prior to construction of each phase. The survey shall be conducted the same year that construction is anticipated.* If special-status plant species cannot be avoided during construction, the CDFG shall be contacted immediately and determine the appropriate salvage and relocation measures.

In response, the referenced Mitigation Measures have been revised to assign responsibility for enforcement/monitoring to Shasta County and Mitigation Measure 4.5.6 has been revised as indicated below.

Pages 4.5-47 through 4.5-61 includes Mitigation Measures 4.5.5, 4.5.6 (a, b, and c), 4.5.11, 4.5.12, 4.5.13, 4.5.14, 4.5.15 (a)(b), and 4.5.19 (a) which have been revised to assign responsibility for enforcement/monitoring to Shasta County. In addition, Mitigation Measure 4.5.6 (c) has been revised as indicated below.

> **MM 4.5.5** *Enforcement/Monitoring*: *Shasta County* ~~California Department of Fish and Game~~
>
> **MM 4.5.6(a)** *Enforcement/Monitoring: Shasta County* ~~California Department of Fish and Game and National Marine Fisheries Service~~.

MM 4.5.6(b) *Enforcement/Monitoring:* *Shasta County* ~~California Department of Fish and Game and Game and National Marine Fisheries Service~~.

MM 4.5.6(c) Grading of the restored Phase 1 quarry shall avoid creating pits or swales and insure that slopes and contours drain to the Sacramento River in order to prevent stranding of fish species during high flow events. *Further, mitigation measure MM 4.9-3 (a-c) shall be implemented to reduce the potential for impacts to spawning gravels and aquatic invertebrates as a result of erosion and sedimentation.*

Timing/Implementation: During reclamation activities.

Enforcement/Monitoring: *Shasta County* ~~California Department of Fish and Game~~ and National Marine Fisheries Service.

MM 4.5.11 *Enforcement/Monitoring: Shasta County* ~~*California Department of Fish and Game*~~

MM 4.5.12 *Enforcement/Monitoring: Shasta County* ~~*California Department of Fish and Game*~~

MM 4.5.13 *Enforcement/Monitoring: Shasta County* ~~*California Department of Fish and Game*~~

MM 4.5.14 *Enforcement/Monitoring: Shasta County* ~~*California Department of Fish and Game*~~

MM 4.5.15(a) *Enforcement/Monitoring: Shasta County* ~~*California Department of Fish and Game*~~

MM 4.5.15(b) *Enforcement/Monitoring: Shasta County* ~~*California Department of Fish and Game*~~

MM 4.5.19(a) *Enforcement/Monitoring:* *Shasta County* ~~California Department of Fish and Game~~

Page 4.5-48, under **Impact 4.5.6**, second paragraph, the 25-year fish exclusion levee was omitted and revised in accordance the Department of Fish and Game and Office of Mine Reclamation.

> The proposed Shasta Ranch Mining and Reclamation Plan includes fish exclusion levees to prevent river channel migration, gravel pit entrainment, and fish stranding in gravel pits at river flows ~~up to 25 year flow events (Phase 1) and~~ up to 50-year flow events (Phases 1, 2 and 3) for perpetuity.

In addition, **MM 4.5.6(a)**: the levee designs were revised in accordance the Department of Fish and Game and Office of Mine Reclamation.

MM 4.5.6(a): In the event that flood events exceed the ~~25-year (Phase 1) and~~ 50-year (Phases *1*, 2 and 3) design flood capacities of the proposed quarry levees, a qualified fishery biologist shall be retained to conduct site surveys to quantify the extent of anadromous fish stranding that may occur.

Page 4.5-53, the following mitigation measures have been added under Impact 4.5-10 to address habitat assessment for the red-legged frog.

Mitigation Measures

MM 4.5.10 A California red-legged frog habitat assessment shall be conducted in accordance with guidelines provided by the USFWS (U.S. Fish and Wildlife Service 2005). This assessment shall be submitted to the USFWS who will make a determination as to whether protocol-level surveys will be required. If surveys are required by the USFWS, the applicant shall retain a qualified biologist to complete red-legged frog surveys per the USFWS protocol (U.S. Fish and Wildlife Service 2005). If it is determined that red-legged frogs may occur on the site, formal Section 10 consultation with the USFWS will be required *to determine the mitigation measures that will be required. These measures will include, but are not limited to, the following:*

1. *Only USFWS-approved biologists will participate in activities associated with the capture, handling, and monitoring of California red-legged frogs.*
2. *Ground disturbance will not begin until written approval is received from the USFWS that the biologist is qualified to conduct work.*
3. *A USFWS-approved biologist will survey the project site 48 hours before the onset of work activities. If any life stage of the California red-legged frog is found and these individuals are likely to be killed or injured by work activities, the approved biologist will be allowed sufficient time to move them from the site before work activities begin. The USFWS-approved biologist will relocate the California red-legged frogs the shortest distance possible to a location that contains suitable habitat and will not be affected by activities associated with the proposed project.*
4. *Before any activities begin, a USFWS-approved biologist will conduct a training session for all construction personnel. At a minimum, the training will include a description of the California red-legged frog and its habitat, the specific measures that are being implemented to conserve the California red-legged frog, and the boundaries within which the project may be accomplished.*
5. *Compensatory mitigation for directly impacted California red-legged frog habitat will be provided at a ratio of not less than 1:1.*

Timing/Implementation: Prior to initiating construction activities for each phase.

Enforcement/Monitoring: *Shasta County* ~~U.S. Fish and Wildlife Service~~

Implementation of the above mitigation measures would reduce impacts to *a* ***less-than-significant level.*** **(LS)**

4.6 Cultural Resources

Changes were required and are noted herein.

Page 4.6-11, Mitigation Measure 4.6.2 was split into two mitigation measures, 4.6.2(a) and (b). Mitigation Measure 4.6.2(a) was added for clarification:

~~MM 4.6.2~~

MM 4.6.2(a) *Ground disturbing project activity shall not be conducted within boundaries of site CA-SHA-779. Site preservation (as-is) should be retained through impact avoidance. To ensure site preservation the boundaries of the site and the site area should be flagged by an archaeologist with a 30 ft. buffer accurately located through formal survey. Once the area is flagged and mapped then the area should be designated as an impact avoidance zone on project and county development maps.*

MM 4.6.2(b) Ground disturbing project activity should not be conducted within boundaries of sites CA-SHA-779. If ground disturbing activity within boundaries of this site cannot be avoided, one of the following options shall be implemented:

1. An archaeologist meeting the Secretary of Interior's Professional Qualifications Standards in prehistoric archaeology shall be retained to excavate the sites to determine their eligibility for inclusion on the NRHP and the CRHR and recover the data potential of the sites, if appropriate; or

2. An archaeologist meeting the Secretary of Interior's Professional Qualifications Standards in prehistoric archaeology shall be retained to: prepare an inadvertent discovery plan; monitor any ground disturbing activities within site boundaries; and update the records for the sites; or

3. A representative of the Wintu Tribe shall be on-site to monitor all ground disturbing activity within the boundaries of CA-SHA-779. If significant cultural resources are_identified during monitoring the protocols presented in the inadvertent discovery plan shall be implemented.

Timing/Implementation: As a condition of project approval, and implemented prior to and during grading, mining and/or construction activities.

Enforcement/Monitoring: Shasta County Department of Resource Management, Planning Division.

Implementation of ~~MM 4.6.2~~ MM 4.6.2(a)(b) would reduce the impacts to a less than significant impact. (LS)

MM 4.6.2(b)

4.7 Noise

Changes were required and are noted herein.

Page 4.7-19, the proposed mining and operational period was modified by one hour in response to the comments received on the Draft EIR. This modification is consistent with the County's noise ordinance.

MM 4.7.2(b) Mining and processing operations shall be limited to the hours between *7 a.m. and ~~7~~* ***6*** *p.m.* Monday through Saturday.

Page 4.7-20, last paragraph, third sentence has been modified to reflect the operational hours as noted above in MM 4.7.2(b).

Pages 4.7-26, 4.7-29, and 4.7-30, first sentence under the section, "Mitigation Measures" the operational time period was modified to reflect the change as noted above in **MM 4.7.2(b).**

Page 4.7-32, **Mitigation Measure 4.7.6** was omitted from the first sentence under Mitigation Measures as shown below.

See ~~MM 4.7-6 and~~ MM 4.7-2(b).

4.8 Geology and Soils

Changes were required and are noted herein.

Page 4.8-15, under Section 4.8.2 Regulatory Framework, the Shasta Grading Ordinance was omitted. All grading activities associated with mining operations are regulated under the Surface Mining and Reclamation Act (SMARA) and are enforced by the Shasta County Planning Division.

~~**Shasta County Grading Ordinance**~~

~~Shasta County Code Chapter 12.12 sets forth regulations concerning grading, excavating and filling. The County Code prohibits any grading of more than 250 cubic yards or 10,000 square feet of disturbance area without a grading permit from the County. The grading permit must include an approved grading plan provided by the project applicant, and it shall set forth terms and conditions of grading operations that conform to the County's grading standards. The permit also requires the project applicant to provide a permanent erosion plan that must be approved and implemented upon completion of the project. In addition, each permit shall require approval of a plan for ongoing maintenance of erosion control measures for the duration of the project and for three years after completion of the project, unless the project is released earlier by the enforcing officer designated by the County Board of Supervisors.~~

Page 4.8-8, Figure 4.8-4 Aggregate Resource Areas has been edited to include the correct spelling and can be found in Exhibit 3.0-A.

Page 4.8-21, Bullet item 6 is deleted as follows as it is already stated under bullet item 4.

- ~~Levee embankment slopes should be constructed with engineered fill with slopes no steeper than 2-1/2:1 upstream and 2:1 downstream.~~

Pages 4.8-22 through 4.8-27, the following mitigation measures have been revised to assign responsibility for enforcement/ monitoring to Shasta County Planning Division.

MM 4.8.2 *Enforcement/Monitoring: Shasta County Department of Resource Management, ~~Environmental Health Division and~~ Planning Division.*

MM 4.8.3(a) *Enforcement/Monitoring: Shasta County Department of Resource Management, ~~Environmental Health Division and~~ Planning Division.*

MM 4.8.3(b) *Enforcement/Monitoring: Shasta County Department of Resource Management, ~~Environmental Health Division and~~ Planning Division.*

MM 4.8.3(c) *Enforcement/Monitoring: Shasta County Department of Resource Management, ~~Environmental Health Division and~~ Planning Division.*

MM 4.8.3(d) *Enforcement/Monitoring: Shasta County Department of Resource Management, ~~Environmental Health Division and~~ Planning Division.*

MM 4.8.3(e) *Enforcement/Monitoring: Shasta County Department of Resource Management, ~~Environmental Health Division and~~ Planning Division.*

MM 4.8.4 *Enforcement/Monitoring: Shasta County Department of Resource Management, ~~Environmental Health Division and~~ Planning Division.*

Page 4.8-25, under **Mitigation Measure 4.8.3** reference mitigation measure 4.5.3(a) has been corrected as follows: from ~~MM 4.5.3(a)~~ to **MM 4.5.4**.

4.9 Hydrology and Water Quality

Changes were required and are noted herein.

Page 4.9-10 under "Proposed Project" the first paragraph has been modified for consistency with the remainder of the document. In addition modifications were made as requested by the California Department of Fish and Game criteria for the fish exclusion levees.

> These levees are intended to prevent overbank flows of the Sacramento River from causing fish entrapment during selected major storm events as requested by F CDFG. The fish exclusion *levees will be constructed to a height equivalent to the elevation of the 50-year flood in the Sacramento River, plus freeboard.* ~~adjacent to the Phase 1 extraction and reclamation area was originally proposed to be constructed to the elevation of the 25-year flood. The fish exclusion levees adjacent to the Phase 2 and Phase 3 extraction areas were originally proposed to be constructed to the elevation of the 50-year flood. It was eventually decided that all fish exclusion levees would be constructed to the elevation of the 10 year flood.~~

Page 4.9-12, continuation of the last paragraph on Page 4.9-10 was revised as shown below:

> This flood control levee will be constructed to a height that *is equivalent to the elevation of the 100-year flood in the Sacramento River, plus freeboard.* ~~exceeds the elevation of the 100-year flood for the Sacramento River.~~

Page 4.9-12, second paragraph following the first sentence the following reference is amended as:

> (See ~~**Appendix 4.9-2**~~ ***Appendix 4.9-1***)

Following paragraph 5 on page 4.9-12 the Storm Water Pollution Prevention Plan (SWPPP) requirements were provided for clarification. Table 4.9-3, Potential Pollution Sources and Corresponding BMPs, was also added following the discussion below:

> *A Storm Water Pollution Prevention Plan (SWPPP) has been prepared for the proposed project (VESTRA Resources, Inc., 2006) and is included as Appendix 4.9-7. The SWPPP is required under the State Water Resources Control Board General Order No. 97-03-DWQ*

pertaining to industrial activities. The SWPPP identifies and evaluates sources of pollutants associated with the project that may affect the quality of storm water discharges and authorized non-storm water discharges from the facility and identifies Best Management Practices (BMPs) that will be implemented to reduce or prevent pollutants from being introduced to storm water discharges. It provides documentation relevant to compliance with the required utilization of Best Available Technology (BAT), Best Conventional Pollutant Control Technology (BCT) and BMPs to reduce or eliminate storm water pollution from the project. The SWPPP shall be retained on-site and shall be available to the public for review per Section 308(b) of the Clean Water Act. The SWPPP will be updated whenever a change in the facility operations occurs that may significantly affect the discharge of pollutants to surface waters.

Potential pollutions sources, pollutants and proposed BMPs identified in the SWPPP are shown on Table 4.9-3, Potential Pollution Sources and Corresponding BMPs (Table 5-1 in the SWPPP).

In addition, the SWPPP identifies several storm water management controls that will be implemented relating to preventive maintenance, spill prevention and response, material handling and storage, waste handling and recycling, storm water management practices, erosion and sediment control, discharge prohibitions, employee training, inspections, good housekeeping, record keeping and internal reporting, and quality assurance. It also indicates that an emergency response plan will be prepared when the project commences. Requirements for inspections, monitoring, water quality sampling, record keeping, and reporting are also provided in the SWPPP.

TABLE 4.9-3

POTENTIAL POLLUTION SOURCES AND CORRESPONDING BMP'S

AREA	POLLUTANT SOURCE	POLLUTANT	BMP
Equipment Fueling	Spills and leaks during delivery Spill caused by topping off fuel tanks Leaking storage tanks	Fuel, oil, and lubricants	• Designate one area for refueling • Use spill and overflow protection (e.g. spill kits and secondary containment) • Minimize run-on of storm water into the fueling area by diverting storm water drainage through drainage channels • Train employees on proper fueling (do not top off, clean-up, and spill response techniques with dry absorbent countermeasures) • Implement preventative maintenance of equipment including visual inspections twice daily • Aboveground fuel tank with proper secondary containment (double-walled tank or concrete slab with concrete containment wall)
Maintenance Canopy	Spills	Fuel, oil, and lubricants	• Train employees on clean-up and spill response techniques (e.g. spill kits and countermeasures) • Do not store waste oils, solvents, or batteries on-site, remove these materials as necessary
Stockpiles	Rainfall or drainage from	Sediment	• Divert run-on from stockpiles with berms and drainage swales

	wet stockpiles		• *Divert stockpile drainage to rinse-water pond through drainage channels* • *Cover with geotextile mats or plastic* • *Apply plant material based soil binders/ stablilizers*
Roadway	*Track off (mud carried offsite by trucks)*	*Sediment*	• *Divert runoff to excavation pits through drainage channels* • *Use finer/straw rolls and straw mulch.*
	Runoff from roadways	*Sediment*	• *Rock construction entrance (RCE) at all egress pints where trucks/equipment enter paved roads as shown on the attached BMP sheet. The RCE shall be inspected and maintained as necessary to ensure it adequately removes mud from trucks.*
Wetlands and Sensitive Areas	*Storm water runoff*	*Fuel, oil, and lubricants and sediment*	• *Avoid these areas by installing orange construction fence around identified wetlands and streams within 50 feet of a de-vegetated process area* • *Divert runoff with drainage swales or ditches* • *Install silt fences or fiber/ straw rolls upgradient from wetlands or sensitive areas.*

Page 4.9-19, under Impact 4.9-1 after paragraph one, the following information was added to address impacts of surface water quality.

> *Surface water quality associated with discharges to surface waters will predominantly not be impacted by the project as site runoff will be directed internally to below grade areas. The remaining sources of potential storm water quality pollution are limited to portions of access roads and dust and particulate generating activities. A Stormwater Pollution Prevention Plan (SWPPP) has been prepared for the proposed project (VESTRA Resources, Inc., 2006) and addresses measures to be taken to further prevent impacts of pollutants being introduced to storm water discharges. The impact of the project on surface water quality is considered less than significant.*

Page 4.9-25, Section 4.9.6, Cumulative Impacts and Mitigation paragraph 1 sentence 2 Mitigation Measures 4.6.2, 4.6.3, and 4.6.6 were incorrectly identified. See changes below.

> However, proper implementation of mitigation measures ~~MM 4.6.2, MM 4.6.3, and MM 4.6.6~~ *MM 4.9.2, MM 4.9.3, MM 4.9.6* will effectively provide mitigation against their individual and cumulative impacts.

The following reference was appended to the Draft EIR on page4 4.9-25:

> *Vestra Resources, Inc. April 2006. Storm Water Pollution Prevention Plan (SWPPP), Shasta Ranch Aggregate Mine, WDID No. R5451020225*.

4.10 Aesthetics and Visual Resources

No changes were necessary.

4.11 Public Services and Utilities

Changes were required and are noted herein.

Page 4.11-6, paragraph one has been revised as follows:

> The project does not ~~require~~ *include* an on-site disposal system to accommodate the waste disposal. Wastewater generated from the property will be limited to portable restrooms and gravel washing processes approved by the Regional Water Quality Control Board, Army Corp of Engineers and the Shasta County Environmental Health Division to avoid any violation of water quality control standards. *Pursuant to the Shasta County Environmental Health Division the project will be required to install a permanent restroom facility and on-site sewage disposal system.* The applicant *may also* ~~will~~ provide sewage disposal services through a local service provider to accommodate ~~all~~ on-site waste disposal generated from restrooms *but these facilities will not be permitted as the primary sewage disposal method.*

Page 4.11-15, Impact 4.11.4 has been modified to include an on-site waste disposal system.

> **Impact 4.11.4** The project would generate additional demands for wastewater treatment services and disposal that would exceed the current wastewater treatment systems capacity. This impact is considered ***less than significant***. **(LS)**
>
> The project site does not include any wastewater treatment services that would exceed the current wastewater treatment facilities capacity. *Pursuant to the Shasta County Environmental Health Division (EHD) the project will be required* ~~There will be no on-site sewage disposal system or infrastructure constructed~~ to ~~connect to an existing wastewater treatment facility *for the*~~ *install a permanent restroom facility and an on-site sewage disposal system.* The sewage disposal system must be constructed, under a permit issued by EHD, in an area of suitable soils that meet the applicable setbacks. ~~With the exception of portable restrooms, that will be maintained by a local service provider, the project will be recycling all wastewater on-site in accordance with federal and state regulatory requirements.~~ This impact is considered **less than significant. (LS)**

4.12 Hazards and Hazardous Materials

Page 4.12-11, paragraph three, first sentence was amended to reflect the correct appendices.

> Dioxin TEQ results from the Geomatrix investigation are presented in ~~**Appendix 4.9-2**~~ ***Appendix 4.8-2***.

On page 4.12-11, paragraph five, first sentence was amended to reference the correct appendices.

> The Vestra results are presented in ~~**Appendix 4.9-2**~~, ***Appendix 4.12.-2*** and the results are compared to current regulatory levels in **Table 4.12-2.**

Page 4.12-13, Figures 4.12-2, Figure 4.12-3, and Figure 4.12-4 have been revised for consistency with the amended Shasta Ranch Mining and Reclamation Plan. See Exhibit 3.0-A, Revised Figures in the Final EIR.

Page 4.12-29 and 4.12-30, under **Mitigation Measure 4.12.3** referenced MM 4.5.3(a) has been corrected as follows: from ~~MM 4.5.3(a)~~ to **MM 4.5.4**.

Page 4.12-30, **Mitigation Measures 4.12.3 (b)** has been revised as follows:

MM 4.12.3(b) Bright colored exclusionary fencing shall be placed around the primary sludge trenches (Figure 3.0-3 of the DEIR) and ~~in the setback area~~ between the stockpile trenches and Phase 3 mining pit (Figure 3.0-5 of the DEIR) to ensure the area remains undisturbed.

Page 4.12-30, **Mitigation Measures 4.12.3(a) and (b)** have been revised to assign the correct responsibility for enforcement/monitoring.

MM 4.12.3(a) Enforcement/Monitoring: Shasta County Resource Management Department~~, Environmental Health~~ *Planning* Division.

MM 4.12.3(b) *Enforcement/Monitoring: Shasta County Resource Management Department~~, Environmental Health~~ Planning Division.*

MM 4.12.4 *Enforcement/Monitoring: Shasta ~~County Department of~~ Mosquito and Vector Control District.*

5.0 Alternatives

On page 5.0-4, under **Section 5.4, Restricted Hours of Operation,** the following revisions are made for clarification.

Because of the noise impacts associated with the proposed project, the EIR team considered restricting hours of operation. Mitigation measure 4.3.2(a) ~~effectively~~ requires that the facility restrict offsite haul truck trips between the hours of 7a.m. and 9a.m. because of capacity issues at the Bowman Road/I-5 Interchange. This also reduces conflict with school buses during school days~~. to avoid conflict with school buses.~~

Other mitigation measures considered included the construction of sound walls and sound proofing of homes located along the adversely affected haul routes. However, because construction of sound walls along these roadway segments would interfere with access to adjacent parcels, this measure was considered infeasible. Further restriction of hours was considered to determine if the noise impact would be substantially reduced. This was considered as an alternative because the CNEL noise measurement factors for increased noise sensitivity change depending on the hour of measurement. Based on the analysis, the resulting reduction in noise was negligible. Further, a reduction in hours of operation might result in greater traffic impacts associated with truck traffic as the same amount of material would need to be moved during fewer operating hours. Other than as mitigated in Section 4.7 Noise, further reduction in operating hours was not considered further.

Restricting the hours of operation to reduce the level of truck traffic was also considered by the EIR team. As shown in ***Table 4.3-13, Level of Service-Cumulative Conditions****, the results indicate all of the roadway sections studied will continue to operate at acceptable levels of service under both cumulative and cumulative plus project conditions. Mitigation measure 4.3.1 was provided in response to public safety concerns associated with increased truck traffic on existing roadways. An accident data summary (Table 4.3-5) was also provided by the County that addressed existing conditions and potential safety measures. Based on Section 4.3, Traffic and Circulation the increase in traffic does not warrant any further mitigation than has been provided. However, several comment letters raised the concern*

over haul trucks traveling on the same routes at the same time as school buses on, particularly on foggy days.

In response to public comment, the EIR team contacted Anderson Union High School District Superintendent, Randy Palomino, regarding operational periods for district school buses on foggy day schedules. Mr. Palomino spoke on behalf of all three school districts stating buses generally run between the hours of 6:30 a.m. to 8:45 a.m. during foggy day schedules. The Board of Supervisors could restrict the hours of operation of the quarry on foggy days to avoid any conflict between school buses and haul trucks. As noted in Section 4.3 Transportation and Traffic (page 4.3-38) the operation of the roadways will remain at an acceptable level of service under cumulative conditions. Any modification of the hours of operation would be to address potential safety concerns over the mix of truck and bus traffic during low visibility periods. Unlike mitigation measure 4.3.1, a modification of the hours of operation would affect all roadways, not just the Bowman Road/Interstate 5 intersection. As the weather associated with fog typically restricts paving and road construction, this reduction in hours of operation is a feasible alternative.

6.0 Cumulative

No changes were necessary.

Appendices

Appendix 3.0-3 was amended to incorporate all changes and recommendations by the California Department of Fish and Game and the Office of Mine Reclamation. See Section 3.0 in the Final EIR.

Appendix 4.9-1(G) *"Water Monitoring Summary Report" has been incorporated into Appendix 4.9-1 to provide updated information.*

Appendix 4.9-7 the document was unintentionally left out of the Draft EIR and has been provided in the Final EIR under Section 3.0.

Exhibit 3.0-A- Revised Figures

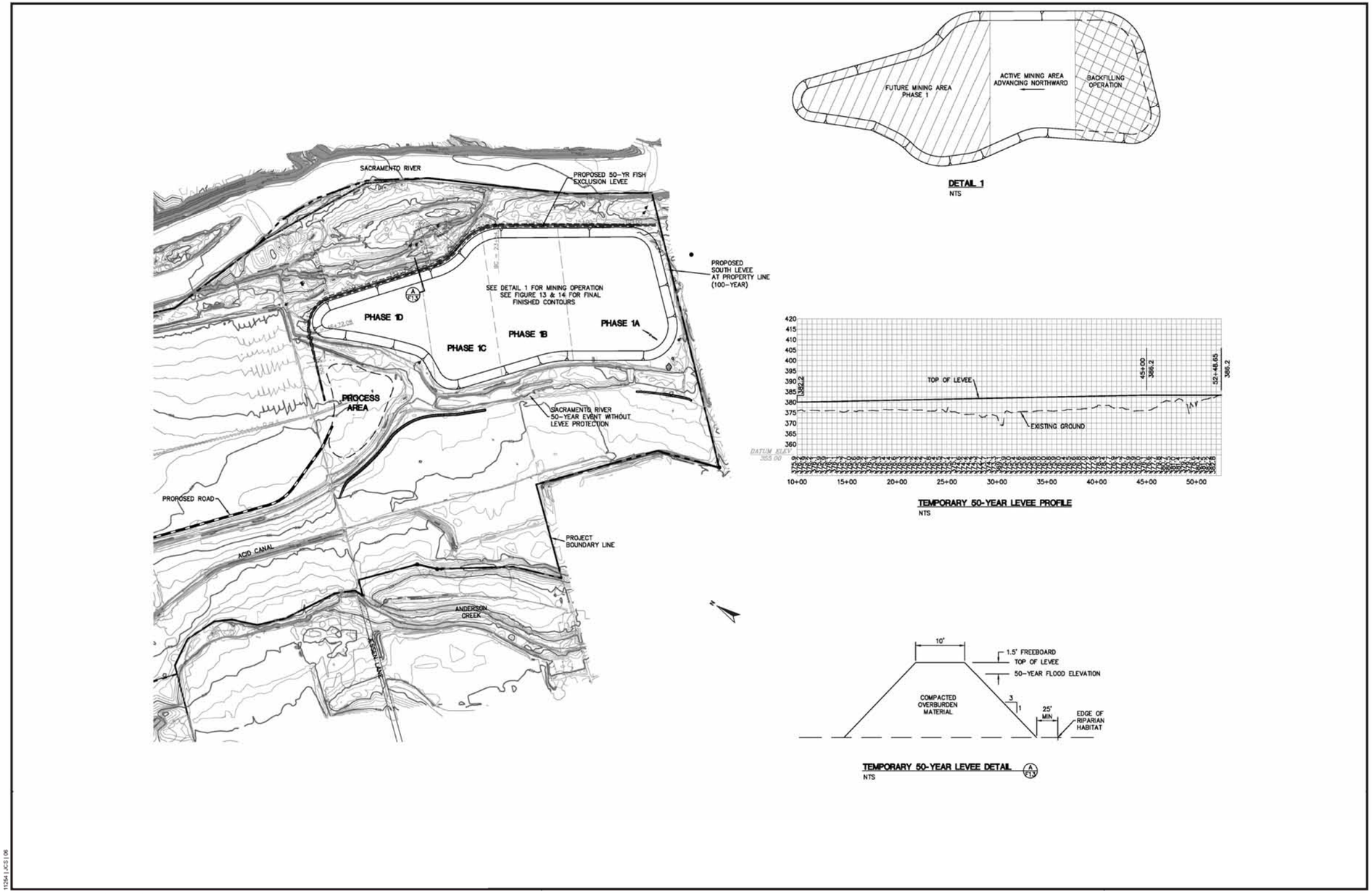
Section 3.0 Project Description: Figures 3.0-6, 3.0-7, 3.0-8, and 3.0-11

Section 4.2: Land Use: Figure 4.2-4

Section 4.5 Biological Resources: Figures 4.5-3 and 4.5-4

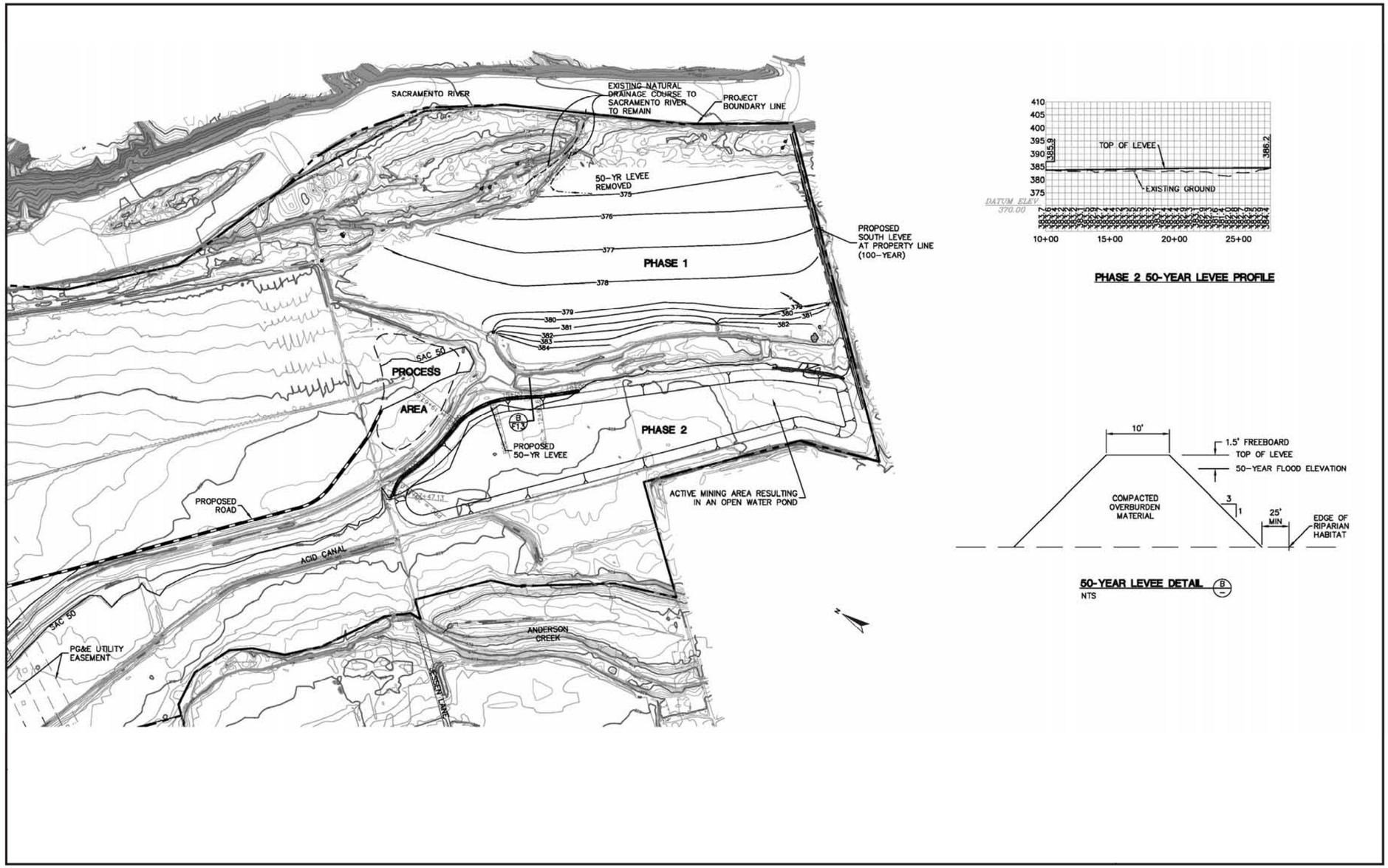
Section 4.8 Geology and Soils: 4.8-4

Section 4.12 Hazards and Hazardous Materials: Figures 4.12-2, 4.12-3, and 4.12-4



Source: Sharrah, Dunlap, Sawyer Inc. and EIP Associates.

Figure 3.0-6
Phase 1 Operations Plan
PMC

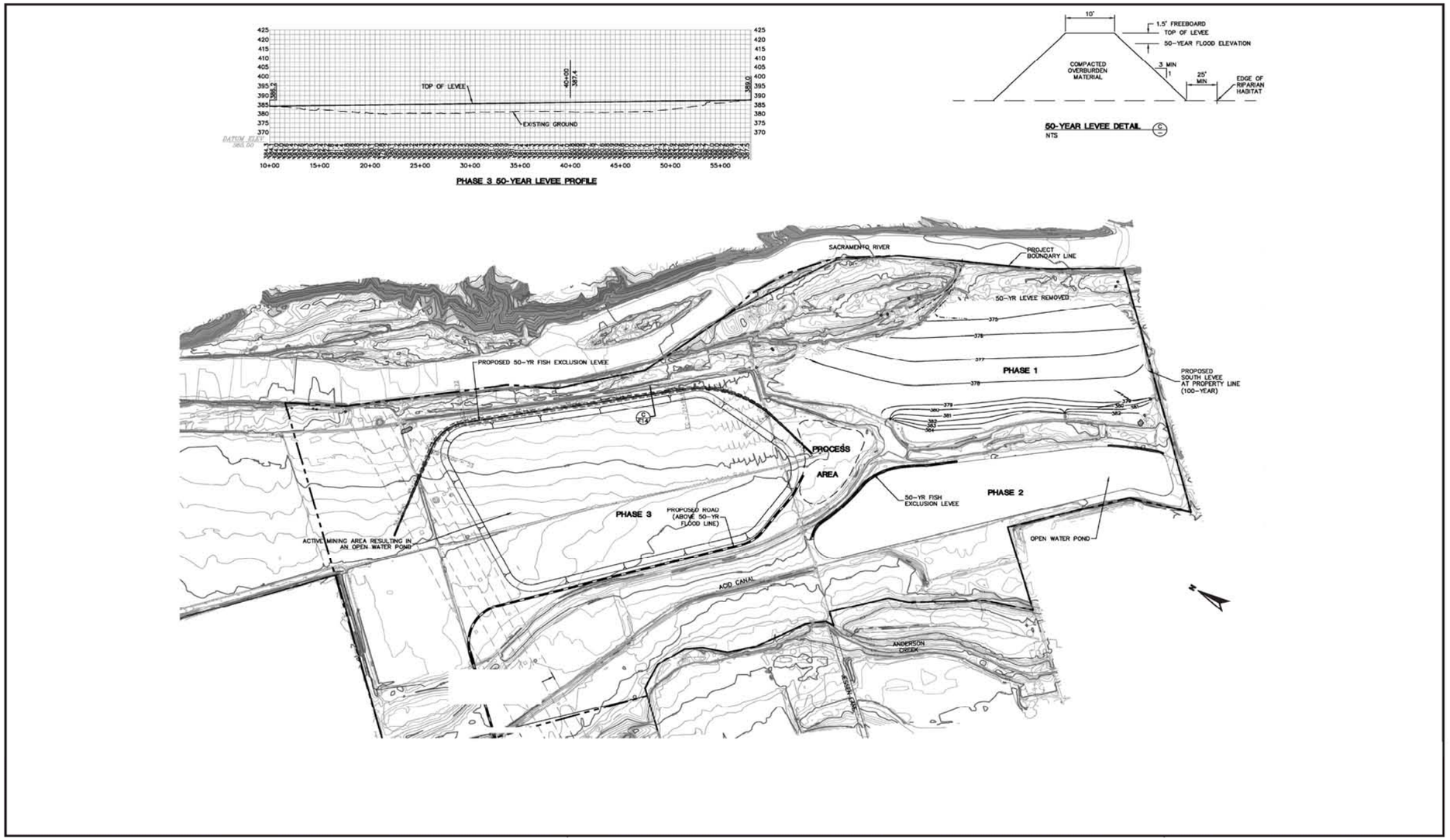


Source: Sharrah, Dunlap, Sawyer Inc. and EIP Associates.

Figure 3.0-7
Phase 2 Operations Plan

PMC

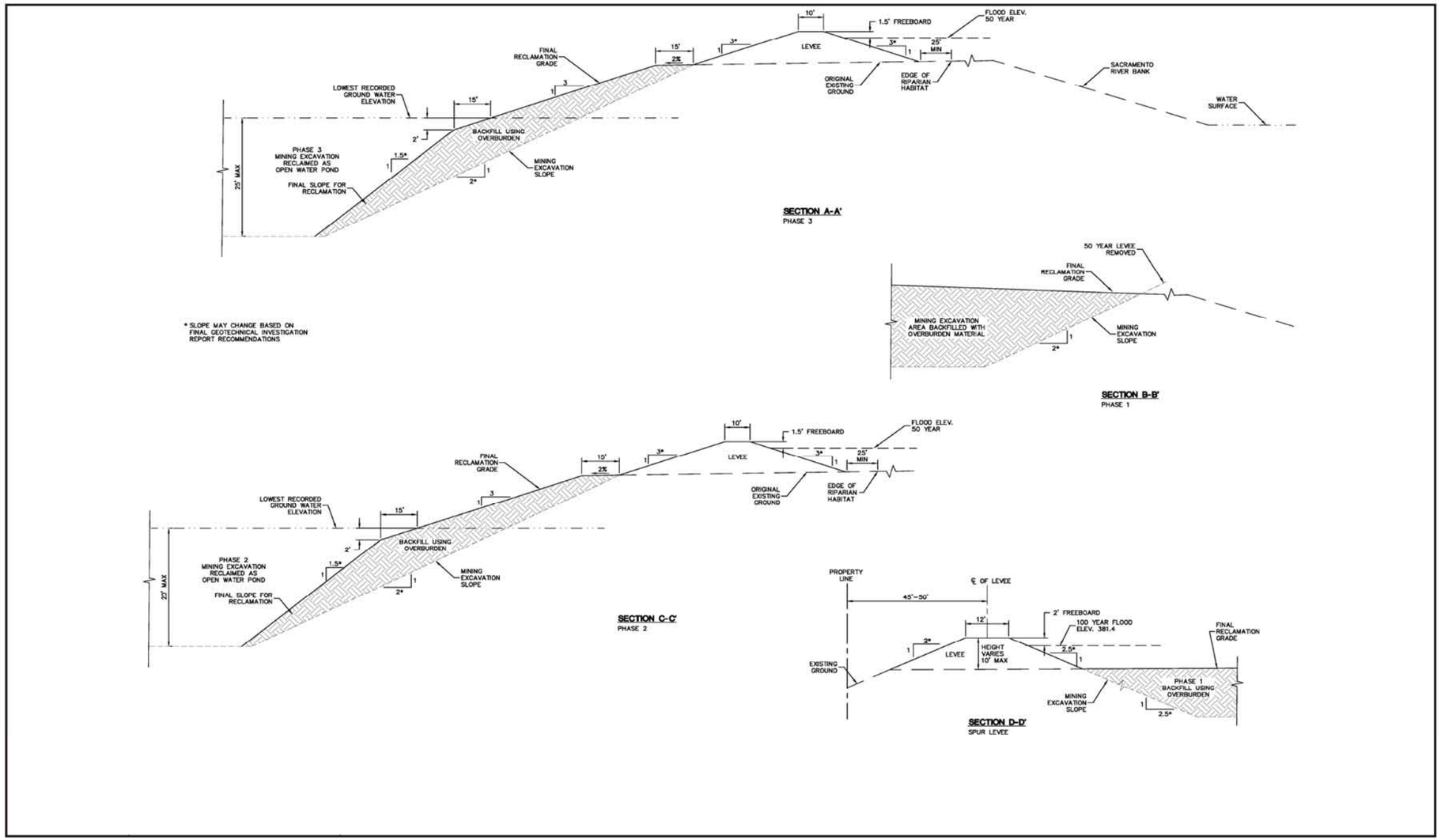
Shasta Ranch Mining and Reclamation Plan
Final Environmental Impact Report



Source: Sharrah, Dunlap, Sawyer Inc. and EIP Associates.

Figure 3.0-8
Phase 3 Operations Plan

PMC



Source: Sharrah, Dunlap, Sawyer Inc. and EIP Associates.

Figure 3.0-11
Reclamation Cross-Sections

PMC

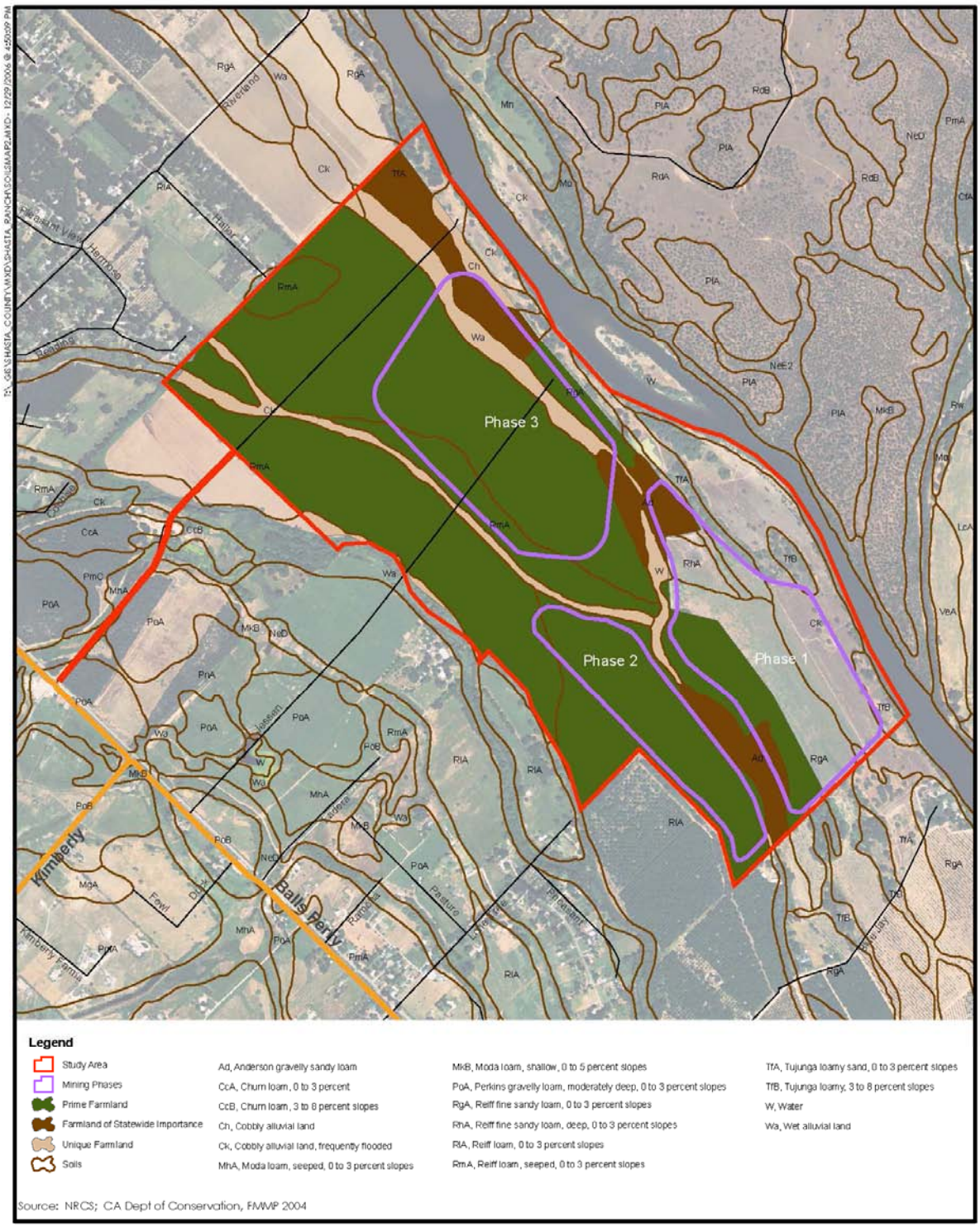


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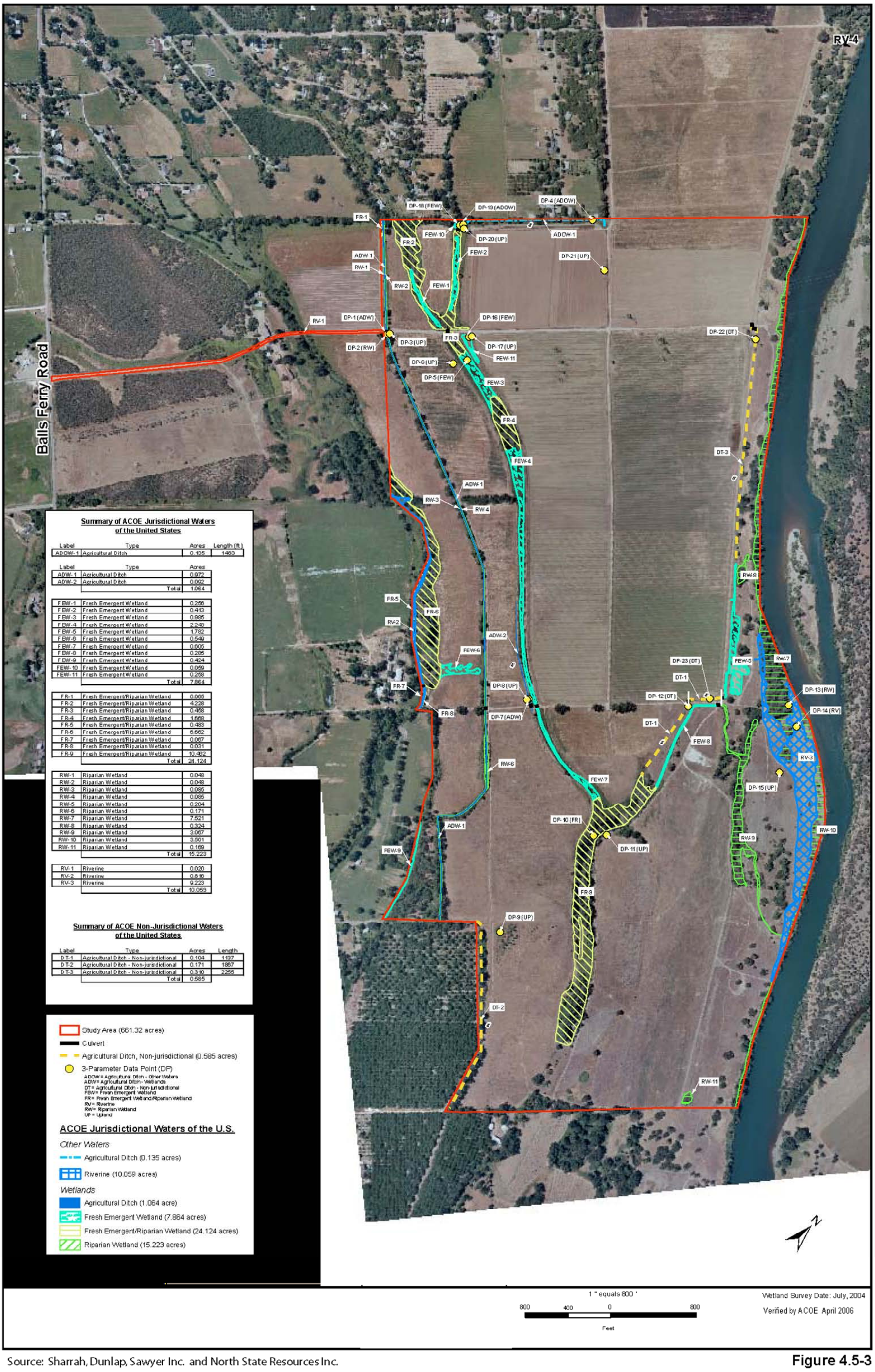
Figure 4.2-4
Agricultural Soils Map
with Project Overlay

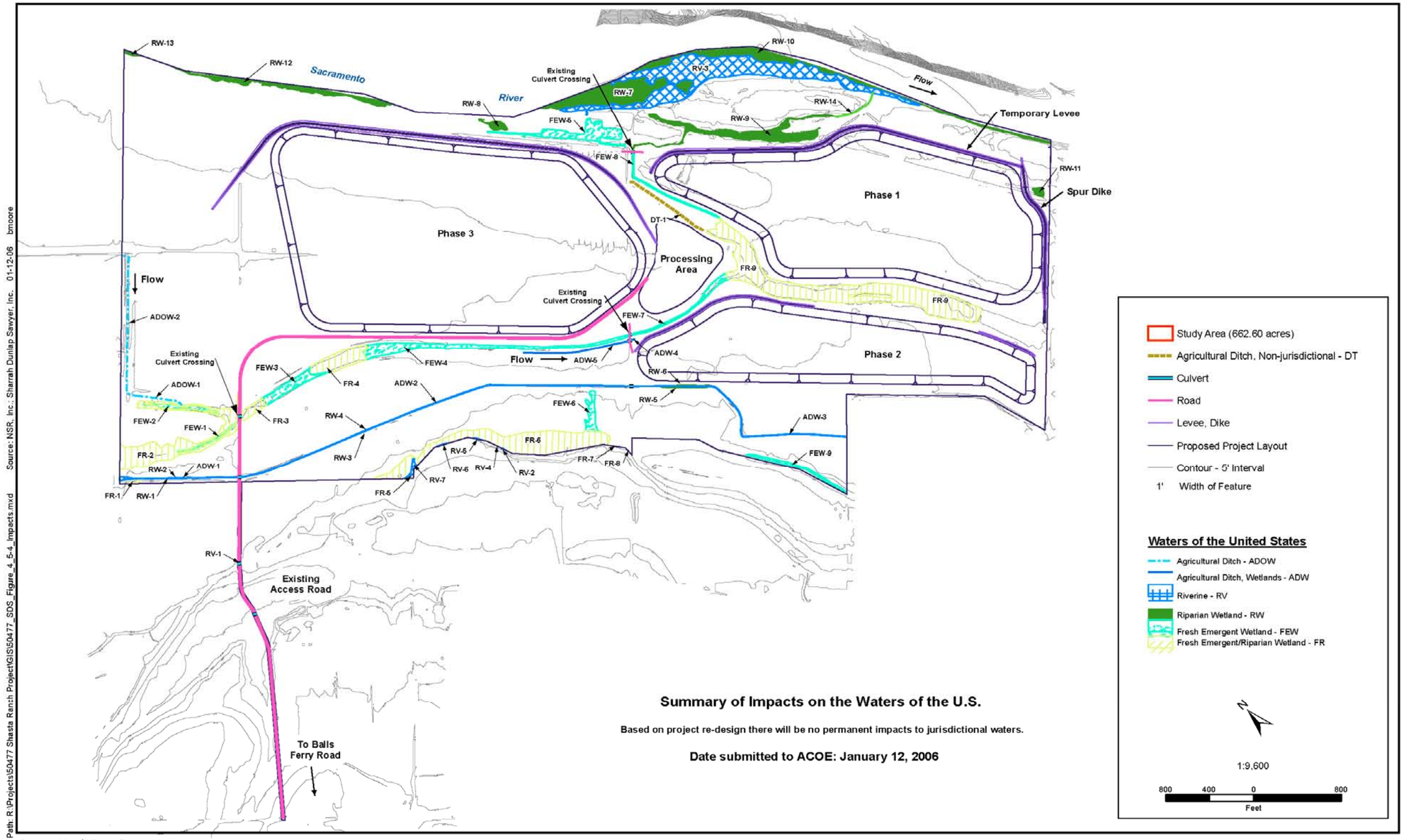
PMC



Source: Sharrah, Dunlap, Sawyer Inc. and North State Resources Inc.

Figure 4.5-3
Boundaries of Waters of the United States, including Wetlands

PMC

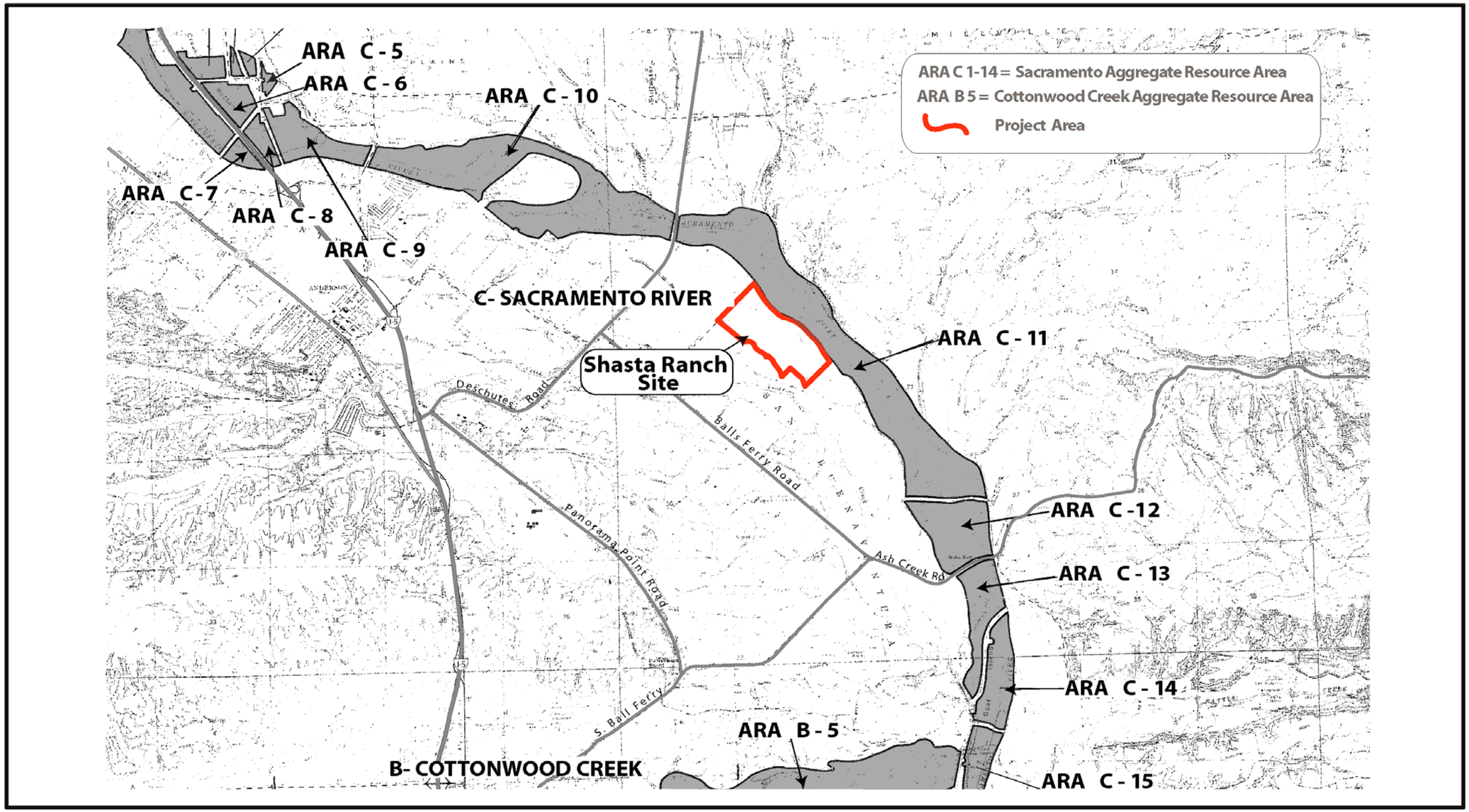


Source: North State Resources Inc.

Figure 4.5-4

Impacts on Boundaries of Waters of the United States, including Wetlands

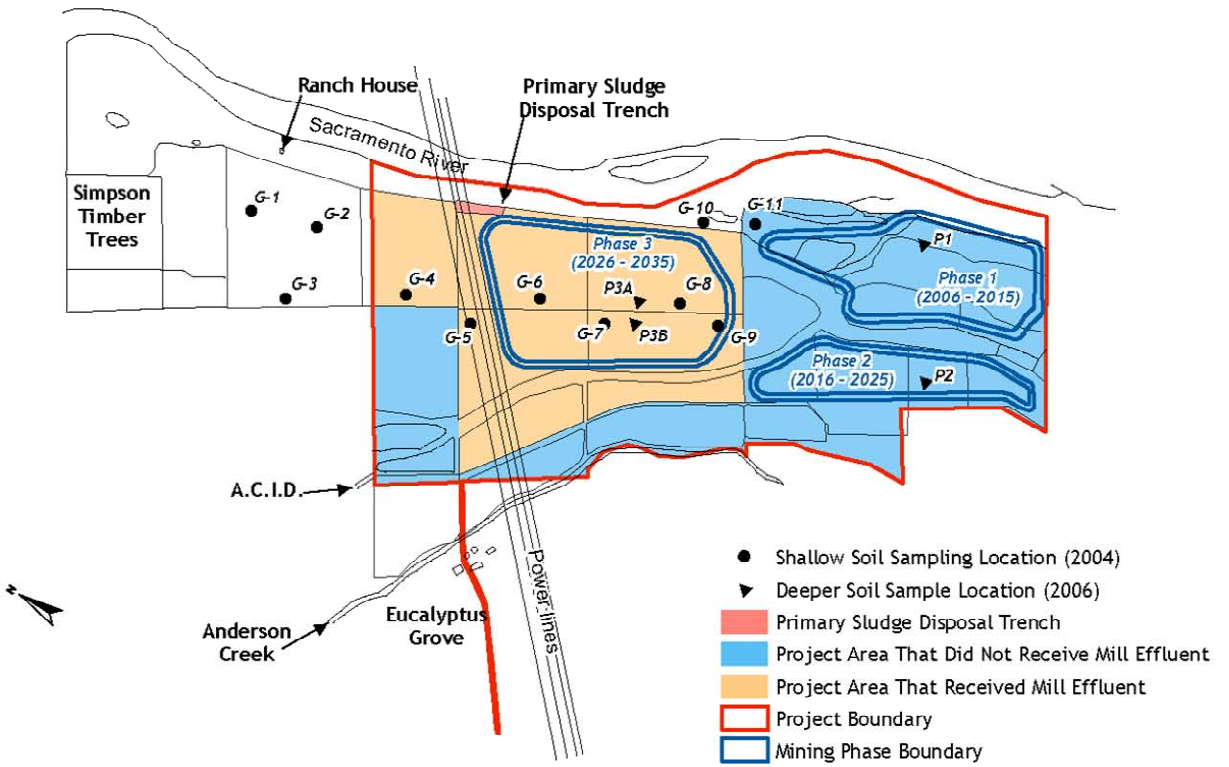
PMC



SOURCE: NRCS DEPARTMENT OF AGRICULTURE

FIGURE 4.8-4
AGGREGATE RESOURCE AREAS

PMC



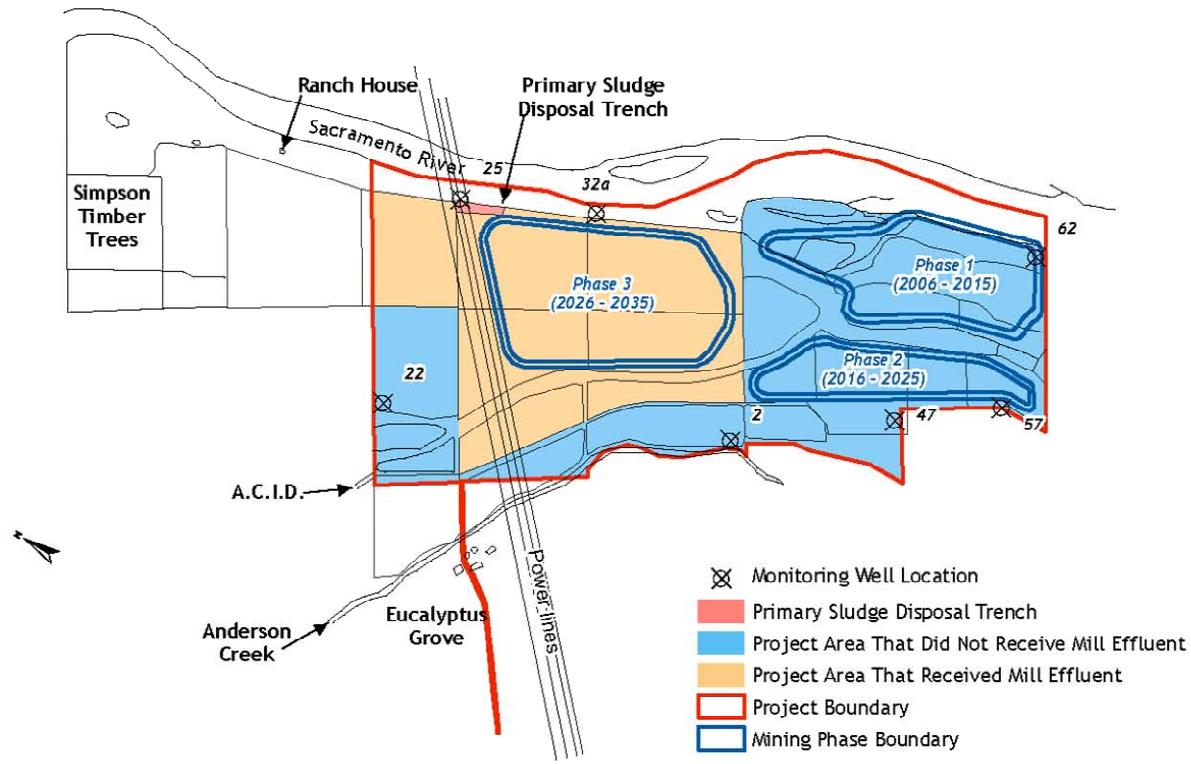
Prepared to present field past use and soil sample locations with revised project boundary.

Abbreviation:
A.C.I.D. = Anderson/Cottonwood Irrigation District

Source: Geomatrix 2005.

Figure 4.12-2
Sample Soil Locations

PMC



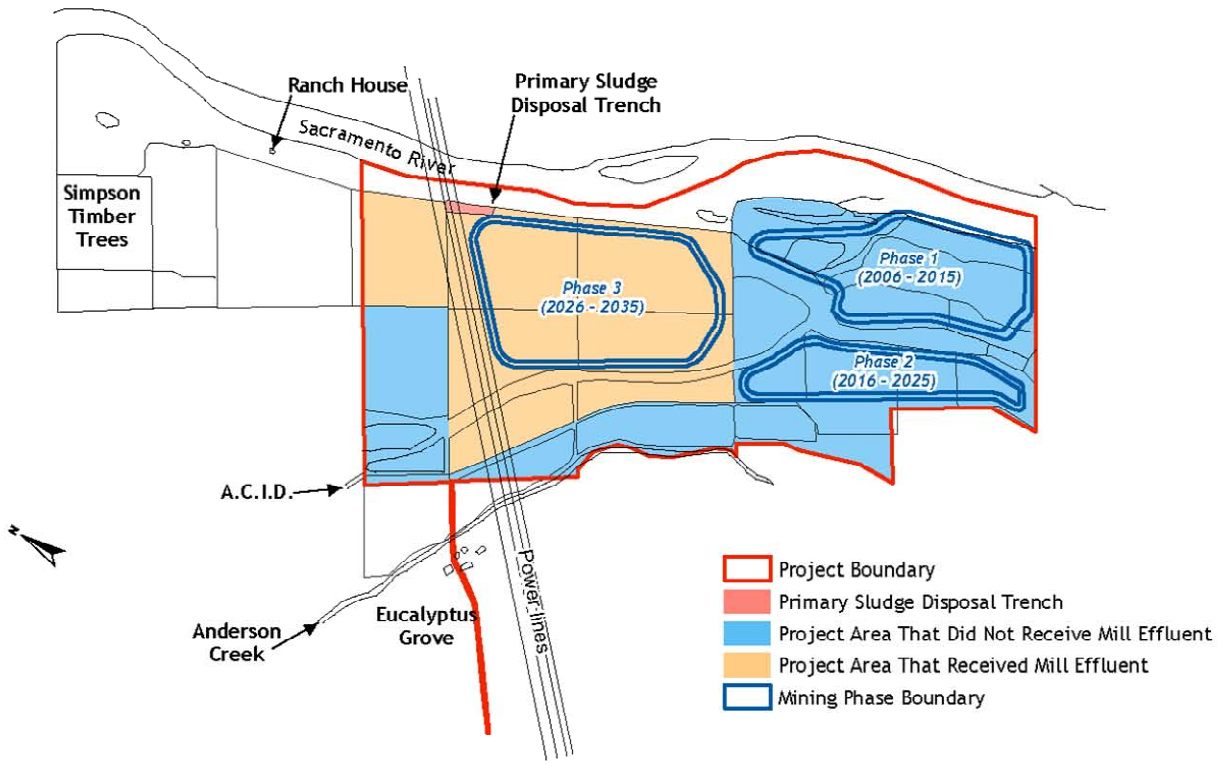
Prepared to present field past use and soil sample locations with revised project boundary.

Abbreviation:
A.C.I.D. = Anderson/Cottonwood Irrigation District

Source: Geomatrix 2005.

Figure 4.12-3
Monitoring Well Locations

PMC



Prepared to present field past use and soil sample locations with revised project boundary.

Abbreviation:
A.C.I.D. = Anderson/Cottonwood Irrigation District

Source: Geomatrix 2005.

Figure 4.12-4
Aggregate Extraction Areas and Effluent Fields

PMC

APPENDIX 4.9-1G

SHASTA RANCH ADDITIONAL WATER MONITORING SUMMARY REPORT DECEMBER 5, 2006

California Regional Water Quality Control Board
Central Valley Region

Linda S. Adams
Secretary for Environmental Protection

Redding Office
415 Knollcrest Drive, Suite 100, Redding, California 96002
(530) 224-4845 • Fax (530) 224-4857
http://www.waterboards.ca.gov/centralvalley

Arnold Schwarzenegger
Governor

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DEC 0 6 2006

5 December 2006

Mr. Lyle Tullis
Shasta Ranch Aggregate
P.O. Box 493416
Redding, CA 96049-3416

SHASTA RANCH – ADDITIONAL WATER MONITORING SUMMARY REPORT, ANDERSON, SHASTA COUNTY

The Shasta Ranch Project proposes to excavate and process aggregate on an approximately 660-acre site east of the City of Anderson. Beginning in 1976, a portion of the wastewater from the former Shasta Paper Mill was diverted and used for irrigation on the Shasta Ranch property. Shasta Paper Mill routed approximately 11 million gallons per day of treated effluent and domestic wastewater to the Sacramento River and the Shasta Ranch property by 2000. Discharge to the Sacramento River ceased in 2001. Effluent from the Shasta Paper Mill continued to be used for irrigation of the Shasta Ranch property through 2002.

An investigation into the presence of dioxin and furan compounds remaining at the site in soil and groundwater was conducted by the property owner. The Central Valley Regional Water Quality Control Board (Central Valley Water Board) has received the *Additional Water Monitoring Summary Report* (Report) dated 29 August 2006 prepared by Geomatrix. Based on our review of the Report, a meeting with Wendy Johnston of Vestra Resources, Inc., and consideration of other information for this site, we have the following comments:

Applicable Water Quality Criteria

The USEPA National Recommended Ambient Water Quality Criteria for Human Health and Welfare Protection (NRA) based on a one-in-a-million cancer risk estimate for sources of drinking water and consumption of organisms for dioxins/furans reported as 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) is 0.005 picograms per liter (pg/L). The California Toxics Rule (CTR) criteria for human health based on consumption of water and aquatic organisms is 0.013 pg/L. The Cal/EPA Cancer Potency Factor as a drinking water level based on one-in-a-million incremental cancer risk estimate is 0.270 pg/L. The California Department of Health Services (DHS) primary maximum contaminant level (MCL) is 30 pg/L. These water quality criteria are summarized in Table 1, below.

Table 1. Water Quality Criteria for 2,3,7,8-TCDD

Criteria	pg/L
USEPA National Recommended Ambient Water Quality Criteria (NRA) Human Health and Welfare Protection (One-in-a-Million Cancer Risk Estimate) Sources of Drinking Water (water and organisms)	0.005
California Toxics Rule Criteria (CTR) Human Health (30-day average) Drinking Water Sources (consumption of water and aquatic organisms)	0.013
Cal/EPA Cancer Potency Factor as a Drinking Water Level One-in-a-Million Incremental Cancer Risk Estimates for Drinking Water	0.270
California Department of Health Services (DHS) Drinking Water Standards Maximum Contaminant Level (MCL) Primary MCL	30

Data Re-evaluation

Central Valley Water Board staff concurs with the use of U.S. EPA CDD/CDF Validation SOP to qualify sample results[1]. Further, Central Valley Water Board staff concurs with re-evaluating previous sample data based on the SOP.

Results From Additional Investigation Of Phase 1 And Phase 2 Areas

The historical groundwater monitoring data for monitoring wells 2, 42, 45, 47, 57, 62, 63a, 64, 65, 66, and 67 located within and around the Phase 1 and Phase 2 areas of the Shasta Ranch property have been below all four water quality criteria for 2,3,7,8-TCDD since March 2005 with the exception of detections in monitoring wells 47, 57, and 62 as described below.

On 15 September 2005, 2,3,7,8-TCDD was detected at 0.015 pg/L (above the NRA and CTR criteria) in monitoring well 47. All previous monitoring data for monitoring well 47 was below all four water quality criteria.

On 15 September 2005, 2,3,7,8-TCDD was detected at 0.0239 pg/L (above the NRA and CTR criteria) in monitoring well 57. All previous monitoring data for monitoring well 57 was below all four water quality criteria.

On 7 September 2005, 2,3,7,8-TCDD was detected at 0.595 pg/L (above the NRA, CTR, and Cal/EPA criteria) in monitoring well 62. In two previous and one subsequent sampling event, 2,3,7,8-TCDD was below all four water quality criteria. On 11 May 2006, 2,3,7,8-TCDD was detected at 0.0001 pg/L, below all four water quality criteria, in a sample collected from monitoring well 62.

[1] United States Environmental Protection Agency (U.S. EPA) Region IV, 2002, Data Validation Standard operating Procedures for Chlorinated Dioxins/Furans Analysis by High Resolution Gas Chromatography/High Resolution Mass Spectrometry (CDD/CDF Data Validation SOP, Revision 3, May 2002)

Results From Additional Investigation Of Phase 3 Area

Historical groundwater monitoring data for monitoring wells located on the northern half of the Shasta Ranch property, within and around the Phase 3 area have all been below detection limits for 2,3,7,8-TCDD, with the exception of one sample from monitoring well 22 collected on June 1, 2005. On 1 June 2005, 2,3,7,8-TCDD was detected at 0.116 pg/L in monitoring well 22. 2,3,7,8-TCDD has been reported below all four water quality criteria in three subsequent sampling events.

Results From Additional Surface Water Sampling

Surface water samples were collected on 11 May 2006 from the Sacramento River at R-1 and R-2. 2,3,7,8-TCDD TEQ was not detected in the sample collected from R-1. However, 2,3,7,8-TCDD TEQ was detected in the R-2 sample at a concentration of 0.0092 pg/L, above the NRA criteria, but below the CTR, Cal/EPA, and DHS MCL criteria.

Monitoring Well Removal

Central Valley Water Board staff concurs that the monitoring wells located on the southern half of the Shasta Ranch property, within and surrounding the Phase 1 and Phase 2 areas, may be abandoned. Staff also concurs with the request to abandon monitoring wells located on the northern half of the Shasta Ranch property, within and around the Phase 3 area, with the exception of monitoring wells GMX-1, 8A7, 22, 25, and 32a. These excepted wells should be retained for possible future monitoring. Monitoring wells to be removed should be abandoned in accordance with the California Department of Water Resources California Well Standards (Bulletin 74-90). You must contact the Shasta County Environmental Health Division to obtain a monitoring well decommissioning permit.

Summary

Based on our review of the information available for the Shasta Ranch property, no further action to evaluate the presence of dioxin and furan compounds in soil and groundwater at the site is required at this time. However, if the proposed aggregate mining operation proceeds, then Central Valley Water Board staff plan to require additional surface water sampling for dioxins/furans during mining operations, when groundwater is encountered in each pond.

If you have any questions regarding the above information, please contact Mr. Daniel Warner at (530) 224-4848, or at the letterhead address above.

JAMES C. PEDRI, P.E.
Assistant Executive Officer

DLW/BJS:sae

cc: Ann Holbrow, Geomatrix, Oakland
Wendy Johnston, Vestra Resources, Inc., Redding
Mr. Bill Walker, Shasta County Department of Resource Management, Redding

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EXHIBIT 3.0-B

REVISED TABLE OF CONTENTS TO DRAFT EIR

The Table of Contents included in the Draft EIR has been corrected. The pages numbers for the List of Tables and List of Figures has been included for complete reference as shown below.

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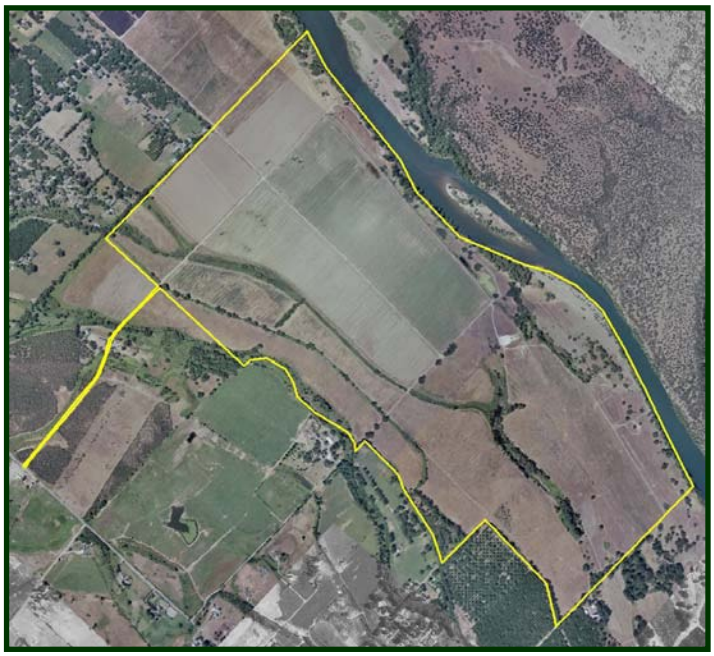
STORM WATER POLLUTION PREVENTION PLAN

APRIL 2006

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

SHASTA RANCH AGGREGATE MINE
WDID No. R5451020225



Prepared for
Tullis, Inc.
8585 Commercial Way
Redding, CA 96002
(530) 241-5570

Prepared by

VESTRA Resources, Inc.
962 Maraglia Street
Redding, California 96002

April 2006

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

SHASTA RANCH AGGREGATE MINE
WDID No. _____

Prepared for
Tullis, Inc.
8585 Commercial Way
Redding, CA 96002
(530) 241-5570

Property Owner:
Shasta Ranch Estates, LLC
8585 Commercial Way
Redding, CA 96002
(530) 241-5570

Prepared by

VESTRA Resources, Inc.
962 Maraglia Street
Redding, California 96002

APRIL 2006

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1.0 INTRODUCTION

1.1 Purpose of the Storm Water Pollution Prevention Plan

The State Water Resources Control Board Order No. 97-03-DWQ created a general storm water permit (CAS000001) for industrial activities that discharge storm water to surface water. The general permit requires all dischargers under the permit to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) that is administered by the State Water Resources Control Board through the Regional Water Quality Control Board (RWQCB). The SWPPP's objectives are (a) to identify and evaluate sources of pollutants associated with industrial activities that may affect the quality of storm water discharges and authorized non-storm water discharges from the facility; and (b) to identify and implement site specific Best Management Practices (BMPs) to reduce or prevent pollutants associated with industrial activities in storm water discharges. The intent of the regulations is to protect water quality by controlling pollutants in storm water runoff. This SWPPP is designed to comply with Best Available Technology (BAT), Best Conventional Pollutant Control Technology (BCT), and Best Management Practices (BMP) to reduce or eliminate industrial storm water pollution.

1.2 BAT Implementation

The SWPPP identifies the BAT that has been implemented to reduce the pollutants in storm water runoff. Lyle Tullis is responsible for implementing this SWPPP.

1.3 Implementation Schedule

The BMP's in this plan will be implemented as described in Section 5.

1.4 Protocol on Public Access to the SWPPP

The SWPPP shall be retained onsite and made available to RWQCB staff upon request. A copy of this SWPPP will be submitted to the RWQCB before operations begin. The SWPPP is considered a report that shall be available to the public under Section 308(b) of the Clean Water Act (CWA).

1.5 Updating the SWPPP

The SWPPP will be updated whenever a change in the facility operations occurs that may significantly affect the discharge of pollutants to surface water. Lyle Tullis is responsible for determining when SWPPP updates are required. Changes determined to be necessary in the SWPPP will be forwarded to the RWQCB and included in copies of the SWPPP that are retained onsite.

2.0 PROJECT INFORMATION

2.1 Project Site

The Shasta Ranch Project is located along the southwestern bank of the Sacramento River approximately 24 miles southeast of the Shasta Dam, 16 miles south of the City of Redding, and just east of Balls Ferry Road as shown in Figure 1 and Figure 2.

The proposed project encompasses 660 acres, of which 268 acres are proposed for aggregate mining activities. The project site currently supports row crops, areas of native habitat, and fallow farmland with no residences located on the project site. The site is bounded by the Sacramento River to the east, and properties that support a variety of land uses including agricultural and rural residential to the north, south, and west. The project site is located in an alluvial floodplain that was once the original channel for the Sacramento River. Heavy gold mining activities transformed and redirected the ancient channel. Dredge tailings and hydraulic mining eventually filled the river channel, ultimately transforming both depth and alignment.

Topography of the project site is relativity flat with some gentle slopes along the banks of the river. The Anderson Cottonwood Irrigation District Canal runs adjacent to the project site, along the southwestern boundary. A depression, left from the ancient river channel discussed above, transects the southwestern portion of the project site running generally north to south. The depression supports areas of standing water, riparian/marsh wetland vegetation and mature trees.

Dense riparian vegetation occurs adjacent to the Sacramento River along portions of the project site's northeastern boundary. The proposed project would preserve onsite areas of emergent marsh wetlands and protect areas of Sacramento River riparian habitat. The project would also include both temporary and permanent levees to exclude migrating salmon and steelhead from excavated areas of the project site during periods of high river flow.

2.2 Facility Operations

This area is projected to yield approximately 12 million tons of material. This does not include approximately 4 to 5 million tons of topsoil (overburden) material that would be excavated and used in reclamation. The project applicant estimates mining will occur on the site for approximately 29 years. The rate of mining would be governed by the market demands and local competition. The estimated timeline would be adjusted based on these conditions.

The Shasta Ranch mining plan describes three distinct mining phases, outlined in Figure 2, with the operation in each phase taking approximately 10 years to complete.

The mining operations would use a variety of large machinery to transport overburden to storage piles and to mine the underlying aggregate. Hydraulic excavators would be used for the excavation of the mining pit areas below the groundwater table. Diesel-powered loaders would be used for both excavation above the groundwater table and for moving excavated materials on the project site from the pits to the processing plant. Diesel trucks would also be used onsite for material transport. The processing area would be centrally located in relation to the mining phases on the project site. The central location minimizes distances between the pits and the processing plant during each of the separate mining phases.

The mined aggregate material would be processed using a crusher, then screened and washed to different sizes. The processed material would become available to the local and regional area for use in general construction projects using concrete aggregate for the construction of foundations for residential, commercial, industrial, agricultural buildings and structures, and other aggregate products.

2.3 Project Closure

Except for the first mining phase, the excavation pits would be reclaimed as ponds. The reclamation and closure is described in detail in the Shasta Ranch Project Mining and Reclamation Plan (EIP, 2005). Overburden or native material would be used to develop the side slopes of the ponds and levees to ensure successful revegetation. The Phase 1 mining pit would be refilled with overburden and reclaimed for use as farmland. Backfilling of Phase 1 would be done in phases as mining in the Phase 1 pit proceeds, and during the removal of overburden from the Phase 2 pit site after Phase 1 mining is complete.

During mining and reclamation phases of the proposed project, agricultural operations will continue in those fields that are not involved in the mining process or that represent a future phase. The final configuration of the ponds and reclaimed land will depend on the conditions during the mining operation and the available amount of overburden. Other conditions that would contribute to the final reclamation of the proposed project are volume of overburden, depth of groundwater and volume of material removed for processing.

2.4 Other Regulatory Requirements

The discharge to the wash-water holding pond will be regulated by RWQCB Waste Discharge Requirements (WDRs). The rinse water or other non-storm water discharges will not discharge directly into surface waters. This SWPPP requires the visual observation during dry weather to identify any non-storm discharges.

The Mining and Reclamation Plan (EIP, 2005) provides the reclamation plan details.

The Shasta County Air Quality Management District (SCAQMD) has stationary source permitting authority over the proposed project. A source must comply with all SCAQMD requirements before operating in the County. The SCAQMD was contacted to determine what permitting requirements would apply to the proposed project. The material excavated at the proposed project site would be processed onsite at a newly-constructed processing plant. In order to build and operate this plant, the applicant would need to obtain an Authority to Construct (ATC) from the SCAQMD, followed by a Permit to Operate (PTO). The ATC allows construction to begin, but operation may not begin until the PTO is obtained. The amount of material that the plant would be able to process yearly would be regulated by the SCAQMD as part of the PTO. In the event that any portable equipment with an internal combustion engine above 50 horsepower remains in one stationary location for more than 6 months, that equipment would also need to be included in the PTO.

3.0 SOURCE IDENTIFICATION

This section includes the identification of various sources of pollutants.

3.1 Industrial Process

Industrial activities include the removal of vegetation and excavation of native soil to extract aggregate materials. Removal of vegetation exposes soil to rainfall that in turn can cause erosion and mobilization of sediments. Typically, without proper controls, sediment could be discharged from the site into nearby drainage facilities. However, since excavation pits are below grade, the exposed slopes of the pits will not result in a discharge to drainage facilities or watercourses. The process plant area does have stockpiles of disturbed soils. Figure 3 shows the process area and the surrounding drainage routes.

3.2 Dust- and Particulate-Generating Activities

Dust may be generated by processing of aggregate materials as well as by truck and heavy equipment movement throughout the site. The SCAQMD will manage the requirements for the dust- and particulate-generating activities as discussed in Section 2.4.

3.3 Soil Erosion

Project site erosion could occur around the banks of the excavation area. Excavation areas are below grade and considered a special site condition that will prevent bank erosion run-off from entering surface waters. The project site is relatively small when compared to the entire 660 acres of project area. Soil erosion adjacent to roads and within the process plant could occur and the methods of controlling sediment and erosion run-off are detailed in Table 5-1. Gravel roads should be incorporated into the onsite roads design to control airborne particulate matter (dust) in dry months and minimize soil erosion during the wet months.

3.4 Fuel and Oil Containment Area and Maintenance Area

Potential sources for pollution on the site are fuels and oils that are used for machinery, trucks and tractor equipment. The maximum amount of fluids stored onsite will be 10,000 gallons of fuel in an aboveground storage tank and approximately five 55-gallon drums of lubricants and transmission oil. The vehicles and equipment used in the operation of the project would be maintained to prevent any possible leaks. Routine onsite maintenance will be conducted under an approximately 900 square-foot maintenance canopy. Major repairs, other than emergency repairs, would be conducted at an offsite facility.

4.0 POTENTIAL POLLUTANTS

4.1 Significant Materials That May Come in Contact With Surface Water

The materials that may come into contact with surface water are identified in Section 3.

4.2 Types of Potential Pollutants by Source

Potential pollutants that may be present in storm water from the facility are identified by area in Table 4-1.

Table 4-1
SIGNIFICANT MATERIALS THAT MAY COME IN CONTACT WITH SURFACE WATER BY SOURCE AREA

Area	Significant Material
Industrial Process Areas	Sediment
Roadways	Sediment
Fuel and Oil Containment Area	TPH-D and TPHO&G
Maintenance Area	TPH-D and TPHO&G

TPH-D – Total Petroleum Hydrocarbons Diesel
TPH-O&G – Total Petroleum Hydrocarbons Oil and Grease

4.3 Existing Data on Quality of Storm Water from the Site

The facility is new and not yet in operation. There is no existing data on the quality of storm water from the site.

4.4 Estimate of Annual Pollutant Loading to Surface Water

This has not been quantified.

4.5 Spills of Significant Materials

The facility is new and not yet in operation. No spills of significant materials have occurred.

5.0 STEPS TO REDUCE POLLUTION FROM STORM WATER RUNOFF

This section summarizes the BMPs that are to be implemented at the Shasta Ranch Project to reduce or limit storm water pollution from the site. As stated in the regulations, priority has been given to those BMPs that control pollution with low or modest cost. Source control and treatment control BMPs will be considered if operational BMPs do not prove to be effective.

5.1 Storm Water Management Controls

The site is relatively flat, sloping to the northeast and to the Sacramento River. Storm water controls will consist of the following:

5.1.1 Preventive Maintenance – This practice includes inspection and maintenance of the storm water conveyance system. Inspections shall take place monthly and after significant rainfall events.

5.1.2 Spill Prevention and Response – This includes increasing employee awareness toward minimizing spills and the training to respond to spills if they occur. Each employee will be directed to clean up spills as they occur and to report any spills of significant quantities.

5.1.3 Material Handling and Storage – This includes training employees on the proper way to handle the materials to minimize the potential for spills and to minimize the exposure of hazardous materials to storm water.

5.1.4 Waste Handling and Recycling – Employee training will include how to handle hazardous wastes that may be used in connection with future activities onsite.

5.1.5 Storm Water Management Practices – Storm water runoff generally flows in a northerly or southerly direction away from the process area. Figure 3 shows the direction of storm water runoff. Runoff is directed away from the process area by berms and ditches.

5.1.6 Erosion and Sediment Control – Inspection and cleaning of drainage systems and access roads is performed on a regular basis. Special attention is required prior to the beginning of the wet season.

5.1.7 Discharge Prohibitions – The discharge of wastewater at a location or manner different from that described is prohibited. The discharge of sediment, or any other waste to surface waters or surface water drainage courses is prohibited. The discharge of hazardous or toxic substances, including petroleum fuel, is prohibited. Bypass or overflow of untreated or partially treated waste, including domestic waste, is prohibited.

5.1.8 Employee Training – Employee training programs will inform all personnel responsible for implementing the SWPPP. Training will address spill response, good housekeeping, material management practices, inspections, maintenance and repair measures. Training will be performed for each new hire and on an annual review basis, usually prior to the wet season.

5.1.9 Inspections – All inspections, visual observations and sampling, as required in the Monitoring and Reporting Program, shall be done by trained personnel. Mr. Lyle Tullis is responsible to follow-up and ensure that appropriate measures have been taken in response to these activities.

5.1.10 Good Housekeeping – Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material handling areas will be inspected and cleaned to reduce the potential for pollutants to enter the storm water conveyance system.

5.1.11 Record Keeping and Internal Reporting – Records of all inspections, spills, and maintenance activities will be kept onsite at the office. These are available to personnel as necessary.

5.1.12 Quality Assurance – The procedures contained in the SWPPP will be conducted under the direction of Mr. Lyle Tullis.

5.2 Emergency Response Plans and Procedures

An emergency response plan is currently not in place. A plan will be prepared when the property is put back into use. Employees will be provided with procedures for spill cleanup and evacuation. They will be trained on fire evacuation procedures.

5.3 Proposed Additional BMPs

BMPs for this project are described in Table 5-1. The BMPs are tailored to the activities and conditions at the project site. Facility operators are required to develop and implement additional BMPs as appropriate and necessary to prevent or reduce pollutants.

Table 5-1 POTENTIAL POLLUTION SOURCES AND CORRESPONDING BMPS			
Area	**Pollutant Source**	**Pollutant**	**BMP**
Equipment Fueling	Spills and leaks during delivery Spill caused by topping off fuel tanks Leaking storage tanks	Fuel, oil and lubricants	• Designate one area for refueling • Use spill and overflow protection (e.g. spill kits and secondary containment) • Minimize run-on of storm water into the fueling area by diverting storm water drainage through drainage channels • Train employees on proper fueling (do not top off, clean-up, and spill response techniques with dry absorbent countermeasures) • Implement preventative maintenance of equipment including visual inspections twice daily • Aboveground fuel tanks with proper secondary containment (double-walled tank or concrete slab with concrete containment wall)
Maintenance Canopy	Spills	Fuel, oil and lubricants	• Train employees on clean-up and spill response techniques (e.g. spill kits and countermeasures) • Do not store waste oils, solvents, or batteries onsite, remove these materials as often as necessary
Stockpiles	Rainfall or drainage from wet stockpiles	Sediment	• Divert run-on from stockpiles with berms and drainage swales • Divert stockpile drainage to rinse-water pond through drainage channels • Cover with geotextile mats or plastic • Apply plant material based soil binders/stabilizers
Roadway	Runoff from roadways	Sediment	• Divert runoff to excavation pits through drainage channels • Use fiber/straw rolls and straw mulch
	Track off (mud carried offsite by trucks)	Sediment	• Rock construction entrance (RCE) at all egress points where trucks/equipment enter paved roads as shown on the attached BMP sheet. The RCE shall be inspected and maintained as necessary to ensure it adequately removes mud from trucks
Wetlands & Sensitive Areas	Storm water runoff	Fuel, oil, lubricants and sediment	• Avoid these areas by installing orange construction fence around identified wetlands and streams within 50 feet of a de-vegetated process area • Divert runoff with drainage swales or ditches • Install silt fences or fiber/straw rolls upgradient from wetlands or sensitive areas

6.0 MONITORING AND RECORD KEEPING

6.1 Checking BMP Implementation

Personnel responsible for implementation of the SWPPP will conduct inspections of the facility operations to ensure that BMPs are implemented and meet the objectives of the SWPPP. Inspections will be conducted monthly and during storm events. If BMPs are not adequate, the personnel will implement additional management practices to reduce the concentrations of pollutants in storm water from the site.

6.2 Effluent/Storm Water Monitoring (Discharge)

Monitoring includes both visual inspections and water quality sampling. Visual inspections shall document the presence of any discoloration, stains, odors, floating materials, etc., as well as the source of any discharges. Storm water runoff discharges at the southeast corner of the facility as shown on Figure 3. Samples shall be collected as shown on Table 6-1. Samples must be received by the lab within 24 hours of collection.

Table 6-1
MONITORING AND SAMPLING REQUIREMENTS

Monitoring	Description
Quarterly Visual Inspections	Visual observation shall be made during daylight hours with no storm discharges, during scheduled hours of operation. Observations shall be made within 6 to 18 weeks of each year calendar quarter.
Monthly Storm Inspection	The first storm event to occur during normal hours of observations and proceeded by at least three days without storm water discharges shall include a visual inspection. The inspection shall occur during the first hour of the storm or the first hour of operation. The perimeter of the process area shall be inspected and reports of any surface water discharges shall be documented.
Sampling	Storm water samples shall be collected at the monitoring point identified in Figure 3 during the first monthly storm inspection after September 1st. A second sample shall be taken during the subsequent monthly storm inspection. Samples shall be analyzed for: • Total Suspended Solids (TSS) • Specific Conductance (EC) • Nitrate-N (NO_3-N) • Total Organic Carbon (TOC)

6.3 Reporting

Effluent/storm water samples will be tested by a California Certified Laboratory. The laboratory will provide sample and shipping containers.

An annual report shall be submitted by July 1st of each year to the RWQCB. The report shall include visual observations and sampling results; an evaluation of the visual, sampling and analysis results; laboratory reports; and the Annual Comprehensive Site Compliance Evaluation Report.

6.4 Record Keeping

All inspections and analytical results shall be kept in the onsite SWPPP binder.

7.0 APPROVAL AND CERTIFICATION OF THE STORM WATER POLLUTION PREVENTION PLAN

I certify under a penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Lyle Tullis
Tullis, Inc. and Shasta Ranch Estates, LLC
8585 Commercial Way
Redding, CA 96002

Date

Susan Goodwin

Susan Goodwin, P.E. C61687
VESTRA Resources, Inc.
962 Maraglia Street
Redding, CA 96002

5/2/06
Date

REGISTERED PROFESSIONAL ENGINEER
SUSAN DIANE GOODWIN
No. 61687
Exp 6/30/07
CIVIL
STATE OF CALIFORNIA

8.0 THE STORM WATER POLLUTION PREVENTION MANAGER

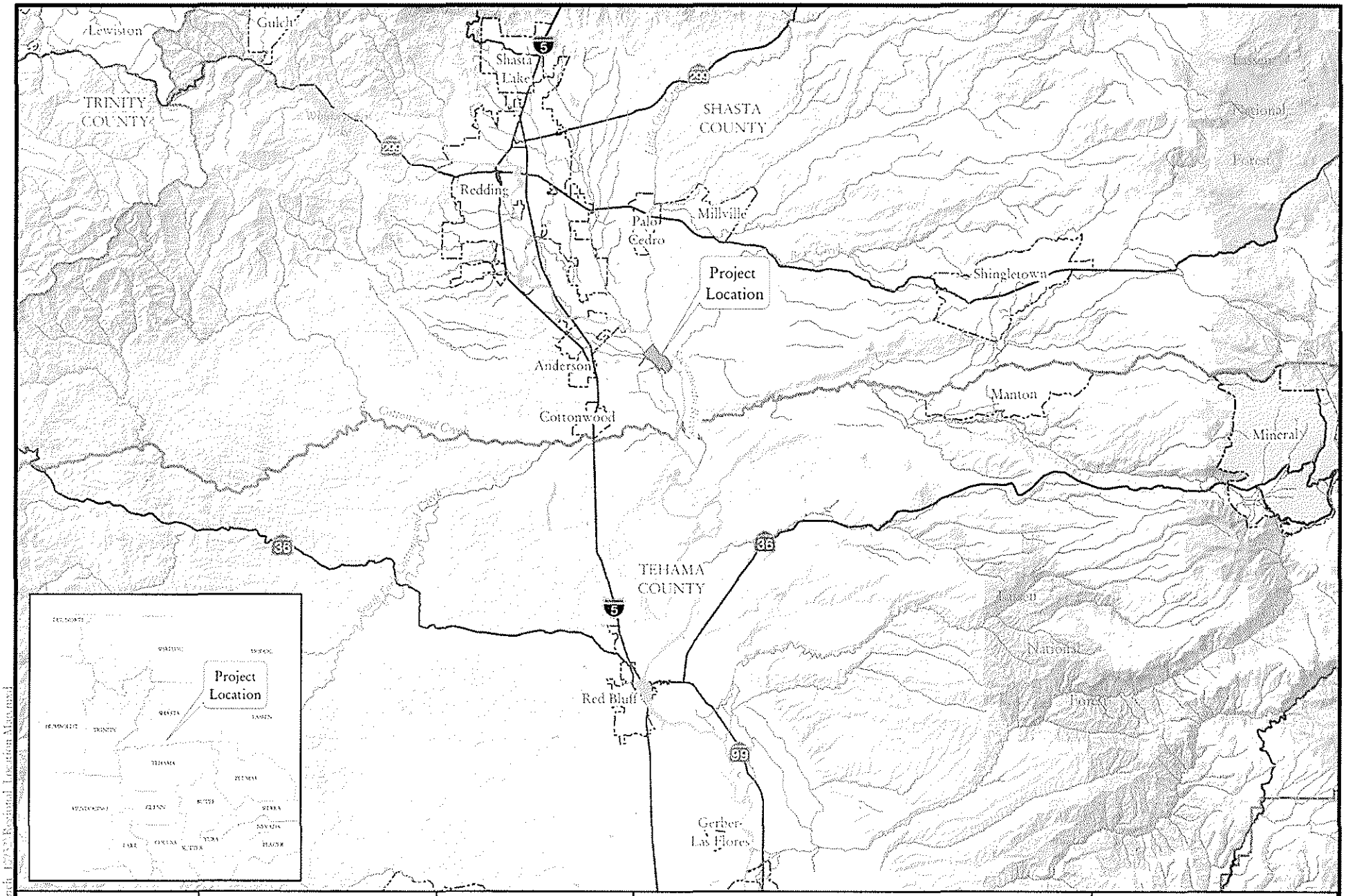
The Storm Water Pollution Prevention Manager (SWPPM) assigned to this job is:

Lyle Tullis
Tullis, Inc.
8585 Commercial Way
Redding, CA 96002
(530) 241-5570

The SWPPM shall have primary responsibility and significant authority for the implementation, maintenance, inspection and amendments to the approved SWPPP. The SWPPM will be available at all times throughout the duration of the project. Duties of the Owner/Developer/Contractor's SWPPM include but are not limited to:

- Ensuring full compliance with the SWPPP and the permit;
- Implementing all elements of the SWPPP, including but not limited to:
    - Implementation of prompt and effective erosion and sediment control measures; and
    - Implementing all non-storm water management, and materials and waste management activities such as: monitoring discharges (dewatering, diversion devices); general site clean-up; vehicle and equipment cleaning, fueling and maintenance; spill control; ensuring that no materials other than storm water are discharged in quantities that will have an adverse effect on receiving waters or storm drain systems; etc.
- Monitoring as described in the Monitoring Section
- Updates/Amendments to the SWPPP
- Preparing annual compliance certification
- Ensuring elimination of all unauthorized discharges
- The SWPPM shall be assigned authority by the Owner/Developer/Contractor to mobilize crews in order to make immediate repairs to the control measures
- Coordinate with the Owner/Developer/Contractor to assure all of the necessary corrections/repairs are made immediately, and that the project complies with the SWPPP, the permit, and approved plans at all times
- Submitting Notices of Discharge and reports of illicit connections or illegal discharges

Figures



EIP

Source: SDS Engineering, Project Boundary, Nov. 2004; CDFG, County Boundaries, July 2004; US Census Bureau, City Boundaries, July 2000; USGS, Hydrology Dec. 1998; ESRI, Highways and Roads, June 1999; and EIP Associates GIS Program, Sept. 6, 2005.

N

0 3.5 7

Miles

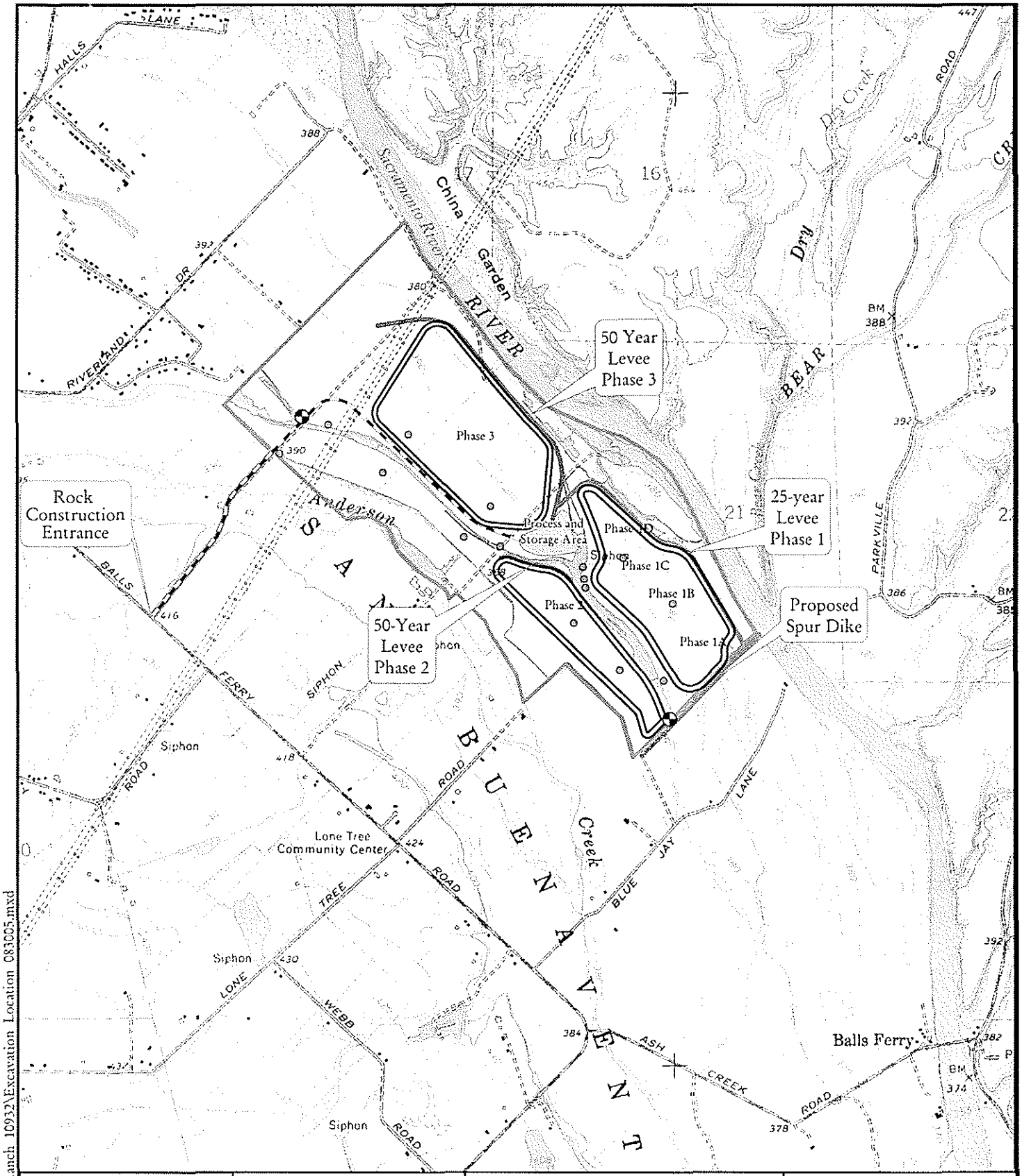
1 inch equals 7 miles

Project Boundary
County Boundary
City Boundary
Lakes and Reservoirs
Rivers and Streams
Highway

FIGURE 1
PROJECT LOCATION

Shasta Ranch Aggregate Mining Project Restoration
Shasta County, CA

N:\GIS\Projects\Shasta Ranch [2005] Regional Location Map.mxd



EIP

Project Number 10932-00

N 0 1,000 2,000 Feet

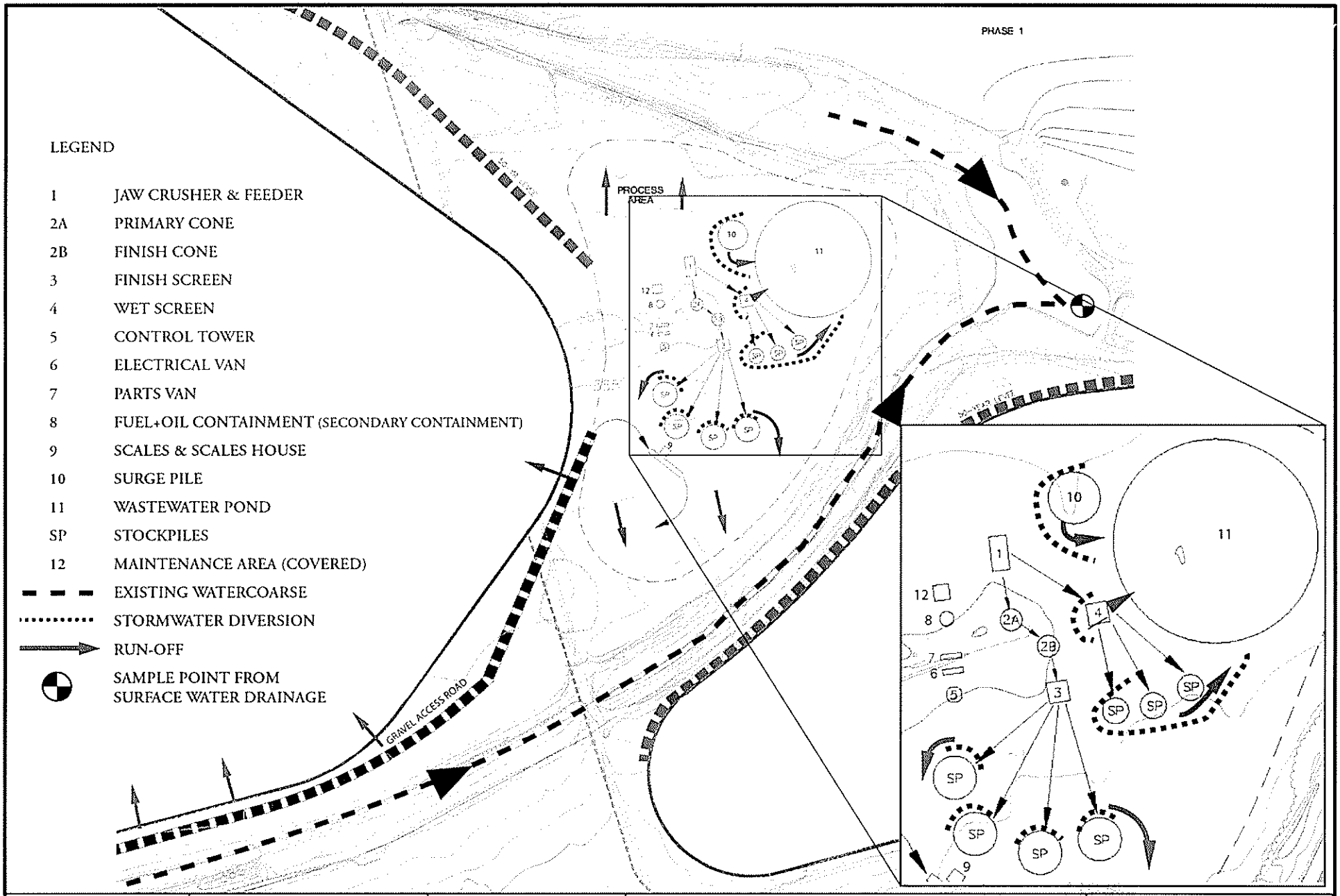
Source: Sharrah Dunlap Sawyer, Site Plan, Aug. 2005; USGS, 7.5' Topo Quad, Balls Ferry, 1965; and EIP Associates, Sampling Points, Aug. 2005, and GIS Program, Dec. 2005.

Phase Boundary
Sampling Point
Piezometer Location
Project Boundary
Levee
Proposed Spur Dike
Access Road

FIGURE 2 PROJECT PHASING

Shasta Ranch Mining and Reclamation Plan
Shasta County, CA

N:\GIS\Projects\Shasta Ranch 10932\Excavation Location 083005.mxd



EIP

Source: Sharrah Dunlap Sawyer, Inc.
December 15, 2005

FIGURE 3
PROCESS AND STORAGE AREA SCHEMATIC
Shasta Ranch Restoration
Shasta County, CA

Appendix A

Annual Report Forms - Monthly Monitoring

State of California
STATE WATER RESOURCES CONTROL BOARD

2005-2006

ANNUAL REPORT

FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITIES

Reporting Period July 1, 2005 through June 30, 2006

An annual report is required to be submitted to your local Regional Water Quality Control Board (Regional Board) by July 1 of each year. This document must be certified and signed, under penalty of perjury, by the appropriate official of your company. Many of the Annual Report questions require an explanation. Please provide explanations on a separate sheet as an attachment. **Retain a copy of the completed Annual Report for your records.**

Please circle or highlight any information contained in Items A, B, and C below that is new or revised so we can update our records. Please remember that a Notice of Termination and new Notice of Intent are required whenever a facility operation is relocated or changes ownership.

If you have any questions, please contact your Regional Board Industrial Storm Water Permit Contact. The names, telephone numbers and e-mail addresses of the Regional Board contacts, as well as the Regional Board office addresses can be found at http://www.swrcb.ca.gov/stormwtr/contact.html. To find your Regional Board information, match the first digit of your WDID number with the corresponding number that appears in parenthesis on the first line of each Regional Board office.

GENERAL INFORMATION:

A. Facility Information:

Facility WDID No: _____

Facility Business Name: _____ Contact Person: _____

Physical Address: _____ e-mail: _____

City: _____ CA Zip: _____ Phone: _____

Standard Industrial Classification (SIC) Code(s): _____

B. Facility Operator Information:

Operator Name: _____ Contact Person: _____

Mailing Address: _____ e-mail: _____

City: _____ State: ____ Zip: _____ Phone: _____

C. Facility Billing Information:

Operator Name: _____ Contact Person: _____

Mailing Address: _____ e-mail: _____

City: _____ State: ____ Zip: _____ Phone: _____

2005-2006

ANNUAL REPORT

SPECIFIC INFORMATION

MONITORING AND REPORTING PROGRAM

D. SAMPLING AND ANALYSIS EXEMPTIONS AND REDUCTIONS

1. For the reporting period, was your facility exempt from collecting and analyzing samples from **two** storm events in accordance with sections B.12 or 15 of the General Permit?

   ☐ **YES** Go to Item D.2 ☐ **NO** Go to Section E

2. Indicate the reason your facility is exempt from collecting and analyzing samples from **two** storm events. Attach a copy of the first page of the appropriate certification if you check boxes ii, iii, iv, or v.

   i. ☐ Participating in an Approved Group Monitoring Plan **Group Name:** _____

   _____

   ii. ☐ Submitted **No Exposure Certification (NEC)** Date Submitted: _____

   Re-evaluation Date: _____

   Does facility continue to satisfy NEC conditions? ☐ YES ☐ NO

   iii. ☐ Submitted **Sampling Reduction Certification (SRC)** Date Submitted: _____

   Re-evaluation Date: _____

   Does facility continue to satisfy SRC conditions? ☐ YES ☐ NO

   iv. ☐ Received Regional Board Certification Certification Date: _____

   v. ☐ Received Local Agency Certification Cetification Date: _____

3. If you checked boxes i or iii above, were you scheduled to sample **one** storm event during the reporting year?

   ☐ **YES** Go to Section E ☐ **NO** Go to Section F

4. If you checked boxes ii, iv, or v, go to Section F.

E. SAMPLING AND ANALYSIS RESULTS

1. How many storm events did you sample? _____ If less than 2, **attach explanation** (if you checked item D.2.i or iii. above, only attach explanation if you answer "0").

2. Did you collect storm water samples from the first storm of the wet season that produced a discharge during scheduled facility operating hours? (Section B.5 of the General Permit)

   ☐ **YES** ☐ **NO, attach explanation** **(Please note that if you do not sample the first storm event, you are still required to sample 2 storm events)**

3. How many storm water discharge locations are at your facility? _____

4. For each storm event sampled, did you collect and analyze a sample from each of the facilitys' storm water discharge locations? ☐ YES, go to Item E.6 ☐ NO

5. Was sample collection or analysis reduced in accordance with Section B.7.d of the General Permit? ☐ YES ☐ NO, **attach explanation**

   If "YES", **attach documentation** supporting your determination that two or more drainage areas are substantially identical.

   Date facility's drainage areas were last evaluated _____

6. Were all samples collected during the first hour of discharge? ☐ YES ☐ NO, **attach explanation**

7. Was all storm water sampling preceded by three (3) working days without a storm water discharge? ☐ YES ☐ NO, **attach explanation**

8. Were there any discharges of stormwater that had been temporarily stored or contained? (such as from a pond) ☐ YES ☐ NO, go to Item E.10

9. Did you collect and analyze samples of temporarily stored or contained storm water discharges from two storm events? (or one storm event if you checked item D.2.i or iii. above) ☐ YES ☐ NO, **attach explanation**

10. Section B.5. of the General Permit requires you to analyze storm water samples for pH, Total Suspended Solids (TSS), Specific Conductance (SC), Total Organic Carbon (TOC) or Oil and Grease (O&G), other pollutants likely to be present in storm water discharges in significant quantities, and analytical parameters listed in Table D of the General Permit.

    a. Does Table D contain any additional parameters related to your facility's SIC code(s)? ☐ YES ☐ NO, Go to Item E.11

    b. Did you analyze all storm water samples for the applicable parameters listed in Table D? ☐ YES ☐ NO

    c. If you did not analyze all storm water samples for the applicable Table D parameters, check one of the following reasons:

       _____ In prior sampling years, the parameter(s) have not been detected in significant quantities from two consecutive sampling events. **Attach explanation**

       _____ The parameter(s) is not likely to be present in storm water discharges and authorized non-storm water discharges in significant quantities based upon the facility operator's evaluation. **Attach explanation**

       _____ Other. **Attach explanation**

11. For each storm event sampled, attach a copy of the laboratory analytical reports and report the sampling and analysis results using **Form 1** or its equivalent. The following must be provided for each sample collected:

- Date and time of sample collection
- Name and title of sampler.
- Parameters tested.
- Name of analytical testing laboratory.
- Discharge location identification.
- Testing results.
- Test methods used.
- Test detection limits.
- Date of testing.
- Copies of the laboratory analytical results.

F. QUARTERLY VISUAL OBSERVATIONS

1. **Authorized Non-Storm Water Discharges**
Section B.3.b of the General Permit requires quarterly visual observations of all authorized non-storm water discharges and their sources.

a. Do authorized non-storm water discharges occur at your facility?

☐ **YES** ☐ **NO** Go to Item F.2

b. Indicate whether you visually observed all authorized non-storm water discharges and their sources during the quarters when they were discharged. **Attach an explanation for any "NO" answers.** Indicate "N/A" for quarters without any authorized non-storm water discharges.

July -September	☐ **YES**	☐ **NO**	☐ **N/A**	October-December	☐ **YES**	☐ **NO**	☐ **N/A**
January-March	☐ **YES**	☐ **NO**	☐ **N/A**	April-June	☐ **YES**	☐ **NO**	☐ **N/A**

c. Use **Form 2** to report quarterly visual observations of authorized non-storm water discharges or provide the following information.

i. name of each authorized non-storm water discharge
ii. date and time of observation
iii. source and location of each authorized non-storm water discharge
iv. characteristics of the discharge at its source and impacted drainage area/discharge location
v. name, title, and signature of observer
vi. **any** new or revised BMPs necessary to reduce or prevent pollutants in authorized non-storm water discharges. Provide new or revised BMP implementation date.

2. **Unauthorized Non-Storm Water Discharges**
Section B.3.a of the General Permit requires quarterly visual observations of all drainage areas to detect the presence of unauthorized non-storm water discharges and their sources.

a. Indicate whether you visually observed all drainage areas to detect the presence of unauthorized non-storm water discharges and their sources. **Attach an explanation for any "NO" answers.**

July -September	☐ **YES**	☐ **NO**	October-December	☐ **YES**	☐ **NO**
January-March	☐ **YES**	☐ **NO**	April-June	☐ **YES**	☐ **NO**

b. Based upon the quarterly visual observations, were any unauthorized non-storm water discharges detected?

☐ **YES** ☐ **NO** Go to item F.2.d

c. Have each of the unauthorized non-storm water discharges been eliminated or permitted?

☐ **YES** ☐ **NO** **Attach explanation**

d. Use **Form 3** to report quarterly unauthorized non-storm water discharge visual observations or provide the following information.

i. name of each unauthorized non-storm water discharge.
ii. date and time of observation.
iii. source and location of each unauthorized non-storm water discharge.
iv. characteristics of the discharge at its source and impacted drainage area/discharge location.
v. name, title, and signature of observer.
vi. **any** corrective actions necessary to eliminate the source of each unauthorized non-storm water discharge and to clean impacted drainage areas. Provide date unauthorized non-storm water discharge(s) was eliminated or scheduled to be eliminated.

G. MONTHLY WET SEASON VISUAL OBSERVATIONS

Section B.4.a of the General Permit requires you to conduct monthly visual observations of storm water discharges at all storm water discharge locations during the wet season. These observations shall occur during the first hour of discharge or, in the case of temporarily stored or contained storm water, at the time of discharge.

1. Indicate below whether monthly visual observations of storm water discharges occurred at all discharge locations. **Attach an explanation for any "NO" answers.** Include in this explanation whether any eligible storm events occurred during scheduled facility operating hours that did not result in a storm water discharge, and provide the date, time, name and title of the person who observed that there was no storm water discharge.

	YES	NO		YES	NO
October	☐	☐	February	☐	☐
November	☐	☐	March	☐	☐
December	☐	☐	April	☐	☐
January	☐	☐	May	☐	☐

2. Report monthly wet season visual observations using **Form 4** or provide the following information.

   a. date, time, and location of observation
   b. name and title of observer
   c. characteristics of the discharge (i.e., odor, color, etc.) and source of any pollutants observed.
   d. **any** new or revised BMPs necessary to reduce or prevent pollutants in storm water discharges. Provide new or revised BMP implementation date.

ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION (ACSCE)

H. ACSCE CHECKLIST

Section A.9 of the General Permit requires the facility operator to conduct one ACSCE in each reporting period (July 1-June 30). Evaluations must be conducted within 8-16 months of each other. The SWPPP and monitoring program shall be revised and implemented, as necessary, within 90 days of the evaluation. The checklist below includes the minimum steps necessary to complete a ACSCE. Indicate whether you have performed each step below. **Attach an explanation for any "NO" answers.**

1. Have you inspected all potential pollutant sources and industrial activities areas? ☐ YES ☐ NO
   The following areas should be inspected:

   - areas where spills and leaks have occured during the last year.
   - outdoor wash and rinse areas.
   - process/manufacturing areas.
   - loading, unloading, and transfer areas.
   - waste storage/disposal areas.
   - dust/particulate generating areas.
   - erosion areas.
   - building repair, remodeling, and construction
   - material storage areas
   - vehicle/equipment storage areas
   - truck parking and access areas
   - rooftop equipment areas
   - vehicle fueling/maintenance areas
   - non-storm water discharge generating areas

2. Have you reviewed your SWPPP to assure that its BMPs address existing potential pollutant sources and industrial activities areas? ☐ YES ☐ NO

3. Have you inspected the entire facility to verify that the SWPPP's site map, is up-to-date? The following site map items should be verified: ☐ YES ☐ NO

   - facility boundaries
   - outline of all storm water drainage areas
   - areas impacted by run-on
   - storm water discharges locations
   - storm water collection and conveyance system
   - structural control measures such as catch basins, berms, containment areas, oil/water separators, etc.

4. Have you reviewed all General Permit compliance records generated since the last annual evaluation? ☐ YES ☐ NO

The following records should be reviewed:

- quarterly authorized non-storm water discharge visual observations
- monthly storm water discharge visual observation
- records of spills/leaks and associated clean-up/response activities
- quarterly unauthorized non-storm water discharge visual observations
- Sampling and Analysis records
- preventative maintenance inspection and maintenance records

5. Have you reviewed the major elements of the SWPPP to assure compliance with the General Permit? ☐ YES ☐ NO

The following SWPPP items should be reviewed:

- pollution prevention team
- list of significant materials
- description of potential pollutant sources
- assessment of potential pollutant sources
- identification and description of the BMPs to be implemented for each potential pollutant source

6. Have you reviewed your SWPPP to assure that a) the BMPs are adequate in reducing or preventing pollutants in storm water discharges and authorized non-storm water discharges, and b) the BMPs are being implemented? ☐ YES ☐ NO

The following BMP categories should be reviewed:

- good housekeeping practices
- spill response
- employee training
- erosion control
- quality assurance
- preventative maintenance
- material handling and storage practices
- waste handling/storage
- structural BMPs

7. Has all material handling equipment and equipment needed to implement the SWPPP been inspected? ☐ YES ☐ NO

I. ACSCE EVALUATION REPORT

The facility operator is required to provide an evaluation report that includes:

- identification of personnel performing the evaluation
- the date(s) of the evaluation
- necessary SWPPP revisions
- schedule for implementing SWPPP revisions
- any incidents of non-compliance and the corrective actions taken.

Use **Form 5** to report the results of your evaluation or develop an equivalent form.

J. ACSCE CERTIFICATION

The facility operator is required to certify compliance with the Industrial Activities Storm Water General Permit. To certify compliance, both the SWPPP and Monitoring Program must be up to date and be fully implemented.

Based upon your ACSCE, do you certify compliance with the Industrial Activities Storm Water General Permit? ☐ YES ☐ NO

If you answered "NO" **attach an explanation** to the ACSCE Evaluation Report why you are not in compliance with the Industrial Activities Storm Water General Permit.

ATTACHMENT SUMMARY

Answer the questions below to help you determine what should be attached to this annual report. Answer NA (Not Applicable) to questions 2-4 if you are not required to provide those attachments.

1. Have you attached Forms 1,2,3,4, and 5 or their equivalent?	☐ YES (Mandatory)		
2. If you conducted sampling and analysis, have you attached the laboratory analytical reports?	☐ YES	☐ NO	☐ NA
3. If you checked box II, III, IV, or V in item D.2 of this Annual Report, have you attached the first page of the appropriate certifications?	☐ YES	☐ NO	☐ NA
4. Have you attached an explanation for each "NO" answer in items E.1, E.2, E.5-E.7, E.9, E.10.c, F.1.b, F.2.a, F.2.c, G.1, H.1-H.7, or J?	☐ YES	☐ NO	☐ NA

ANNUAL REPORT CERTIFICATION

I am duly authorized to sign reports required by the INDUSTRIAL ACTIVITIES STORM WATER GENERAL PERMIT (see Standard Provision C.9) and I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those person directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Printed Name: _____

Signature: _____ Date: _____

Title: _____

DESCRIPTION OF BASIC ANALYTICAL PARAMETERS

The Industrial Activities Storm Water General Permit (General Permit) requires you to analyze storm water samples for at least four parameters. These are pH, Total Suspended Solids (TSS), Specific Conductance (SC),and Total Organic Carbon (TOC). Oil and Grease (O&G) may be substituted for TOC. In addition, you must monitor for any other pollutants which you believe to be present in your storm water discharge as a result of industrial activity and analytical parameters listed in Table D of the General Permit. There are no numeric limitations for the parameters you test for.

The four parameters which the General Permit requires to be tested are considered *indicator* parameters. In other words, regardless of what type of facility you operate, these parameters are nonspecific and general enough to usually provide some indication whether pollutants are present in your storm water discharge. The following briefly explains what each of these parameters mean:

pH is a numeric measure of the hydrogen-ion concentration. The neutral, or acceptable, range is within 6.5 to 8.5. At values less than 6.5, the water is considered acidic; above 8.5 it is considered alkaline or basic. An example of an acidic substance is vinegar, and a alkaline or basic substance is liquid antacid. Pure rainfall tends to have a pH of a little less than 7. There may be sources of materials or industrial activities which could increase or decrease the pH of your storm water discharge. If the pH levels of your storm water discharge are high or low, you should conduct a thorough evaluation of all potential pollutant sources at your site.

Total Suspended Solids (TSS) is a measure of the undissolved solids that are present in your storm water discharge. Sources of TSS include sediment from erosion of exposed land, and dirt from impervious (i.e. paved) areas. Sediment by itself can be very toxic to aquatic life because it covers feeding and breeding grounds, and can smother organisms living on the bottom of a water body. Toxic chemicals and other pollutants also adhere to sediment particles. This provides a medium by which toxic or other pollutants end up in our water ways and ultimately in human and aquatic life. TSS levels vary in runoff from undisturbed land. It has been shown that TSS levels increase significantly due to land development.

Specific Conductance (SC) is a numerical expression of the ability of the water to carry an electric current. SC can be used to assess the degree of mineralization, salinity, or estimate the total dissolved solids concentration of a water sample. Because of air pollution, most rain water has a SC a little above zero. A high SC could affect the usability of waters for drinking, irrigation, and other commercial or industrial use.

Total Organic Carbon (TOC) is a measure of the total organic matter present in water. (All organic matter contains carbon) This test is sensitive and able to detect small concentrations of organic matter. Organic matter is naturally occurring in animals, plants, and man. Organic matter may also be man made (so called synthetic organics). Synthetic organics include pesticides, fuels, solvents, and paints. Natural organic matter utilizes the oxygen in a receiving water to biodegrade. Too much organic matter could place a significant oxygen demand on the water, and possibly impact its quality. Synthetic organics either do not biodegrade or biodegrade very slowly. Synthetic organics are a source of toxic chemicals that can have adverse affects at very low concentrations. Some of these chemicals bioaccumulate in aquatic life. If your levels of TOC are high, you should evaluate all sources of natural or synthetic organics you may use at your site.

Oil and Grease (O&G) is a measure of the amount of oil and grease present in your storm water discharge. At very low concentrations, O&G can cause a sheen (that floating "rainbow") on the surface of water (1 qt. of oil can pollute 250,000 gallons of water). O&G can adversely affect aquatic life and create unsightly floating material and film on water, thus making it undrinkable. Sources of O&G include maintenance shops, vehicles, machines and roadways.

If you have any questions regarding whether or not your constituent concentrations are too high, please contact your local Regional Board office. The United States Environmental Protection Agency (USEPA) has published stormwater discharge benchmarks for a number of parameters. These benchmarks may be helpful when evaluating whether additional BMPs are appropriate. These benchmarks can be accessed at our website at http://www.swrcb.ca.gov. It is contained in the Sampling and Analysis Reduction Certification.

See Storm Water Contacts at

http://www.waterboards.ca.gov/stormwtr/contact.html

2005-2006

ANNUAL REPORT

SIDE A

FORM 1-SAMPLING & ANALYSIS RESULTS

FIRST STORM EVENT

- If analytical results are less than the detection limit (or non detectable), show the value as less than the numerical value of the detection limit (example: <.05)
- If you did not analyze for a required parameter, do not report "0". Instead, leave the appropriate box blank
- When analysis is done using portable analysis (such as portable pH meters, SC meters, etc.), indicate "PA" in the appropriate test method used box.
- Make additional copies of this form as necessary.

NAME OF PERSON COLLECTING SAMPLE(S):_____ **TITLE:** _____ **SIGNATURE:** _____

DESCRIBE DISCHARGE LOCATION Example: NW Out Fall	DATE/TIME OF SAMPLE COLLECTION	TIME DISCHARGE STARTED	ANALYTICAL RESULTS For First Storm Event									
			BASIC PARAMETERS					OTHER PARAMETERS				
			pH	TSS	SC	O&G	TOC					
	_____ ☐ AM _____ ☐ PM	_____ ☐ AM _____ ☐ PM										
	_____ ☐ AM _____ ☐ PM	_____ ☐ AM _____ ☐ PM										
	_____ ☐ AM _____ ☐ PM	_____ ☐ AM _____ ☐ PM										
	_____ ☐ AM _____ ☐ PM	_____ ☐ AM _____ ☐ PM										
TEST REPORTING UNITS:			pH Units	mg/l	umho/cm	mg/l	mg/l					
TEST METHOD DETECTION LIMIT:												
TEST METHOD USED:												
ANALYZED BY (SELF/LAB):												

TSS - Total Suspended Solids SC - Specific Conductance O&G - Oil & Grease TOC - Total Organic Carbon

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ANNUAL REPORT

SIDE B

FORM 1-SAMPLING & ANALYSIS RESULTS

SECOND STORM EVENT

- If analytical results are less than the detection limit (or non detectable), show the value as less than the numerical value of the detection limit (example: <.05)
- If you did not analyze for a required parameter, do not report "0". Instead, leave the appropriate box blank
- When analysis is done using portable analysis (such as portable pH meters, SC meters, etc.), indicate "PA" in the appropriate test method used box.
- Make additional copies of this form as necessary.

NAME OF PERSON COLLECTING SAMPLE(S):_____ **TITLE:** _____ **SIGNATURE:** _____

DESCRIBE DISCHARGE LOCATION Example: NW Out Fall	DATE/TIME OF SAMPLE COLLECTION	TIME DISCHARGE STARTED	ANALYTICAL RESULTS For First Storm Event									
			BASIC PARAMETERS					OTHER PARAMETERS				
			pH	TSS	SC	O&G	TOC					
	_____ ☐ AM _____ ☐ PM	☐ AM _____ ☐ PM										
	_____ ☐ AM _____ ☐ PM	☐ AM _____ ☐ PM										
	_____ ☐ AM _____ ☐ PM	☐ AM _____ ☐ PM										
	_____ ☐ AM _____ ☐ PM	☐ AM _____ ☐ PM										
TEST REPORTING UNITS:			pH Units	mg/l	umho/cm	mg/l	mg/l					
TEST METHOD DETECTION LIMIT:												
TEST METHOD USED:												
ANALYZED BY (SELF/LAB):												

TSS - Total Suspended Solids SC - Specific Conductance O&G - Oil & Grease TOC - Total Organic Carbon

2005-2006

ANNUAL REPORT

SIDE A

FORM 2-QUARTERLY VISUAL OBSERVATIONS OF AUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

- Quarterly dry weather visual observations are required of each authorized NSWD.
- Observe each authorized NSWD source, impacted drainage area, and discharge location.
- Authorized NSWDs must meet the conditions provided in Section D (pages 5-6), of the General Permit.
- Make additional copies of this form as necessary.

QUARTER: **JULY-SEPT.** DATE: _____	**Observers Name:** _____ **Title:** _____ **Signature:** _____	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER?** ☐ **YES** ☐ **NO** If **YES**, complete reverse side of this form.
QUARTER: **OCT.-DEC.** DATE: _____	**Observers Name:** _____ **Title:** _____ **Signature:** _____	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER?** ☐ **YES** ☐ **NO** If **YES**, complete reverse side of this form.
QUARTER: **JAN.-MARCH** DATE: _____	**Observers Name:** _____ **Title:** _____ **Signature:** _____	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER?** ☐ **YES** ☐ **NO** If **YES**, complete reverse side of this form.
QUARTER: **APRIL-JUNE** DATE: _____	**Observers Name:** _____ **Title:** _____ **Signature:** _____	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER?** ☐ **YES** ☐ **NO** If **YES**, complete reverse side of this form.

2005-2006

ANNUAL REPORT

SIDE B

FORM 2-QUARTERLY VISUAL OBSERVATIONS OF AUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

DATE /TIME OF OBSERVATION	SOURCE AND LOCATION OF AUTHORIZED NSWD EXAMPLE: Air conditioner Units on Building C	NAME OF AUTHORIZED NSWD EXAMPLE: Air conditioner condensate	DESCRIBE AUTHORIZED NSWD CHARACTERISTICS Indicate whether authorized NSWD is clear, cloudy, or discolored, causing staining, contains floating objects or an oil sheen, has odors, etc.		DESCRIBE ANY REVISED OR NEW BMPs AND PROVIDE THEIR IMPLEMENTATION DATE
			At the NSWD Source	At the NSWD Drainage Area and Discharge Location	
_____ ____ ☐ AM ☐ PM					
_____ ____ ☐ AM ☐ PM					
_____ ____ ☐ AM ☐ PM					
_____ ____ ☐ AM ☐ PM					
_____ ____ ☐ AM ☐ PM					

2005-2006

ANNUAL REPORT

SIDE A

FORM 3-QUARTERLY VISUAL OBSERVATIONS OF UNAUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

- Unauthorized NSWDs are discharges (such as wash or rinse waters) that do not meet the conditions provided in Section D (pages 5-6) of the General Permit.
- Quarterly visual observations are required to observe current and detect prior unauthorized NSWDs.
- Quarterly visual observations are required during dry weather and at all facility drainage areas.
- Each unauthorized NSWD source, impacted drainage area, and discharge location must be identified and observed.
- Unauthorized NSWDs that can not be eliminated within 90 days of observation must be reported to the Regional Board in accordance with Section A.10.e of the General Permit.
- Make additional copies of this form as necessary.

QUARTER: **JULY-SEPT.** **DATE/TIME OF OBSERVATIONS** _____ __ __ ☐ AM ☐ PM	**Observers Name:** _____ **Title:** _____ **Signature:** _____	**WERE UNAUTHORIZED NSWDs OBSERVED?** ☐ YES ☐ NO **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs?** ☐ YES ☐ NO	If **YES** to either question, complete reverse side.
QUARTER: **OCT.-DEC.** **DATE/TIME OF OBSERVATIONS** _____ __ __ ☐ AM ☐ PM	**Observers Name:** _____ **Title:** _____ **Signature:** _____	**WERE UNAUTHORIZED NSWDs OBSERVED?** ☐ YES ☐ NO **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs?** ☐ YES ☐ NO	If **YES** to either question, complete reverse side.
QUARTER: **JAN.-MARCH** **DATE/TIME OF OBSERVATIONS** _____ __ __ ☐ AM ☐ PM	**Observers Name:** _____ **Title:** _____ **Signature:** _____	**WERE UNAUTHORIZED NSWDs OBSERVED?** ☐ YES ☐ NO **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs?** ☐ YES ☐ NO	If **YES** to either question, complete reverse side.
QUARTER: **APRIL-JUNE** **DATE/TIME OF OBSERVATIONS** _____ __ __ ☐ AM ☐ PM	**Observers Name:** _____ **Title:** _____ **Signature:** _____	**WERE UNAUTHORIZED NSWDs OBSERVED?** ☐ YES ☐ NO **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs?** ☐ YES ☐ NO	If **YES** to either question, complete reverse side.

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SIDE B

FORM 3 QUARTERLY VISUAL OBSERVATIONS OF UNAUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

OBSERVATION DATE (FROM REVERSE SIDE)	NAME OF UNAUTHORIZED NSWD EXAMPLE: Vehicle Wash Water	SOURCE AND LOCATION OF UNAUTHORIZED NSWD EXAMPLE: NW Corner of Parking Lot	DESCRIBE UNAUTHORIZED NSWD CHARACTERISTICS Indicate whether unauthorized NSWD is clear, cloudy, discolored, causing stains; contains floating objects or an oil sheen, has odors, etc.		DESCRIBE CORRECTIVE ACTIONS TO ELIMINATE UNAUTHORIZED NSWD AND TO CLEAN IMPACTED DRAINAGE AREAS. PROVIDE UNAUTHORIZED NSWD ELIMINATION DATE.
			AT THE UNAUTHORIZED NSWD SOURCE	AT THE UNAUTHORIZED NSWD AREA AND DISCHARGE LOCATION	
_____ _____ ☐ AM ☐ PM					
_____ _____ ☐ AM ☐ PM					
_____ _____ ☐ AM ☐ PM					
_____ _____ ☐ AM ☐ PM					

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FORM 4-MONTHLY VISUAL OBSERVATIONS OF

SIDE A

STORM WATER DISCHARGES

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

Observation Date: October ____ 2005	Drainage Location Description	#1	#2	#3	#4
Observers Name: _____	Observation Time	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Title: _____	Time Discharge Began	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Signature: _____	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: November____ 2005	Drainage Location Description	#1	#2	#3	#4
Observers Name: _____	Observation Time	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Title: _____	Time Discharge Began	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Signature: _____	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: December____ 2005	Drainage Location Description	#1	#2	#3	#4
Observers Name: _____	Observation Time	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Title: _____	Time Discharge Began	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Signature: _____	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: January____ 2006	Drainage Location Description	#1	#2	#3	#4
Observers Name: _____	Observation Time	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Title: _____	Time Discharge Began	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Signature: _____	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐

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ANNUAL REPORT

SIDE B

FORM 4-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

DATE/TIME OF OBSERVATION (From Reverse Side)	DRAINAGE AREA DESCRIPTION EXAMPLE: Discharge from material storage Area #2	DESCRIBE STORM WATER DISCHARGE CHARACTERISTICS Indicate whether storm water discharge is clear, cloudy, or discolored; causing staining; containing floating objects or an oil sheen, has odors, etc.	IDENTIFY AND DESCRIBE SOURCE(S) OF POLLUTANTS EXAMPLE: Oil sheen caused by oil dripped by trucks in vehicle maintenance area.	DESCRIBE ANY REVISED OR NEW BMPs AND THEIR DATE OF IMPLEMENTATION
_____ _____ ☐ AM ☐ PM				
_____ _____ ☐ AM ☐ PM				
_____ _____ ☐ AM ☐ PM				
_____ _____ ☐ AM ☐ PM				
_____ _____ ☐ AM ☐ PM				

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FORM 4 (Continued)-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

SIDE A

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

Observation Date: February ____ 2006	Drainage Location Description	#1	#2	#3	#4
Observers Name: _____	Observation Time	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Title: _____	Time Discharge Began	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Signature: _____	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: March ____ 2006	Drainage Location Description	#1	#2	#3	#4
Observers Name: _____	Observation Time	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Title: _____	Time Discharge Began	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Signature: _____	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: April ____ 2006	Drainage Location Description	#1	#2	#3	#4
Observers Name: _____	Observation Time	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Title: _____	Time Discharge Began	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Signature: _____	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: May ____ 2006	Drainage Location Description	#1	#2	#3	#4
Observers Name: _____	Observation Time	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Title: _____	Time Discharge Began	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Signature: _____	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐

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SIDE B

FORM 4 (Continued)-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

DATE/TIME OF OBSERVATION (From Reverse Side)	DRAINAGE AREA DESCRIPTION EXAMPLE: Discharge from material storage Area #2	DESCRIBE STORM WATER DISCHARGE CHARACTERISTICS Indicate whether storm water discharge is clear, cloudy, or discolored; causing staining; containing floating objects or an oil sheen, has odors, etc.	IDENTIFY AND DESCRIBE SOURCE(S) OF POLLUTANTS EXAMPLE: Oil sheen caused by oil dripped by trucks in vehicle maintenance area.	DESCRIBE ANY REVISED OR NEW BMPs AND THEIR DATE OF IMPLEMENTATION
_____ _____ ☐ AM ☐ PM				
_____ _____ ☐ AM ☐ PM				
_____ _____ ☐ AM ☐ PM				
_____ _____ ☐ AM ☐ PM				
_____ _____ ☐ AM ☐ PM				

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SIDE A

FORM 5-ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY BMP STATUS

EVALUATION DATE: _____ INSPECTOR NAME: _____ TITLE: _____ SIGNATURE: _____

POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐YES ☐NO ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐YES ☐NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐YES ☐NO ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐YES ☐NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐YES ☐NO ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐YES ☐NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐YES ☐NO ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐YES ☐NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation

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SIDE B

FORM 5 (Continued)-ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY BMP STATUS

EVALUATION DATE: _____ INSPECTOR NAME: _____ TITLE: _____ SIGNATURE: _____

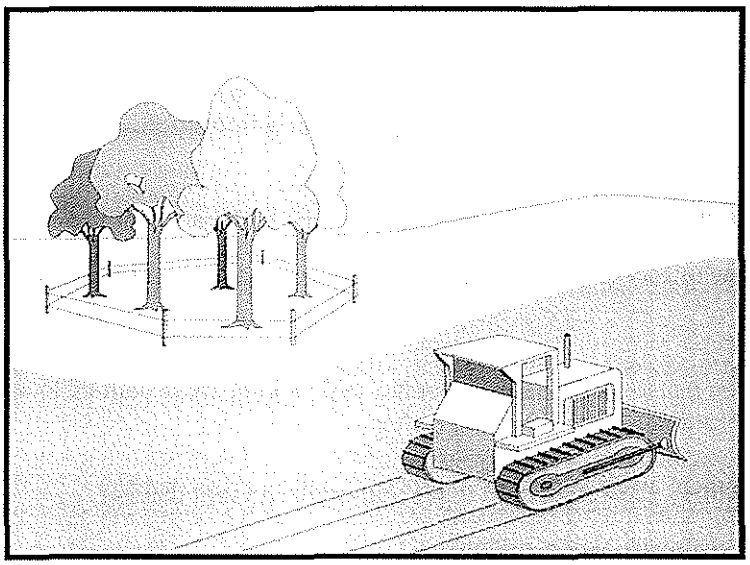
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐YES ☐NO ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐YES ☐NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐YES ☐NO ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐YES ☐NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐YES ☐NO ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐YES ☐NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐YES ☐NO ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐YES ☐NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation

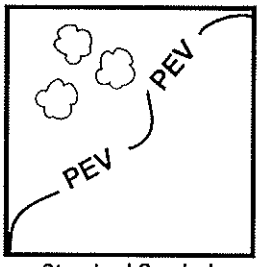
Appendix B

Best Management Practices

Preservation of Existing Vegetation

SS-2





Standard Symbol

BMP Objectives

Soil Stabilization
- ● Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ● Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

Preservation of existing vegetation is the identification and protection of desirable vegetation that provides erosion and sediment control benefits.

Appropriate Applications

- Preserve existing vegetation at areas on a site where no construction activity is planned or will occur at a later date. Specifications for preservation of existing vegetation can be found in Standard Specifications, Section 7-1.11.
- On a year-round basis, temporary fencing shall be provided prior to the commencement of clearing and grubbing operations or other soil-disturbing activities in areas.
- Clearing and grubbing operations should be staged to preserve existing vegetation.

Limitations

Protection of existing vegetation requires planning, and may limit the area available for construction activities.

Standards and Specifications

Timing

- Preservation of existing vegetation shall be provided prior to the commencement of clearing and grubbing operations or other soil-disturbing activities in areas identified on the plans to be preserved, especially on areas designated as Environmentally Sensitive Areas (ESAs).
- Preservation of existing vegetation shall conform to scheduling requirements set forth in the special provisions.

Design and Layout

- Mark areas to be preserved with temporary fencing made of orange polypropylene that is stabilized against ultraviolet light. The temporary fencing shall be at least 1 meter (3.2. ft) tall and shall have openings not larger than 50 mm by 50 mm (2 in by 2 in).

- Fence posts shall be either wood or metal, at the Contractor's discretion, as appropriate for the intended purpose. The post spacing and depth shall be adequate to completely support the fence in an upright position.

- Minimize the disturbed areas by locating temporary roadways to avoid stands of trees and shrubs and to follow existing contours to reduce cutting and filling.

- Consider the impact of grade changes to existing vegetation and the root zone.

Installation

- Construction materials, equipment storage, and parking areas shall be located where they will not cause root compaction.

- Keep equipment away from trees to prevent trunk and root damage.

- Maintain existing irrigation systems.

- Employees and subcontractors shall be instructed to honor protective devices. No heavy equipment, vehicular traffic, or storage piles of any construction materials shall be permitted within the drip line of any tree to be retained. Removed trees shall not be felled, pushed, or pulled into any retained trees. Fires shall not be permitted within 30 m (100 ft) of the drip line of any retained trees. Any fires shall be of limited size, and shall be kept under continual surveillance. No toxic or construction materials (including paint, acid, nails, gypsum board, chemicals, fuels, and lubricants) shall be stored within 15 m (50 ft) of the drip line of any retained trees, nor disposed of in any way which would injure vegetation.

Trenching and Tunneling

- Trenching shall be as far away from tree trunks as possible, usually outside of the tree drip line or canopy. Curve trenches around trees to avoid large roots or root concentrations. If roots are encountered, consider tunneling under them. When trenching and/or tunneling near or under trees to be retained, tunnels shall be at least 450 mm (18 in) below the ground surface, and not below the tree center to minimize impact on the roots.

- Tree roots shall not be left exposed to air; they shall be covered with soil as soon as possible, protected, and kept moistened with wet burlap or peat moss until the tunnel and/or trench can be completed.

- The ends of damaged or cut roots shall be cut off smoothly.

- Trenches and tunnels shall be filled as soon as possible. Careful filling and tamping will eliminate air spaces in the soil which can damage roots.

- Remove any trees intended for retention if those trees are damaged seriously enough to affect their survival. If replacement is desired or required, the new tree shall be of similar species, and at least 50 mm (2 in) caliper, unless

otherwise required by the contract documents.

- After all other work is complete, fences and barriers shall be removed last. This is because protected trees may be destroyed by carelessness during the final cleanup and landscaping.

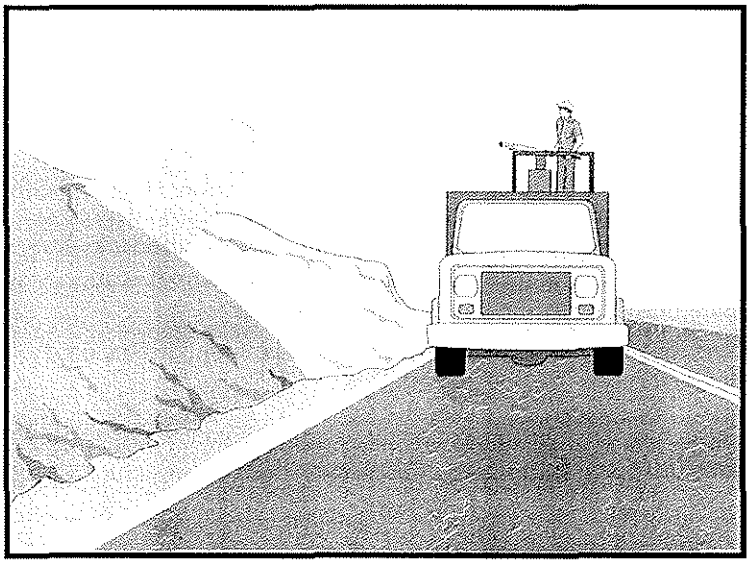
Maintenance and Inspection

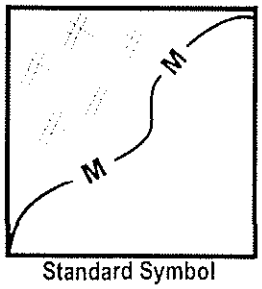
During construction, the limits of disturbance shall remain clearly marked at all times. Irrigation or maintenance of existing vegetation shall conform to the requirements in the landscaping plan. If damage to protected trees still occurs, maintenance guidelines described below shall be followed:

- Serious tree injuries shall be attended to by an arborist.
- During construction, District Environmental shall be contacted to ensure that ESAs are protected.

Hydraulic Mulch

SS-3





Standard Symbol

BMP Objectives

- ● Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ● Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

Hydraulic mulch consists of applying a mixture of shredded wood fiber or a hydraulic matrix and a stabilizing emulsion or tackifier with hydroseeding equipment, which temporarily protects exposed soil from erosion by raindrop impact or wind. This is one of five temporary soil stabilization alternatives to consider.

Appropriate Applications

- Hydraulic mulch is applied to disturbed areas requiring temporary protection until permanent vegetation is established or disturbed areas that must re-disturbed following an extended period of inactivity.

Limitations

- Wood fiber hydraulic mulches are generally short-lived (only last a part of a growing season) and need 24 hours to dry before rainfall occurs to be effective.
- Paper mulches are not permitted.
- Avoid use in areas where the mulch would be incompatible with immediate future earthwork activities and would have to be removed.

Standards and Specifications

- Prior to application, roughen embankment and fill areas by rolling with a crimping or punching type roller or by track walking. Track walking shall only be used where other methods are impractical.
- Hydraulic matrices require 24 hours to dry before rainfall occurs to be effective unless approved by the Resident Engineer.
- Avoid mulch over-spray onto the traveled way, sidewalks, lined drainage channels, and existing vegetation.
- Selection of hydraulic mulches by the Contractor must be approved by the Resident Engineer (RE) or Construction Storm Water Coordinator.

- Materials for wood fiber based hydraulic mulches and hydraulic matrices shall conform to Standard Specifications Section 20-2.07.

- Hydraulic Mulch

- Wood fiber mulch is a component of hydraulic applications. It is typically applied at the rate of 2,250 to 4,500 kilograms per hectare (kg/ha) (2,000 to 4,000 lb/ac) with 0-5% by weight of a stabilizing emulsion or tackifier (e.g., guar, psyllium, acrylic copolymer) and applied as a slurry. This type of mulch is manufactured from wood or wood waste from lumber mills or from urban sources. Specifications for wood fiber mulch can be found in Standard Specifications Sections 20-2.07 and 20-2.08.

- Hydraulic matrix is a combination of wood fiber mulch and a tackifier applied as a slurry. It is typically applied at the rate of 2,250 to 4,500 kilograms per hectare (kg/Ha) with 5-10% by weight of a stabilizing emulsion or tackifier (e.g., guar, psyllium, acrylic copolymer).

- Hydraulic Matrix

- Hydraulic matrix is a combination of wood fiber mulch and tackifier applied as a slurry. It is typically applied at the rate of 2,250 to 4,500 kg/ha with 5-10% by weight of a stabilizing emulsion or tackifier (e.g., guar, psyllium, acrylic copolymer).

- Bonded Fiber Matrix

- Bonded fiber matrix (BFM) is a hydraulically-applied system of fibers and adhesives that upon drying forms an erosion-resistant blanket that promotes vegetation, and prevents soil erosion. BFMs are typically applied at rates from 3,400 kg/ha to 4,500 kg/ha based on the manufacturer's recommendation. The biodegradable BFM is composed of materials that are 100% biodegradable. The binder in the BFM should also be biodegradable and should not dissolve or disperse upon re-wetting. Typically, biodegradable BFMs should not be applied immediately before, during or immediately after rainfall if the soil is saturated. Depending on the product, BFMs require 12 to 24 hours to dry to become effective.

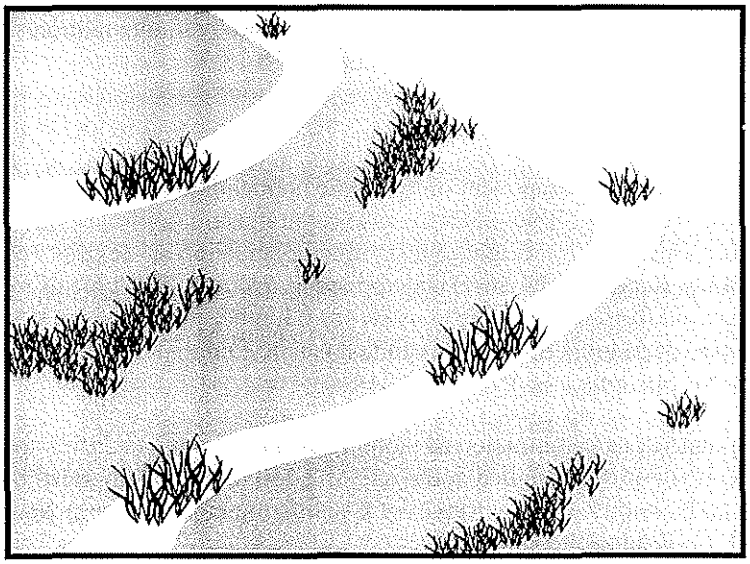
Maintenance and Inspections

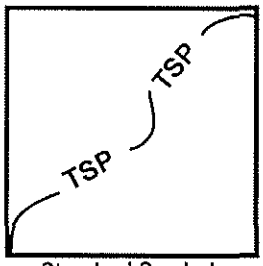
- Maintain an unbroken, temporary mulched ground cover throughout the period of construction when the soils are not being reworked. Inspect before expected rain storms and repair any damaged ground cover and re-mulch exposed areas of bare soil.

- After any rainfall event, the Contractor is responsible for maintaining all slopes to prevent erosion.

Hydroseeding

SS-4





Standard Symbol

BMP Objectives

- ● Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ● Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

Hydroseeding typically consists of applying a mixture of wood fiber, seed, fertilizer, and stabilizing emulsion with hydro-mulch equipment, which temporarily protects exposed soils from erosion by water and wind. This is one of five temporary soil stabilization alternatives to consider.

Appropriate Applications

- Hydroseeding is applied on disturbed soil areas requiring temporary protection until permanent vegetation is established or disturbed soil areas that must be re-disturbed following an extended period of inactivity.

Limitations

- Hydroseeding may be used alone only when there is sufficient time in the season to ensure adequate vegetation establishment and erosion control. Otherwise, hydroseeding must be used in conjunction with a soil binder or mulching (i.e., straw mulch), refer to BMP SS-5, Table 1 for options.
- Steep slopes are difficult to protect with temporary seeding.
- Temporary seeding may not be appropriate in dry periods without supplemental irrigation.
- Temporary vegetation may have to be removed before permanent vegetation is applied.
- Temporary vegetation is not appropriate for short-term inactivity.

Standards and Specifications

To select appropriate hydroseeding mixtures, an evaluation of site conditions shall be performed with respect to:

- Soil conditions
- Site topography
- Season and climate
- Vegetation types
- Maintenance requirements
- Sensitive adjacent areas
- Water availability
- Plans for permanent vegetation

- Selection of hydroseeding mixtures shall be approved by the District Landscape Architect and the Construction Storm Water Coordinator.

The following steps shall be followed for implementation:

- Seed mix shall comply with the Standard Specifications Section 20-2.10, and the project's special provisions.

- Hydroseeding can be accomplished using a multiple-step or one-step process; refer to the special provisions for specified process. The multiple-step process ensures maximum direct contact of the seeds to soil. When the one-step process is used to apply the mixture of fiber, seed, etc., the seed rate shall be increased to compensate for all seeds not having direct contact with the soil.

- Prior to application, roughen the slope, fill area, or area to be seeded with the furrows trending along the contours. Rolling with a crimping or punching type roller or track walking is required on all slopes prior to hydroseeding. Track walking shall only be used where other methods are impractical.

- Apply a straw mulch to keep seeds in place and to moderate soil moisture and temperature until the seeds germinate and grow, refer to Standard Specifications Sections 20-2.06 and 20-3.03.

- All seeds shall be in conformance with the California State Seed Law of the Department of Agriculture. Each seed bag shall be delivered to the site sealed and clearly marked as to species, purity, percent germination, dealer's guarantee, and dates of test; provide the Resident Engineer (RE) with such documentation. The container shall be labeled to clearly reflect the amount of Pure Live Seed (PLS) contained. All legume seed shall be pellet-inoculated. Inoculant sources shall be species-specific and shall be applied at a rate of 2 kg of inoculant per 100 kg of seed (2-lb inoculant per 100-lb seed), refer to Standard Specifications Section 20-2.10.

- Commercial fertilizer shall conform to the requirements of the California Food and Agricultural Code. Fertilizer shall be pelleted or granular form.

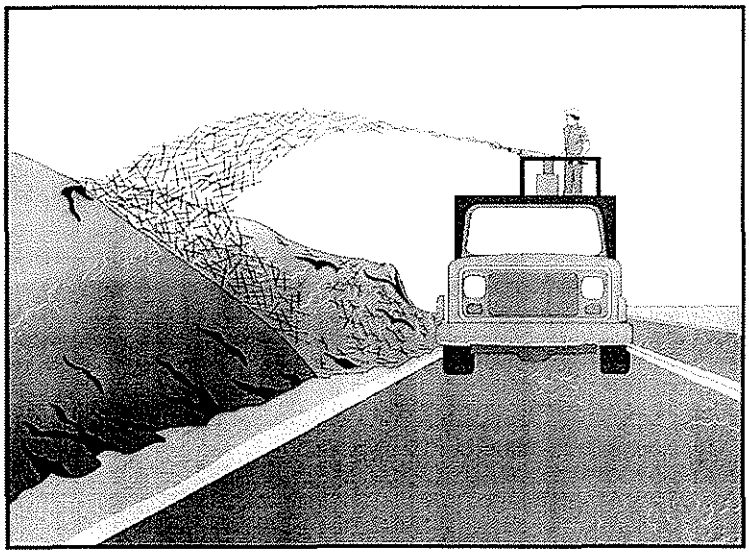
- Follow-up applications shall be made as needed to cover weak spots, and to maintain adequate soil protection.
- Avoid over-spray onto the traveled way, sidewalks, lined drainage channels, and existing vegetation.

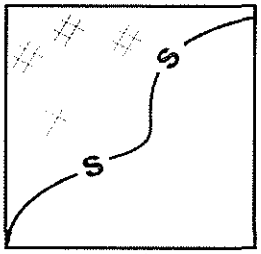
Maintenance and Inspection

- All seeded areas shall be inspected for failures and re-seeded, fertilized, and mulched within the planting season, using not less than half the original application rates. Any temporary revegetation efforts that do not provide adequate cover must be reapplied at a scheduled recommended by the Caltrans Landscape Architect or RE.
- After any rainfall event, the Contractor is responsible for maintaining all slopes to prevent erosion.

Straw Mulch

SS-6





Standard Symbol

BMP Objectives

- ● Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ● Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

Straw mulch consists of placing a uniform layer of straw and incorporating it into the soil with a studded roller or anchoring it with a stabilizing emulsion. This is one of five temporary soil stabilization alternatives to consider.

Appropriate Applications

- Straw mulch is typically used for soil stabilization as a temporary surface cover on disturbed areas until soils can be prepared for revegetation and permanent vegetation is established.
- Also typically used in combination with temporary and/or permanent seeding strategies to enhance plant establishment.

Limitations

- Availability of erosion control contractors and straw may be limited prior to the rainy season due to high demand.
- There is a potential for introduction of weed-seed and unwanted plant material.
- When straw blowers are used to apply straw mulch, the treatment areas must be within 45 m (150 ft) of a road or surface capable of supporting trucks.
- Straw mulch applied by hand is more time intensive and potentially costly.
- May have to be removed prior to permanent seeding or soil stabilization.
- "Punching" of straw does not work in sandy soils.

Standards and Specifications

- Straw shall be derived from wheat, rice, or barley.
- All materials shall conform to Standard Specifications Sections 20-2.06, 20-2.07 and 20-2.11.
- A tackifier is the preferred method for anchoring straw mulch to the soil on slopes.
- Crimping, punch roller-type rollers, or track-walking may also be used to incorporate straw mulch into the soil on slopes. Track walking shall only be used where other methods are impractical.
- Avoid placing straw onto the traveled way, sidewalks, lined drainage channels, sound walls, and existing vegetation.
- Straw mulch with tackifier shall not be applied during or immediately before rainfall.

Application Procedures

- Apply loose straw at a minimum rate of 3,570 kg/ha (4,000 lb/ac), or as indicated in the project's special provisions, either by machine or by hand distribution.
- If stabilizing emulsion will be used to anchor the straw mulch in lieu of incorporation, roughen embankment or fill areas by rolling with a crimping or punching-type roller or by track walking before placing the straw mulch. Track walking should only be used where rolling is impractical.
- The straw mulch must be evenly distributed on the soil surface.
- Anchor the mulch in place by using a tackifier or by "punching" it into the soil mechanically (incorporating).
- A tackifier acts to glue the straw fibers together and to the soil surface. The tackifier shall be selected based on longevity and ability to hold the fibers in place.
- A tackifier is typically applied at a rate of 140 kg/ha (125 lb/ac). In windy conditions, the rates are typically 200 kg/ha (178 lb/ac).
- Methods for holding the straw mulch in place depend upon the slope steepness, accessibility, soil conditions and longevity. If the selected method is incorporation of straw mulch into the soil, then do as follows:
  - Applying and incorporating straw shall follow the requirements in Standard Specifications Section 20-3.03.
  - On small areas, a spade or shovel can be used.

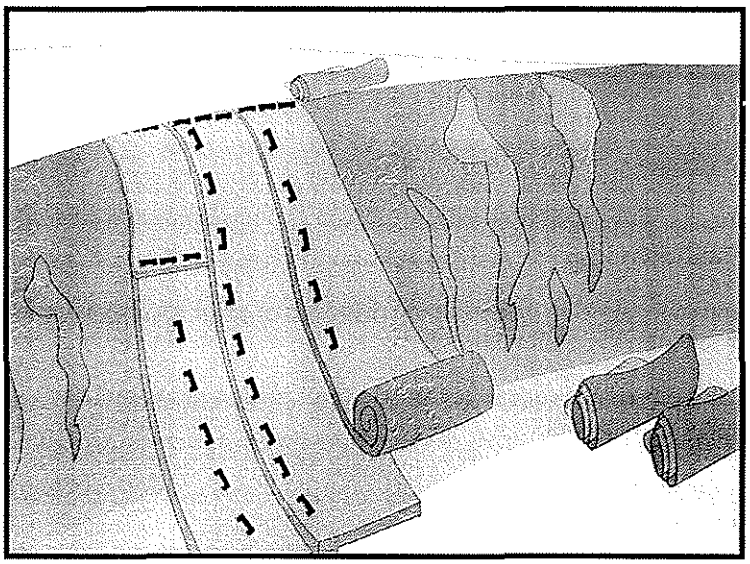
- On slopes with soils, which are stable enough and of sufficient gradient to safely support construction equipment without contributing to compaction and instability problems, straw can be "punched" into the ground using a knife-blade roller or a straight bladed coulter, known commercially as a "crimper."
- On small areas and/or steep slopes, straw can also be held in place using plastic netting or jute. The netting shall be held in place using 11 gauge wire staples, geotextile pins or wooden stakes. Refer to BMP SS-7, "Geotextiles, Plastic Covers and Erosion Control Blankets/Mats."

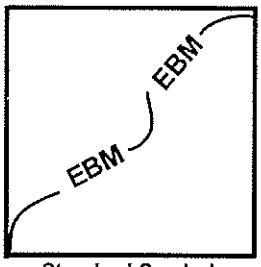
Maintenance and Inspections

- The key consideration in Maintenance and Inspection is that the straw needs to last long enough to achieve erosion control objectives.
- Maintain an unbroken, temporary mulched ground cover while DSAs are non-active. Repair any damaged ground cover and re-mulch exposed areas.
- Reapplication of straw mulch and tackifier may be required by the Resident Engineer (RE) to maintain effective soil stabilization over disturbed areas and slopes.
- After any rainfall event, the Contractor is responsible for maintaining all slopes to prevent erosion.

Geotextiles, Mats, Plastic Covers and Erosion Control Blankets

SS-7





Standard Symbol

BMP Objectives

- ● Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ● Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

This Best Management Practice (BMP) involves the placement of geotextiles, mats, plastic covers, or erosion control blankets to stabilize disturbed soil areas and protect soils from erosion by wind or water. This is one of five temporary soil stabilization alternatives to consider.

Appropriate Applications

These measures are used when disturbed soils may be particularly difficult to stabilize, including the following situations:

- Steep slopes, generally steeper than 1:3 (V:H).
- Slopes where the erosion potential is high.
- Slopes and disturbed soils where mulch must be anchored.
- Disturbed areas where plants are slow to develop.
- Channels with flows exceeding 1.0 m/s (3.3 ft/s).
- Channels to be vegetated.
- Stockpiles.
- Slopes adjacent to water bodies of Environmentally Sensitive Areas (ESAs).

Limitations

- Blankets and mats are more expensive than other erosion control measures, due to labor and material costs. This usually limits their application to areas inaccessible to hydraulic equipment, or where other measures are not applicable, such as channels.
- Blankets and mats are generally not suitable for excessively rocky sites, or areas where the final vegetation will be mowed (since staples and netting can catch in mowers).
- Blankets and mats must be removed and disposed of prior to application of permanent soil stabilization measures.
- Plastic sheeting is easily vandalized, easily torn, photodegradable, and must be disposed of at a landfill.
- Plastic results in 100% runoff, which may cause serious erosion problems in the areas receiving the increased flow.
- The use of plastic shall be limited to covering stockpiles, or very small graded areas for short periods of time (such as through one imminent storm event), until alternative measures, such as seeding and mulching, may be installed.
- Geotextiles, mats, plastic covers; and erosion control covers have maximum flow rate limitations; consult the manufacturer for proper selection.

Standards and Specifications

Material Selection

There are many types of erosion control blankets and mats, and selection of the appropriate type shall be based on the specific type of application and site conditions. Selection(s) made by the Contractor must be approved by the Resident Engineer (RE); certification of compliance shall be in accordance with Standard Specifications Section 6-1.07.

Geotextiles

- Material shall be a woven polypropylene fabric with minimum thickness of 1.5 mm (0.06 inch), minimum width of 3.7 m (12 ft) and shall have minimum tensile strength of 0.67 kN (warp) 0.36 kN (fill) in conformance with the requirements in ASTM Designation: D 4632. The permittivity of the fabric shall be approximately 0.07 sec –1 in conformance with the requirements in ASTM Designation: D4491. The fabric shall have an ultraviolet (UV) stability of 70 percent in conformance with the requirements in ASTM designation: D4355. Geotextile blankets shall be secured in place with wire staples or sandbags and by keying into tops of slopes and edges to prevent infiltration of surface waters under Geotextile. Staples shall be made of 3.05-mm (0.12-inch) steel wire and shall be U-shaped with 200-mm (8-inch) legs and 50-mm (2-inch) crown.
- Geotextiles may be reused if, in the opinion of the RE, they are suitable for the use intended.

Plastic Covers

- Plastic sheeting shall have a minimum thickness of 6 mil, and shall be keyed in at the top of slope and firmly held in place with sandbags or other weights placed no more than 3 m (10 ft) apart. Seams are typically taped or weighted down their entire length, and there shall be at least a 300 mm to 600 mm (12 to 24 inches) overlap of all seams. Edges shall be embedded a minimum of 150 mm (6 inches) in soil.

- All sheeting shall be inspected periodically after installation and after significant rainstorms to check for erosion, undermining, and anchorage failure. Any failures shall be repaired immediately. If washout or breakages occurs, the material shall be re-installed after repairing the damage to the slope.

Erosion Control Blankets/Mats

- Biodegradable rolled erosion control products (RECPs) are typically composed of jute fibers, curled wood fibers, straw, coconut fiber, or a combination of these materials. For an RECP to be considered 100% biodegradable, the netting, sewing or adhesive system that holds the biodegradable mulch fibers together must also be biodegradable.

  - **Jute** is a natural fiber that is made into a yarn, which is loosely woven into a biodegradable mesh. It is designed to be used in conjunction with vegetation and has longevity of approximately one year. The material is supplied in rolled strips, which shall be secured to the soil with U-shaped staples or stakes in accordance with manufacturers' recommendations.

  - **Excelsior (curled wood fiber)** blanket material shall consist of machine produced mats of curled wood excelsior with 80 percent of the fiber 150 mm (6 inches) or longer. The excelsior blanket shall be of consistent thickness. The wood fiber shall be evenly distributed over the entire area of the blanket. The top surface of the blanket shall be covered with a photodegradable extruded plastic mesh. The blanket shall be smolder resistant without the use of chemical additives and shall be non-toxic and non-injurious to plant and animal life. Excelsior blanket shall be furnished in rolled strips, a minimum of 1220 mm (48 inches) wide, and shall have an average weight of 0.5 kg/m^2 (12 lb/ft^2), ±10 percent, at the time of manufacture. Excelsior blankets shall be secured in place with wire staples. Staples shall be made of 3.05-mm (0.12 inch) steel wire and shall be U-shaped with 200-mm (8-inch) legs and 50-mm (2-inch) crown.

- **Straw blanket** shall be machine-produced mats of straw with a lightweight biodegradable netting top layer. The straw shall be attached to the netting with biodegradable thread or glue strips. The straw blanket shall be of consistent thickness. The straw shall be evenly distributed over the entire area of the blanket. Straw blanket shall be furnished in rolled strips a minimum of 2 m (6.5 ft) wide, a minimum of 25 m (80 ft) long and a minimum of 0.27 kg/m2 (6.4 lb/ft2). Straw blankets shall be secured in place with wire staples. Staples shall be made of 3.05-mm (0.12 inch) steel wire and shall be U-shaped with 200-mm (8-inch) legs and 50-mm (2-inch) crown.

- **Wood fiber blanket** is composed of biodegradable fiber mulch with extruded plastic netting held together with adhesives. The material is designed to enhance revegetation. The material is furnished in rolled strips, which shall be secured to the ground with U-shaped staples or stakes in accordance with manufacturers' recommendations.

- **Coconut fiber blanket** shall be machine-produced mats of 100% coconut fiber with biodegradable netting on the top and bottom. The coconut fiber shall be attached to the netting with biodegradable thread or glue strips. The coconut fiber blanket shall be of consistent thickness. The coconut fiber shall be evenly distributed over the entire area of the blanket. Coconut fiber blanket shall be furnished in rolled strips with a minimum of 2 m (6.5 ft) wide, a minimum of 25 m (80 ft) long and a minimum of 0.27-kg/m2 (6.4 lb/ft2). Coconut fiber blankets shall be secured in place with wire staples. Staples shall be made of 3.05-mm (0.12 inch) steel wire and shall be U-shaped with 200-mm (8-inch) legs and 50-mm (2-inch) crown.

- **Coconut fiber mesh** is a thin permeable membrane made from coconut or corn fiber that is spun into a yarn and woven into a biodegradable mat. It is designed to be used in conjunction with vegetation and typically has longevity of several years. The material is supplied in rolled strips, which shall be secured to the soil with U-shaped staples or stakes in accordance with manufacturers' recommendations.

- **Straw coconut fiber blanket** shall be machine-produced mats of 70% straw and 30% coconut fiber with a biodegradable netting top layer and a biodegradable bottom net. The straw and coconut fiber shall be attached to the netting with biodegradable thread or glue strips. The straw coconut fiber blanket shall be of consistent thickness. The straw and coconut fiber shall be evenly distributed over the entire area of the blanket. Straw coconut fiber blanket shall be furnished in rolled strips a minimum of 2 m (6.5 ft) wide, a minimum of 25 m (80 ft) long and a minimum of 0.27 kg/m2 (6.4 lb/ft2). Straw coconut fiber blankets shall be secured in place with wire staples. Staples shall be made of 3.05-mm (0.12-inch) steel wire and shall be U-shaped with 200-mm (8-inch) legs and 50-mm (2-inch) crown.

- Non-biodegradable RECPs are typically composed of polypropylene, polyethylene, nylon or other synthetic fibers. In some cases, a combination of biodegradable and synthetic fibers is used to construct the RECP. Netting used to hold these fibers together is typically non-biodegradable as well.

  - **Plastic netting** is a lightweight biaxially-oriented netting designed for securing loose mulches like straw to soil surfaces to establish vegetation. The netting is photodegradable. The netting is supplied in rolled strips, which shall be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.

  - **Plastic mesh** is an open-weave geotextile that is composed of an extruded synthetic fiber woven into a mesh with an opening size of less than 0.5 cm (0.2 inch). It is used with revegetation or may be used to secure loose fiber such as straw to the ground. The material is supplied in rolled strips, which shall be secured to the soil with U-shaped staples or stakes in accordance with manufacturers' recommendations.

  - **Synthetic fiber with netting** is a mat that is composed of durable synthetic fibers treated to resist chemicals and ultraviolet light. The mat is a dense, three-dimensional mesh of synthetic (typically polyolefin) fibers stitched between two polypropylene nets. The mats are designed to be revegetated and provide a permanent composite system of soil, roots, and geomatrix. The material is furnished in rolled strips, which shall be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.

  - **Bonded synthetic fibers** consist of a three-dimensional geomatrix nylon (or other synthetic) matting. Typically it has more than 90% open area, which facilitates root growth. Its tough root-reinforcing system anchors vegetation and protects against hydraulic lift and shear forces created by high volume discharges. It can be installed over prepared soil, followed by seeding into the mat. Once vegetated, it becomes an invisible composite system of soil, roots, and geomatrix. The material is furnished in rolled strips that shall be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.

  - **Combination synthetic and biodegradable RECPs** consist of biodegradable fibers, such as wood fiber or coconut fiber, with a heavy polypropylene net stitched to the top and a high-strength continuous-filament geomatrix or net stitched to the bottom. The material is designed to enhance revegetation. The material is furnished in rolled strips, which shall be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.

Site Preparation

- Proper site preparation is essential to ensure complete contact of the blanket or matting with the soil.
- Grade and shape the area of installation.
- Remove all rocks, clods, vegetation or other obstructions so that the installed blankets or mats will have complete, direct contact with the soil.
- Prepare seedbed by loosening 50 mm (2 in) to 75 mm (3 in) of topsoil.

Seeding

Seed the area before blanket installation for erosion control and revegetation. Seeding after mat installation is often specified for turf reinforcement application. When seeding prior to blanket installation, all check slots and other areas disturbed during installation must be re-seeded. Where soil filling is specified, seed the matting and the entire disturbed area after installation and prior to filling the mat with soil.

Anchoring

- U-shaped wire staples, metal geotextile stake pins or triangular wooden stakes can be used to anchor mats and blankets to the ground surface.
- Staples shall be made of 3.05 mm (0.12 inch) steel wire and shall be U-shaped with 200-mm (8-inch) legs and 50-mm (2-inch) crown.
- Metal stake pins shall be 5 mm (0.188 in) diameter steel with a 40 mm (1.5 in) steel washer at the head of the pin.
- Wire staples and metal stakes shall be driven flush to the soil surface.
- All anchors shall be 150 mm (6 in) to 450 mm (18 in) long and have sufficient ground penetration to resist pullout. Longer anchors may be required for loose soils.

Installation on Slopes

Installation shall be in accordance with the manufacturer's recommendations. In general, these will be as follows:

- Begin at the top of the slope and anchor the blanket in a 150 mm (6 in) deep by 150 mm (6 in) wide trench. Backfill trench and tamp earth firmly.
- Unroll blanket downslope in the direction of water flow.

- Overlap the edges of adjacent parallel rolls 50 mm (2 in) to 75 mm (3 in) and staple every 1 m (3 ft).
- When blankets must be spliced, place blankets end over end (shingle style) with 150 mm (6 in) overlap. Staple through overlapped area, approximately 300 mm (12 in) apart.
- Lay blankets loosely and maintain direct contact with the soil. Do not stretch.
- Staple blankets sufficiently to anchor blanket and maintain contact with the soil. Staples shall be placed down the center and staggered with the staples placed along the edges. Steep slopes, 1:1 (V:H) to 1:2 (V:H), require a minimum of 2 staples/m2 (2 staples/yd2). Moderate slopes, 1:2 (V:H) to 1:3 (V:H), require a minimum of 1½ staples/m2 (1 ½ staples/yd2), placing 1 staple/m (1 staple/yd) on centers. Gentle slopes require a minimum of 1 staple/m2 (1 staple/yd2).

Installation in Channels

Installation shall be in accordance with the manufacturer's recommendations. In general, these will be as follows:

- Dig initial anchor trench 300 mm (12 in) deep and 150 mm (6 in) wide across the channel at the lower end of the project area.
- Excavate intermittent check slots, 150 mm (6 in) deep and 150 mm (6 in) wide across the channel at 8 m to 10 m (25 ft to 30 ft) intervals along the channels.
- Cut longitudinal channel anchor slots 100 mm (4 in) deep and 100 mm (4 in) wide along each side of the installation to bury edges of matting, whenever possible extend matting 50 mm (2 in) to 75 mm (3 in) above the crest of the channel side slopes.
- Beginning at the downstream end and in the center of the channel, place the initial end of the first roll in the anchor trench and secure with fastening devices at 300 mm (12 in) intervals. Note: matting will initially be upside down in anchor trench.
- In the same manner, position adjacent rolls in anchor trench, overlapping the preceding roll a minimum of 75 mm (3 in).
- Secure these initial ends of mats with anchors at 300 mm (12 in) intervals, backfill and compact soil.
- Unroll center strip of matting upstream. Stop at next check slot or terminal anchor trench. Unroll adjacent mats upstream in similar fashion, maintaining a 75 mm (3 in) overlap.

- Fold and secure all rolls of matting snugly into all transverse check slots. Lay mat in the bottom of the slot then fold back against itself. Anchor through both layers of mat at 300 mm (12 in) intervals, then backfill and compact soil. Continue rolling all mat widths upstream to the next check slot or terminal anchor trench.

- Alternate method for non-critical installations: Place two rows of anchors on 150 mm (6 in) centers at 8 m (25 ft) to 10 m (30 ft) intervals in lieu of excavated check slots.

- Shingle-lap spliced ends by a minimum of 300 mm (12 in) apart on 300 mm (12 in) intervals.

- Place edges of outside mats in previously excavated longitudinal slots, anchor using prescribed staple pattern, backfill and compact soil.

- Anchor, fill and compact upstream end of mat in a 300 mm (12 in) by 150 mm (6 in) terminal trench.

- Secure mat to ground surface using U-shaped wire staples, geotextile pins, or wooden stakes.

- Seed and fill turf reinforcement matting with soil, if specified.

Soil Filling (if specified for turf reinforcement)

- Always consult the manufacturer's recommendations for installation.

- Do not drive tracked or heavy equipment over mat.

- Avoid any traffic over matting if loose or wet soil conditions exist.

- Use shovels, rakes or brooms for fine grading and touch up.

- Smooth out soil filling, just exposing top netting of mat.

Temporary Soil Stabilization Removal

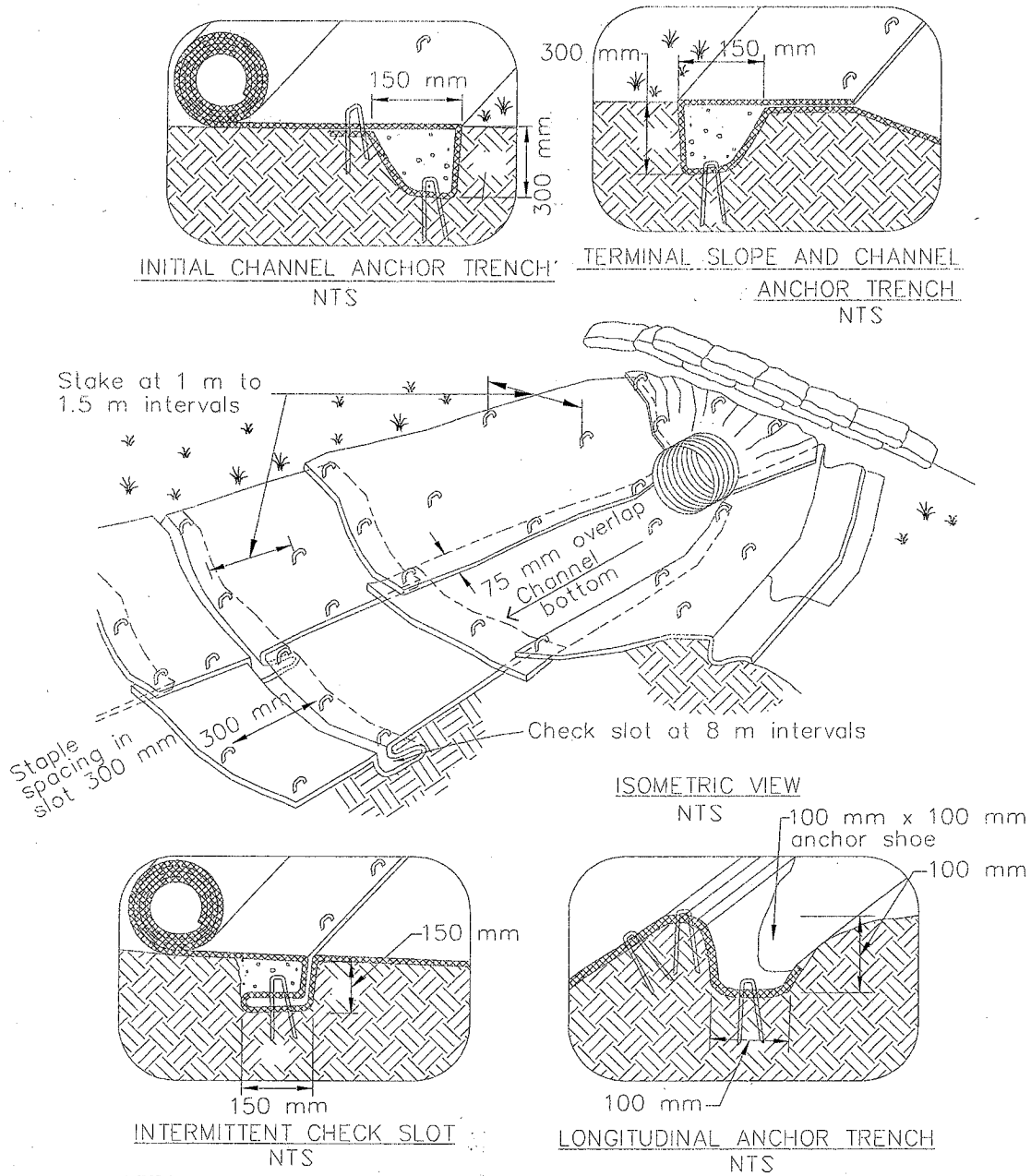
- When no longer required for the work, temporary soil stabilization shall become the property of the Contractor. Temporary soil stabilization removed from the site of the work shall be disposed of outside the highway right-of-way in conformance with the provisions in Standard Specifications Section 7-1.13. If approved by the RE, the contractor may leave the temporary soil stabilizer in place.

Maintenance and Inspection

Areas treated with temporary soil stabilization shall be inspected as specified in the special provisions. Areas treated with temporary soil stabilization shall be maintained to provide adequate erosion control. Temporary soil stabilization shall be reapplied or replaced on exposed soils when area becomes exposed or exhibits visible erosion.

- All blankets and mats shall be inspected periodically after installation.
- Installation shall be inspected after significant rain storms to check for erosion and undermining. Any failures shall be repaired immediately.
- If washout or breakage occurs, re-install the material after repairing the damage to the slope or channel.

Typical Installation Detail



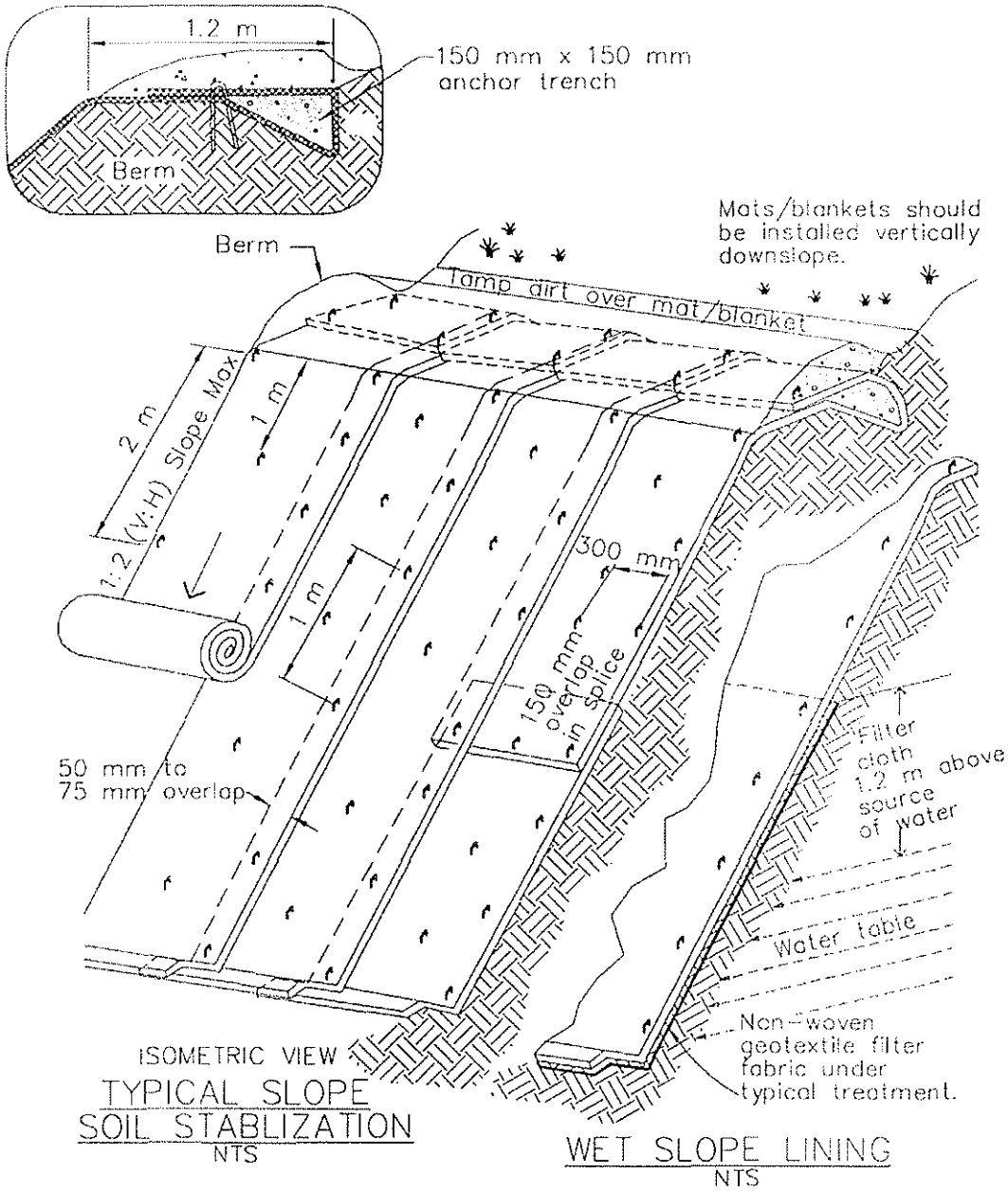
NOTES:

1. Check slots to be constructed per manufacturers specifications.
2. Staking or stapling layout per manufacturers specifications.
3. Install per manufacturer's recommendations

Geotextiles, Mats, Plastic Covers and Erosion Control Blankets

SS-7

Typical Installation Detail

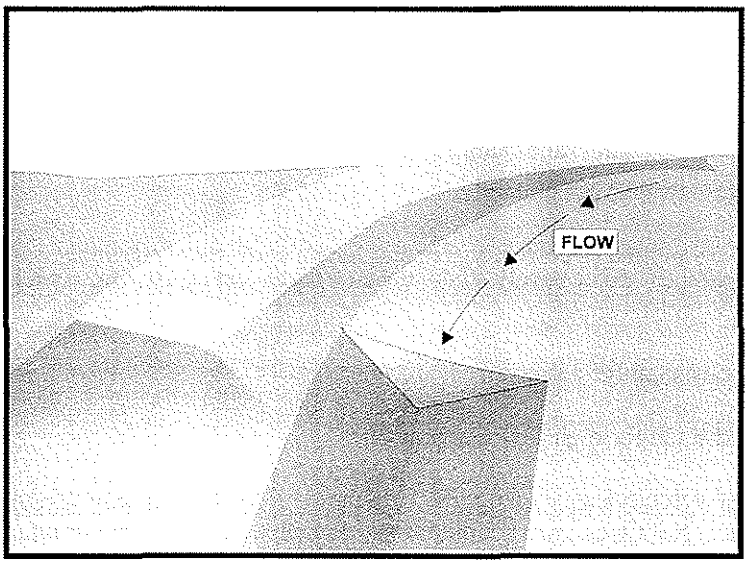


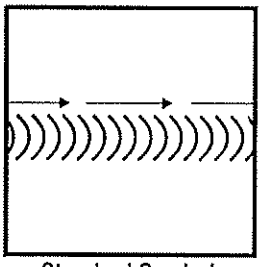
NOTES:

1. Slope surface shall be free of rocks, clods, sticks and grass. Mats/blankets shall have good soil contact.
2. Lay blankets loosely and stake or staple to maintain direct contact with the soil. Do not stretch.
3. Install per manufacturer's recommendations

Earth Dikes/Drainage Swales and Lined Ditches

SS-9





Standard Symbol

BMP Objectives

- ● Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

These are structures that intercept, divert and convey surface run-on, generally sheet flow, to prevent erosion.

Appropriate Applications

- Earth dikes/drainage swales and lined ditches may be used to:
  - Convey surface runoff down sloping land.
  - Intercept and divert runoff to avoid sheet flow over sloped surfaces.
  - Divert and direct runoff towards a stabilized watercourse, drainage pipe or channel.
  - Intercept runoff from paved surfaces.
- Earth dikes/drainage swales and lined ditches also may be used:
  - Below steep grades where runoff begins to concentrate.
  - Along roadways and facility improvements subject to flood drainage.
  - At the top of slopes to divert run-on from adjacent or undisturbed slopes.
  - At bottom and mid-slope locations to intercept sheet flow and convey concentrated flows.
- This BMP may be implemented on a project-by-project basis with other BMPs when determined necessary and feasible by the Resident Engineer (RE).

Earth Dikes/Drainage Swales and Lined Ditches

SS-9

Limitations

- Earth dikes/drainage swales and lined ditches are not suitable as sediment trapping devices.
- May be necessary to use other soil stabilization and sediment controls, such as check dams, plastics, and blankets, to prevent scour and erosion in newly graded dikes, swales and ditches.

Standards and Specifications

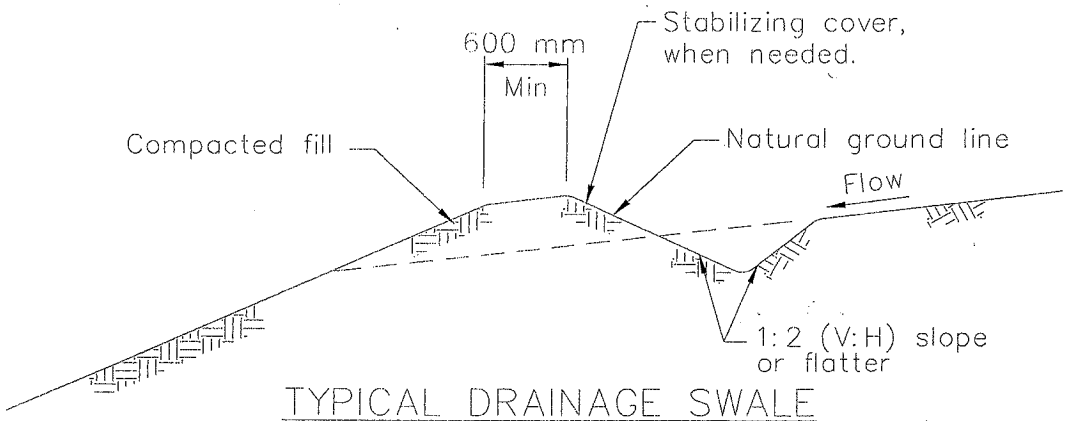
- Care must be applied to correctly size and locate earth dikes, drainage swales and lined ditches. Excessively steep, unlined dikes and swales are subject to erosion and gully formation.
- Conveyances shall be stabilized.
- Use a lined ditch for high flow velocities.
- Select flow velocity based on careful evaluation of the risks due to erosion of the measure, soil types, over topping, flow backups, washout, and drainage flow patterns for each project site.
- Compact any fills to prevent unequal settlement.
- Do not divert runoff from the highway right-of-way onto other property.
- When possible, install and utilize permanent dikes, swales and ditches early in the construction process.
- Provide stabilized outlets. Refer to SS-10, "Outlet Protection/Velocity/ Dissipation Devices."

Maintenance and Inspections

- Inspect temporary measures prior to the rainy season, after rainfall events, and regularly (approximately once per week) during the rainy season.
- Inspect ditches and berms for washouts. Replace lost riprap, damaged linings or soil stabilizers as needed.
- Inspect channel linings, embankments, and beds of ditches and berms for erosion and accumulation of debris and sediment. Remove debris and sediment, and repair linings and embankments as needed or as directed by the RE.
- Temporary conveyances shall be completely removed as soon as the surrounding drainage area has been stabilized, or at the completion of construction.

Earth Dikes/Drainage Swales and Lined Ditches

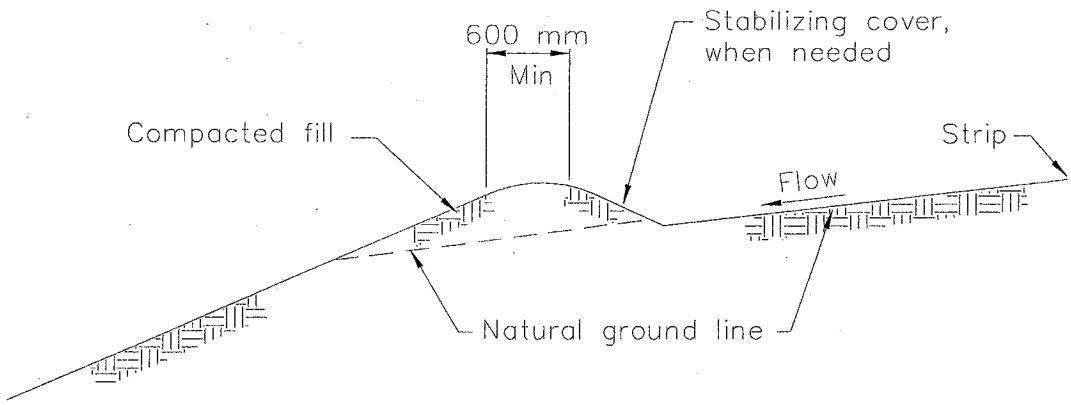
SS-9



TYPICAL DRAINAGE SWALE
NOT TO SCALE

NOTES:

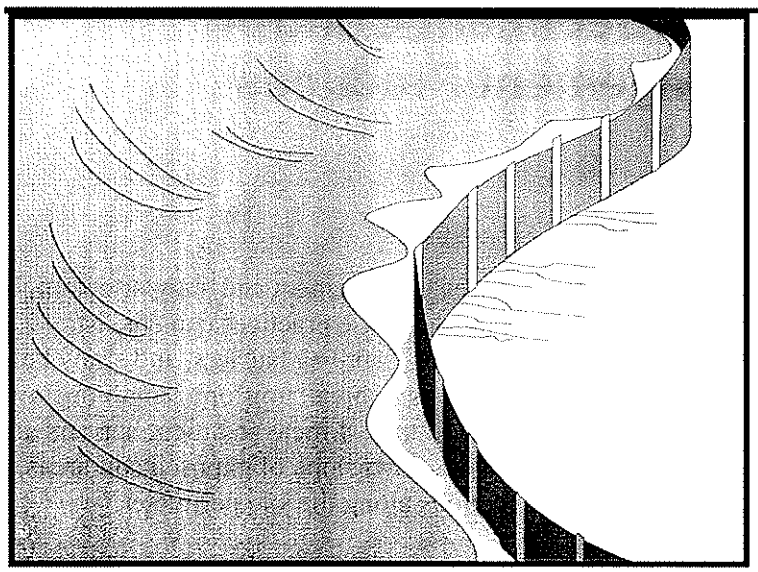
1. Stabilize inlet, outlets and slopes.
2. Properly compact the subgrade, in conformance with Section 19–5 of the Caltrans Standard Specifications.

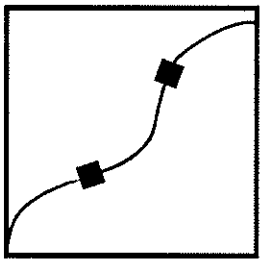


TYPICAL EARTH DIKE
NOT TO SCALE

Silt Fence

SC-1





Standard Symbol

BMP Objectives

- ○ Soil Stabilization
- ● Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

A silt fence is a temporary linear sediment barrier of permeable fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff. Silt fences allow sediment to settle from runoff before water leaves the construction site.

Appropriate Applications

Silt fences are placed:

- Below the toe of exposed and erodible slopes.
- Down-slope of exposed soil areas.
- Around temporary stockpiles.
- Along streams and channels.
- Along the perimeter of a project.

Limitations

- Not effective unless trenched and keyed in.
- Not intended for use as mid-slope protection on slopes greater than 1:4 (V:H).
- Must be maintained.
- Must be removed and disposed of.
- Don't use below slopes subject to creep, slumping, or landslides.
- Don't use in streams, channels, drain inlets, or anywhere flow is concentrated.
- Don't use silt fences to divert flow.

Standards and Specifications

Design and Layout

- The maximum length of slope draining to any point along the silt fence shall be 61 m (200 ft) or less.
- Slope of area draining to silt fence shall be less than 1:1 (V:H).
- Limit to locations suitable for temporary ponding or deposition of sediment.
- Fabric life span generally limited to between five and eight months. Longer periods may require fabric replacement.
- Silt fences shall not be used in concentrated flow areas.
- Lay out in accordance with Pages 5 and 6 of this BMP.
- For slopes steeper than 1:2 (V:H) and that contain a high number of rocks or large dirt clods that tend to dislodge, it may be necessary to install additional protection immediately adjacent to the bottom of the slope, prior to installing silt fence. Additional protection may be a chain link fence or a cable fence.
- For slopes adjacent to water bodies or Environmentally Sensitive Areas (ESAs), additional temporary soil stabilization BMPs shall be used.

Materials

- Silt fence fabric shall be woven polypropylene with a minimum width of 900 mm (36 inches) and a minimum tensile strength of 0.45-kN. The fabric shall conform to the requirements in ASTM designation D4632 and shall have an integral reinforcement layer. The reinforcement layer shall be a polypropylene, or equivalent, net provided by the manufacturer. The permittivity of the fabric shall be between 0.1 sec^{-1} and 0.15 sec^{-1} in conformance with the requirements in ASTM designation D4491. Contractor must submit certificate of compliance in accordance with Standard Specifications Section 6-1.07.
- Wood stakes shall be commercial quality lumber of the size and shape shown on the plans. Each stake shall be free from decay, splits or cracks longer than the thickness of the stake or other defects that would weaken the stakes and cause the stakes to be structurally unsuitable.
- Bar reinforcement may be used, and its size shall be equal to a number four (4) or greater. End protection shall be provided for any exposed bar reinforcement.
- Staples used to fasten the fence fabric to the stakes shall be not less than 45 mm (1.75 inches) long and shall be fabricated from 1.57 mm (0.06 inch) or heavier wire. The wire used to fasten the tops of the stakes together when

joining two sections of fence shall be 3.05 mm (0.12 inch) or heavier wire. Galvanizing of the fastening wire is not required.

Installation

- Generally, silt fences shall be used in conjunction with soil stabilization source controls up slope to provide effective erosion and sediment control.
- Bottom of the silt fence shall be keyed-in a minimum of 150 mm (12 inches).
- Trenches shall not be excavated wider and deeper than necessary for proper installation of the temporary linear sediment barriers.
- Excavation of the trenches shall be performed immediately before installation of the temporary linear sediment barriers.
- Construct silt fences with a set-back of at least 1m (3 ft) from the toe of a slope. Where a silt fence is determined to be not practical due to specific site conditions, the silt fence may be constructed at the toe of the slope, but shall be constructed as far from the toe of the slope as practical.
- Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/3 the height of the barrier; in no case shall the reach exceed 150 meters (490 ft).
- Cross barriers shall be a minimum of 1/3 and a maximum of 1/2 the height of the linear barrier.
- Install in accordance with Pages 5 and 6 of this BMP.

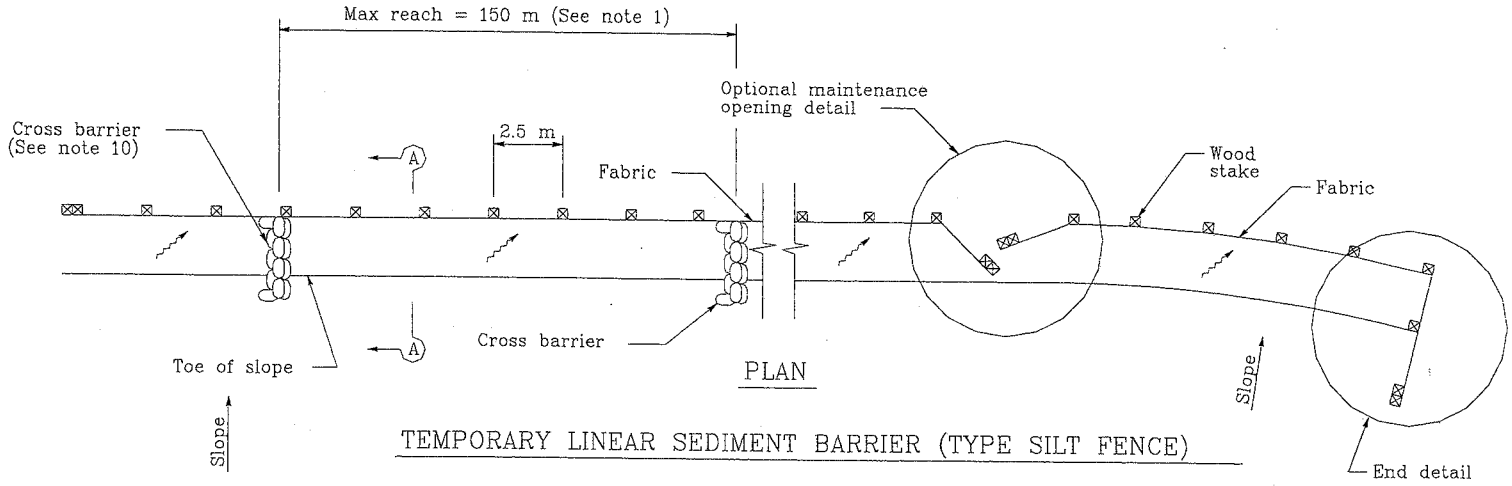
Maintenance and Inspection

- Repair undercut silt fences.
- Repair or replace split, torn, slumping, or weathered fabric.
- Inspect silt fence when rain is forecast. Perform necessary maintenance, or maintenance required by the Resident Engineer (RE).
- Inspect silt fence following rainfall events. Perform maintenance as necessary, or as required by the RE.
- Maintain silt fences to provide an adequate sediment holding capacity. Sediment shall be removed when the sediment accumulation reaches one-third (1/3) of the barrier height. Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the right-of-way in conformance with the Standard Specifications.
- Silt fences that are damaged and become unsuitable for the intended purpose, as determined by the RE, shall be removed from the site of work, disposed of outside the highway right-of-way in conformance with the Standard Specifications, and replaced with new silt fence barriers.

- Holes, depressions or other ground disturbance caused by the removal of the temporary silt fences shall be backfilled and repaired in conformance with the Standard Specifications.

- Remove silt fence when no longer needed or as required by the RE. Fill and compact post holes and anchorage trench, remove sediment accumulation, and grade fence alignment to blend with adjacent ground.

Silt Fence



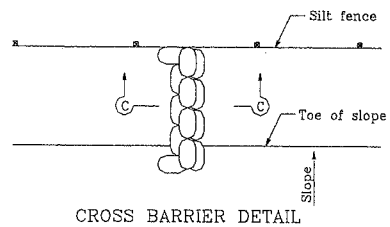
TEMPORARY LINEAR SEDIMENT BARRIER (TYPE SILT FENCE)

NOTES

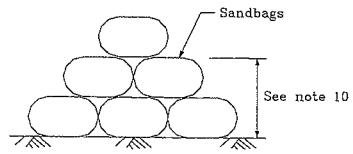
1. Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/3 the height of the linear barrier, in no case shall the reach length exceed 150m.
2. The last 2.5 m of fence shall be turned up slope.
3. Stake dimensions are nominal.
4. Dimension may vary to fit field condition.
5. Stakes shall be spaced at 2.5 m maximum and shall be positioned on downstream side of fence.
6. Stakes to overlap and fence fabric to fold around each stake one full turn. Secure fabric to stake with 4 staples.
7. Stakes shall be driven tightly together to prevent potential flow-through of sediment at joint. The tops of the stakes shall be secured with wire.
8. For end stake, fence fabric shall be folded around two stakes one full turn and secured with 4 staples.
9. Minimum 4 staples per stake. Dimensions shown are typical.
10. Cross barriers shall be a minimum of 1/3 and a maximum of 1/2 the height of the linear barrier.
11. Maintenance openings shall be constructed in a manner to ensure sediment remains behind silt fence.
12. Joining sections shall not be placed at sump locations.
13. Sandbag rows and layers shall be offset to eliminate gaps.

LEGEND

- Tamped backfill
- Slope direction
- Direction of flow



CROSS BARRIER DETAIL



SECTION C-C

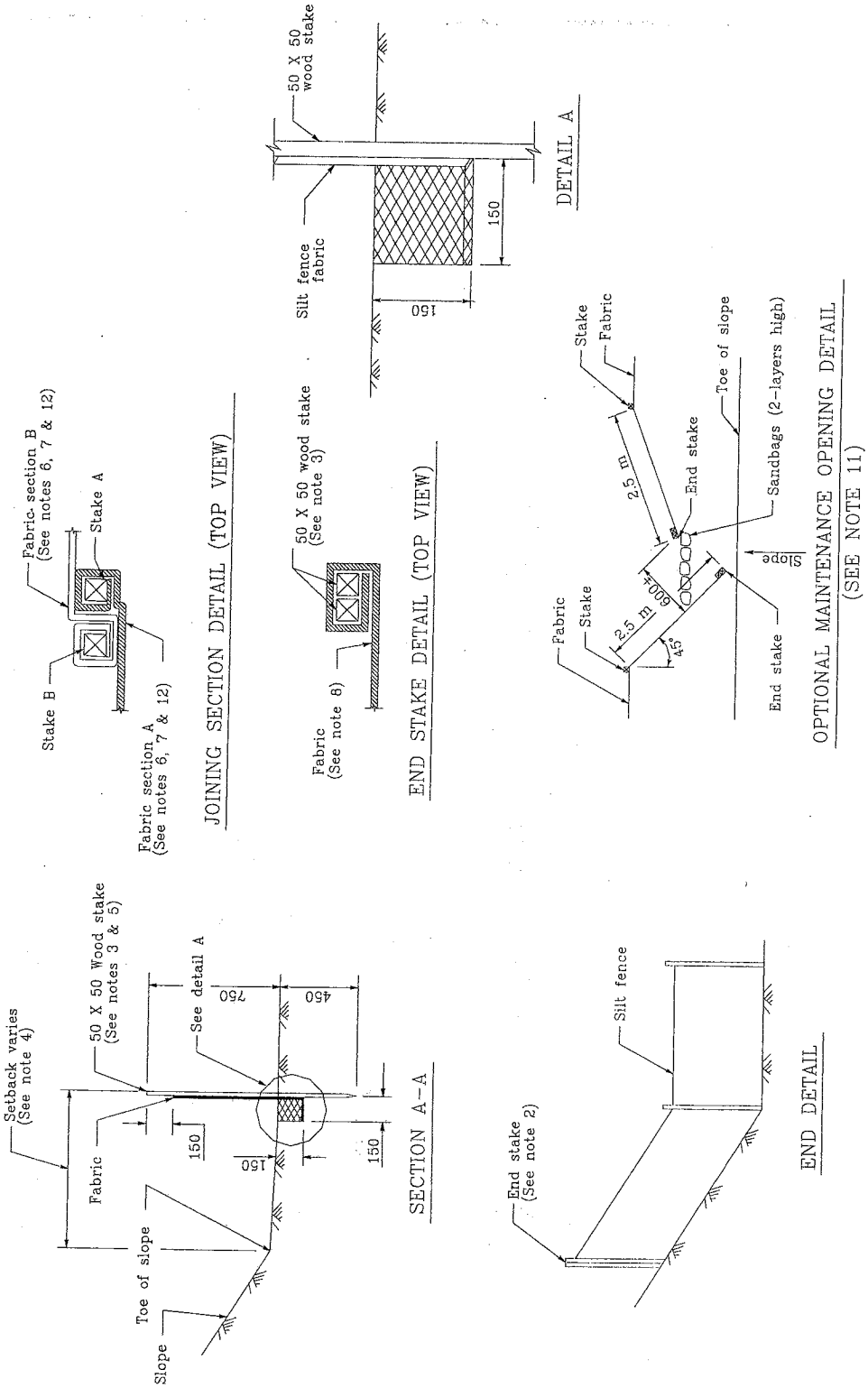
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY LINEAR SEDIMENT BARRIER
(TYPE SILT FENCE)

NO SCALE

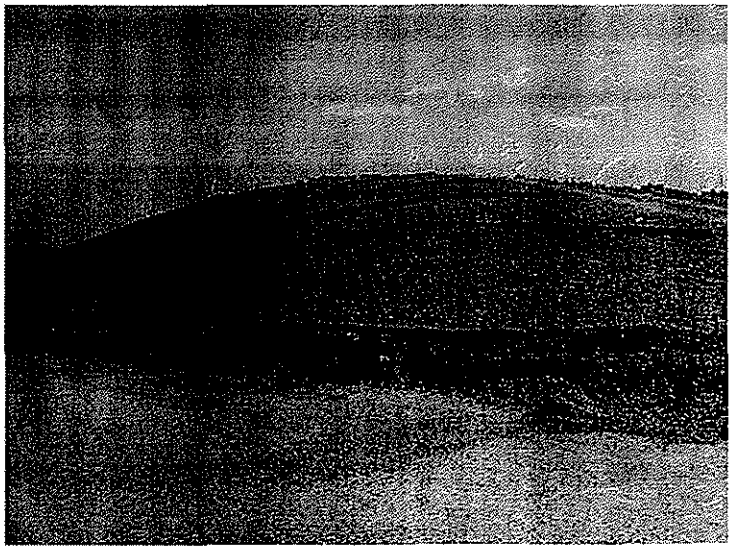
ALL DIMENSIONS ARE IN
MILLIMETERS UNLESS OTHERWISE SHOWN

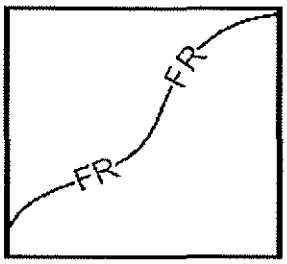
SC-1


Setback varies
(See note 4)
50 X 50 Wood stake
(See notes 3 & 5)
See detail A
750
450
Fabric
150
150
150
Toe of slope
Slope
SECTION A-A
End stake
(See note 2)
Silt fence
END DETAIL
Fabric section B
(See notes 6, 7 & 12)
Stake A
Stake B
Fabric section A
(See notes 6, 7 & 12)
JOINING SECTION DETAIL (TOP VIEW)
50 X 50 wood stake
(See note 3)
Fabric
(See note 8)
END STAKE DETAIL (TOP VIEW)
50 X 50
wood stake
Silt fence
fabric
150
150
DETAIL A
Stake
Fabric
2.5 m
End stake
Toe of slope
Sandbags (2-layers high)
Slope
600
2.5 m
45°
Fabric
Stake
End stake
OPTIONAL MAINTENANCE OPENING DETAIL
(SEE NOTE 11)

Fiber Rolls

SC-5





Standard Symbol

BMP Objectives

- ● Soil Stabilization
- ● Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

A fiber roll consists of wood excelsior, rice or wheat straw, or coconut fibers that is rolled or bound into a tight tubular roll and placed on the toe and face of slopes to intercept runoff, reduce its flow velocity, release the runoff as sheet flow and provide removal of sediment from the runoff. Fiber rolls may also be used for inlet protection and as check dams under certain situations.

Appropriate Applications

- This BMP may be implemented on a project-by-project basis with other BMPs when determined necessary and feasible by the RE.
- Along the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.
- Below the toe of exposed and erodible slopes.
- Fiber rolls may be used as check dams in unlined ditches if approved by the Resident Engineer (RE) or the District Construction Storm Water Coordinator (refer to SC-4 "Check Dams").
- Fiber rolls may be used for drain inlet protection if approved by the RE or the District Construction Storm Water Coordinator (refer to SC-10 "Storm Drain Inlet Protection").
- Down-slope of exposed soil areas.
- Around temporary stockpiles.
- Along the perimeter of a project.

Limitations

- Runoff and erosion may occur if fiber roll is not adequately trenched in.
- Fiber rolls at the toe of slopes greater than 1:5 may require the use of 500 mm (20" diameter) or installations achieving the same protection (i.e., stacked smaller diameter fiber rolls, etc.).
- Fiber rolls may be used for drainage inlet protection if they can be properly anchored.
- Difficult to move once saturated.
- Fiber rolls could be transported by high flows if not properly staked and trenched in.
- Fiber rolls have limited sediment capture zone.
- Do not use fiber rolls on slopes subject to creep, slumping, or landslide.

Standards and Specifications

Fiber Roll Materials

- Fiber rolls shall be either:

  (1) Prefabricated rolls.

  (2) Rolled tubes of erosion control blanket.

Assembly of Field Rolled Fiber Roll

- Roll length of erosion control blanket into a tube of minimum 200 mm (8 in) diameter.
- Bind roll at each end and every 1.2 m (4 ft) along length of roll with jute-type twine.

Installation

- Slope inclination of 1:4 or flatter: fiber rolls shall be placed on slopes 6.0 m apart.
- Slope inclination of 1:4 to 1:2: fiber rolls shall be placed on slopes 4.5 m apart.
- Slope inclination 1:2 or greater: fiber rolls shall be placed on slopes 3.0 m apart.
- Stake fiber rolls into a 50 to 100 mm (2 to 4 in) trench.

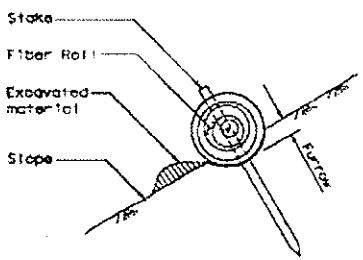
- Drive stakes at the end of each fiber roll and spaced 600 mm (2 ft) apart if Type 2 installation is used (refer to Page 4). Otherwise, space stakes 1.2 m (4 ft) maximum on center if installed as shown on Pages 5 and 6.
- Use wood stakes with a nominal classification of 19 by 19 mm (3/4 by 3/4 in), and minimum length of 600 mm (24 in).
- If more than one fiber roll is placed in a row, the rolls shall be overlapped; not abutted.

Removal

- Fiber rolls are typically left in place.
- If fiber rolls are removed, collect and dispose of sediment accumulation, and fill and compact holes, trenches, depressions or any other ground disturbance to blend with adjacent ground.

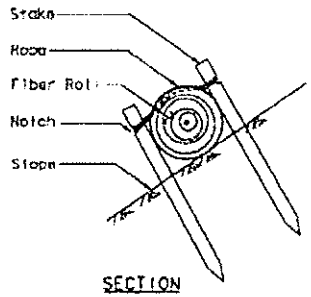
Maintenance and Inspection

- Repair or replace split, torn, unraveling, or slumping fiber rolls.
- Inspect fiber rolls when rain is forecast. Perform maintenance as needed or as required by the RE.
- Inspect fiber rolls following rainfall events and a least daily during prolonged rainfall. Perform maintenance as needed or as required by the RE.
- Maintain fiber rolls to provide an adequate sediment holding capacity. Sediment shall be removed when the sediment accumulation reaches three quarters (3/4) of the barrier height. Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the highway right-of-way in conformance with the Standard Specifications.

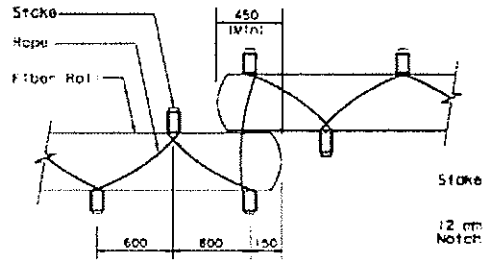


SECTION

TEMPORARY FIBER ROLL (TYPE 1)

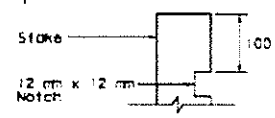


SECTION



PLAN

TEMPORARY FIBER ROLL (TYPE 2)

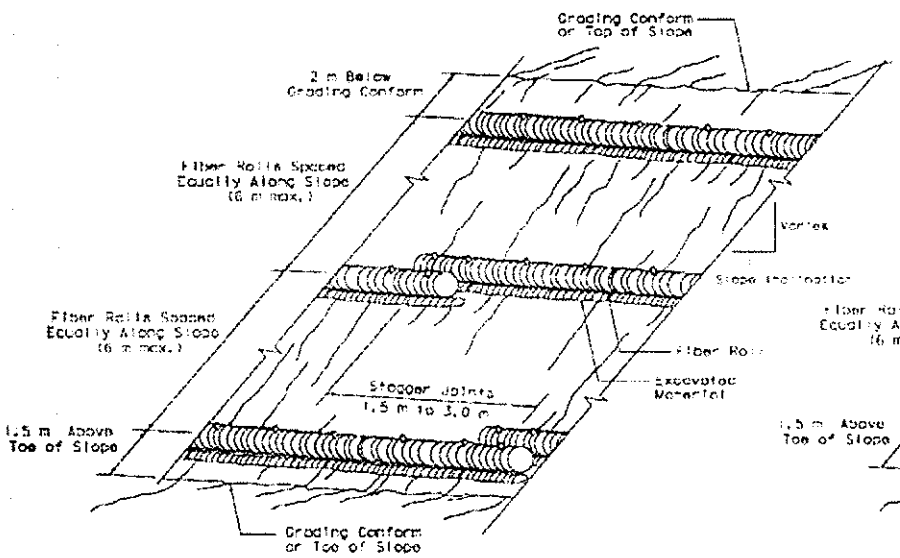


ELEVATION

NOTCH DETAIL

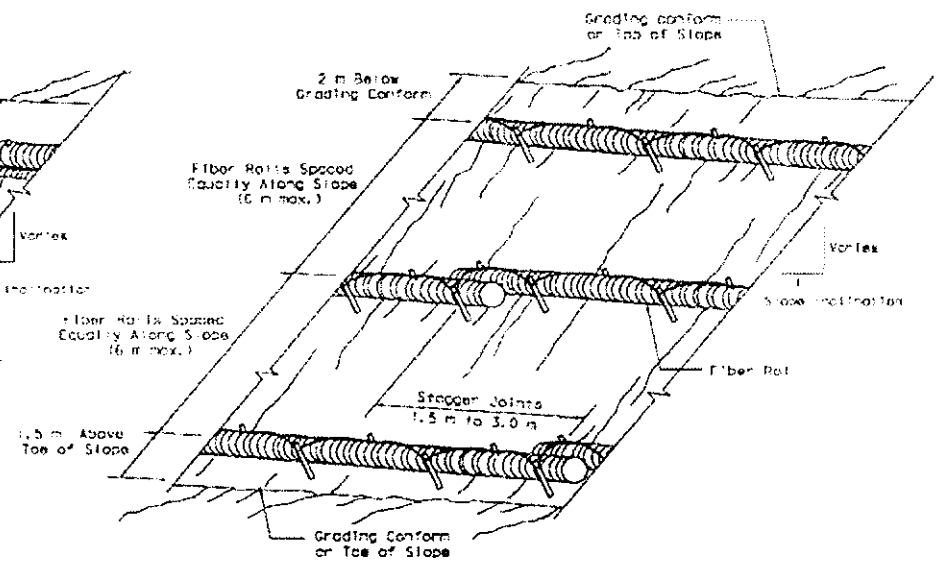
NOTE

1. Temporary fiber roll spacing varies depending upon slope inclination.



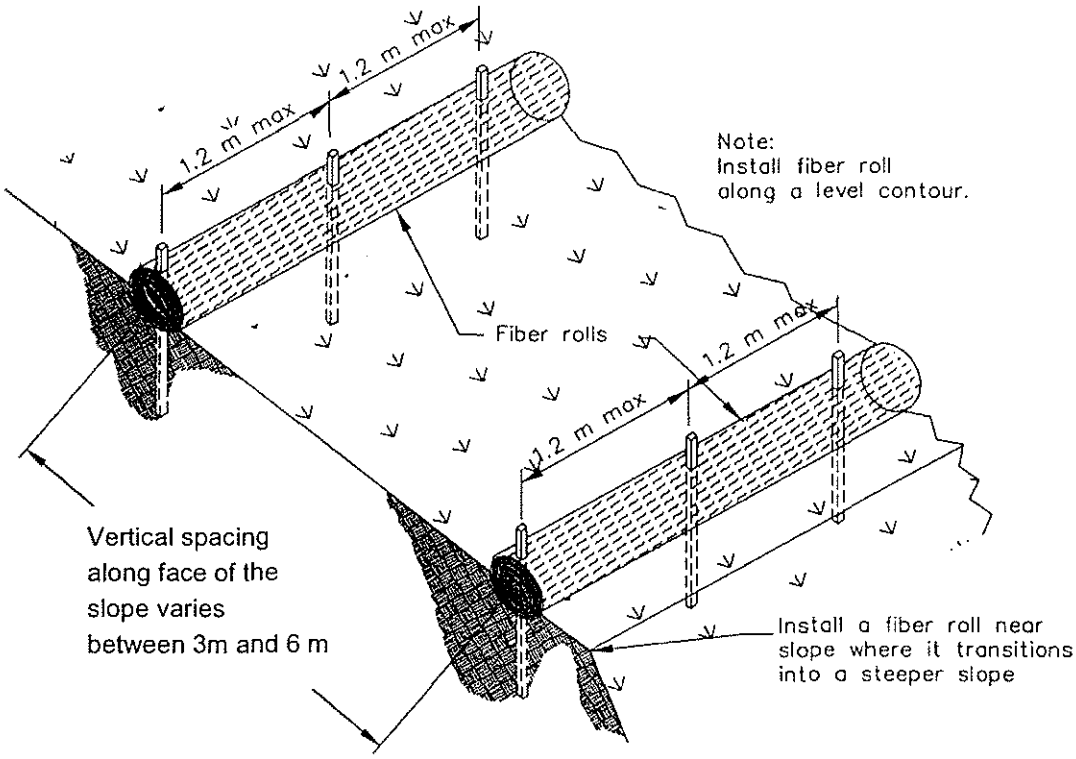
PERSPECTIVE

TEMPORARY FIBER ROLL (TYPE 1)



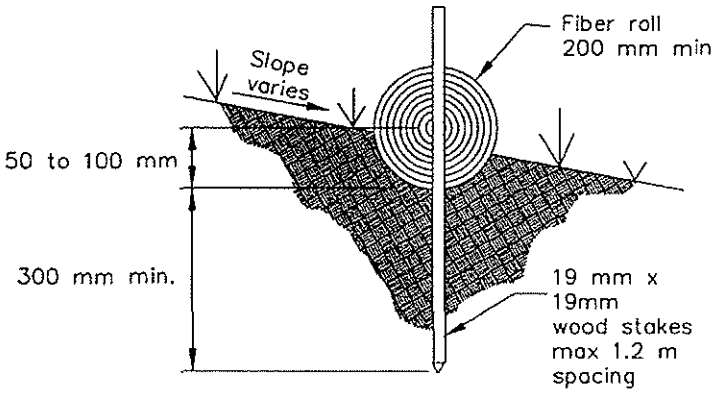
PERSPECTIVE

TEMPORARY FIBER ROLL (TYPE 2)



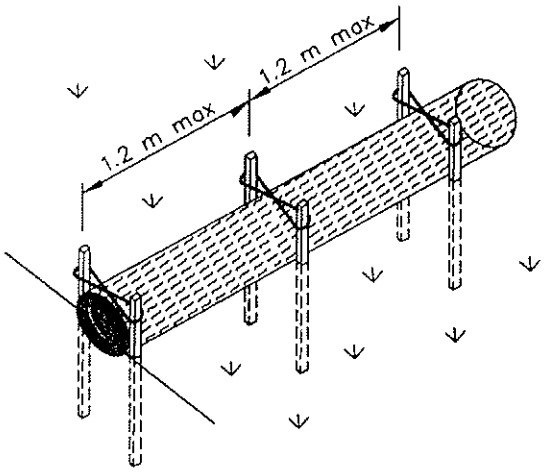
TYPICAL FIBER ROLL INSTALLATION

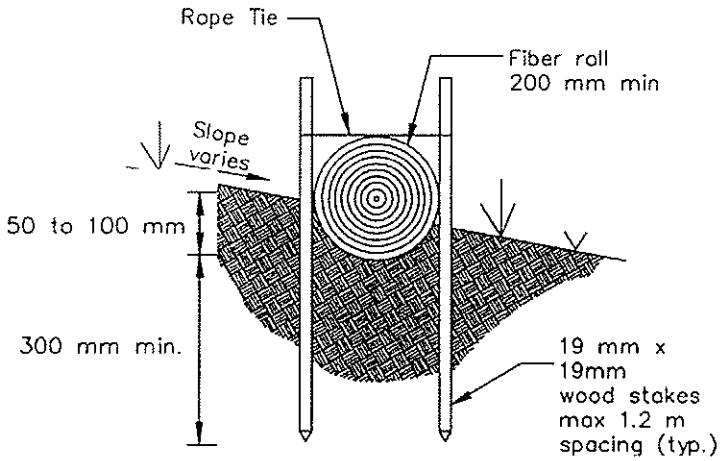
N.T.S.



ENTRENCHMENT DETAIL

N.T.S.



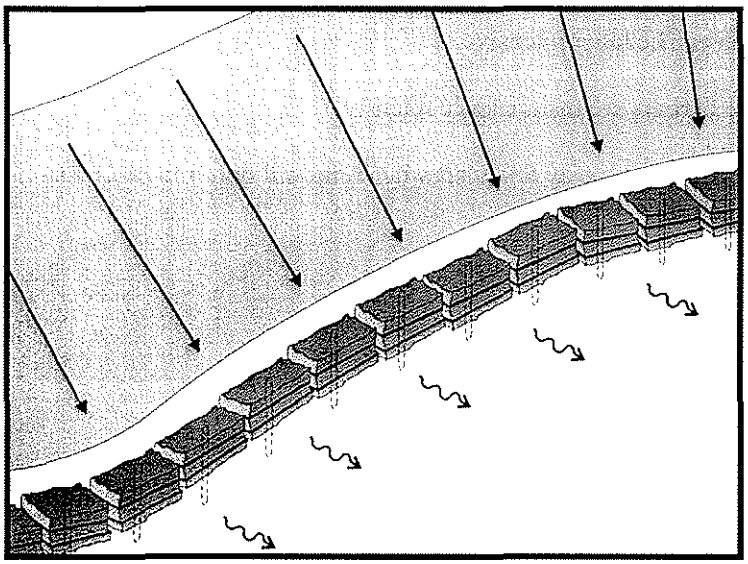


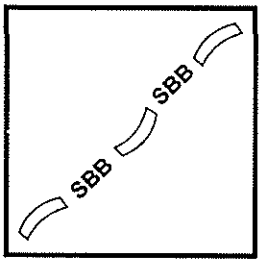
OPTIONAL ENTRENCHMENT DETAIL

N.T.S.

Straw Bale Barrier

SC-9





Standard Symbol

BMP Objectives

- ○ Soil Stabilization
- ● Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

A straw bale barrier is a temporary linear sediment barrier consisting of straw bales, designed to intercept and slow sediment-laden sheet flow runoff. Straw bale barriers allow sediment to settle from runoff before water leaves the construction site.

Appropriate Applications

- This BMP may be implemented on a project-by-project basis in addition to other BMPs when determined necessary and feasible by the Resident Engineer (RE).
- Along the perimeter of a site.
- Along streams and channels.
- Below the toe of exposed and erodible slopes.
- Down slope of exposed soil areas.
- Around stockpiles.
- Across minor swales or ditches with small catchments.
- Around above grade type temporary concrete washouts (See BMP WM-8, "Concrete Waste Management").
- Parallel to a roadway to keep sediment off paved areas.

Limitations

- Installation can be labor intensive.
- Straw bale barriers are maintenance intensive.
- Degraded straw bales may fall apart when removed or left in place for extended periods.
- Can't be used on paved surfaces.
- Not to be used for drain inlet protection.
- Shall not be used in areas of concentrated flow.
- Can be an attractive food source for some animals.
- May introduce undesirable non-native plants to the area.

Standards and Specifications

Materials

- ***Straw Bale Material:*** Straw bale materials shall conform to the provisions in Standard Specifications Section 20-2.06, "Straw."
- Straw Bale Size: Each straw bale shall be a minimum of 360 mm (14 in) wide, 450 mm (18 in) in height, 900 mm (36 in) in length and shall have a minimum mass of 23 kg (51 lb.) The straw bale shall be composed entirely of vegetative matter, except for the binding material.
- Bale Bindings: Bales shall be bound by either steel wire, nylon or polypropylene string placed horizontally. Jute and cotton binding shall not be used. Baling wire shall be a minimum diameter of 1.57 mm (0.06 inch). Nylon or polypropylene string shall be approximately 2 mm (0.08 inch) in diameter with a breaking strength of 360 N.
- Stakes: Wood stakes shall be commercial quality lumber of the size and shape shown on the plans. Each stake shall be free from decay, splits or cracks longer than the thickness of the stake, or other defects that would weaken the stakes and cause the stakes to be structurally unsuitable. Steel bar reinforcement shall be equal to a number four designation or greater. End protection shall be provided for any exposed bar reinforcement.

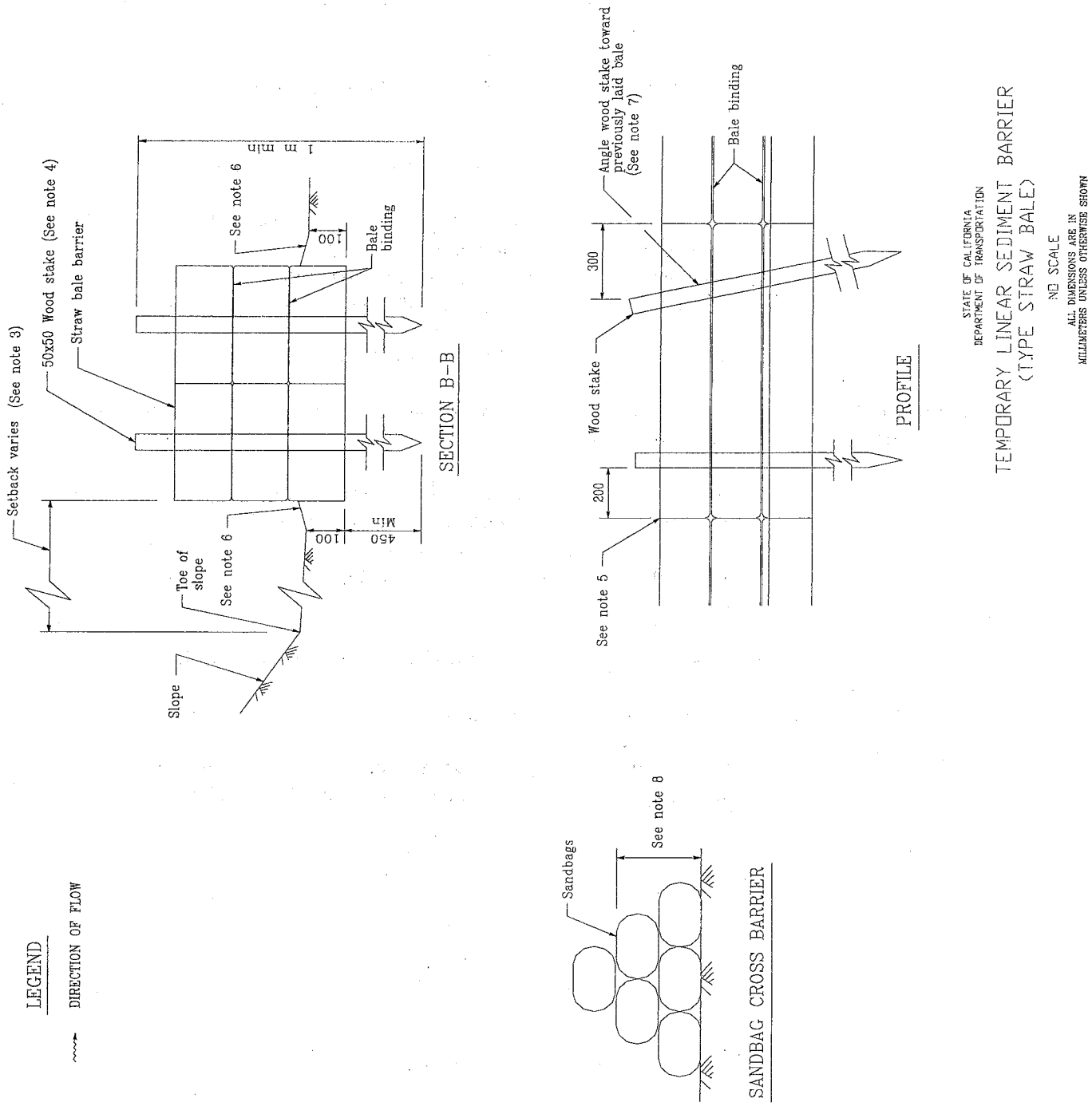
Installation

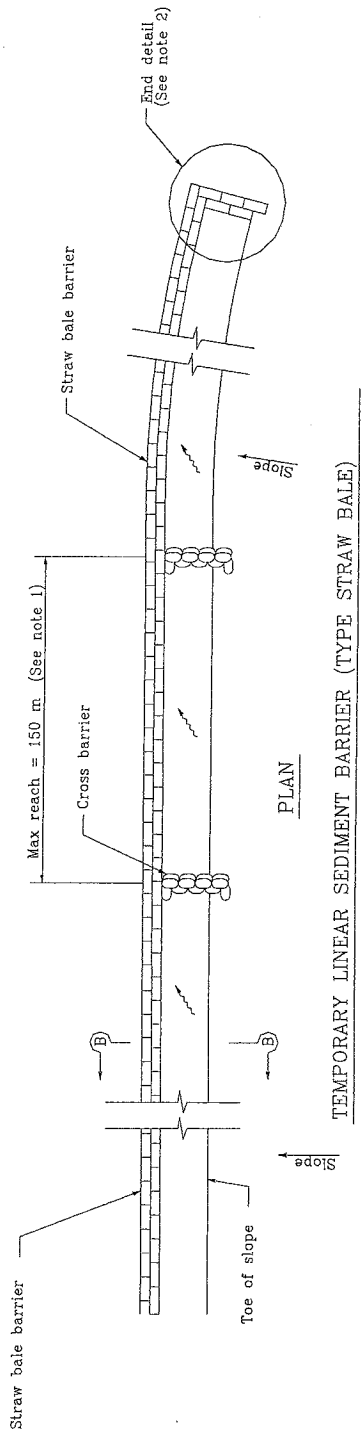
- Limit the drainage area upstream of the barrier to 0.3 ha/100 m (0.25 ac/100ft) or barrier.
- Limit the slope length draining to the straw bale barrier to 30 m (100 ft.)

- Slopes of 2:100 (V:H) (2%) or flatter are preferred. If the slope exceeds 1:10 (V:H) (10%), the length of slope upstream of the barrier must be less than 15 m (50 ft).
- Install straw bale barriers along a level contour, with the last straw bale turned up slope.
- Straw bales must be installed in a trench and tightly abut adjacent bales.
- Construct straw bale barriers with a set-back of at least 1 m (3 ft) from the toe of a slope. Where it is determined to be not practical due to specific site conditions, the straw bale barrier may be constructed at the toe of the slope, but shall be constructed as far from the toe of the slope as practical.
- See pages 4 and 5 of this BMP for installation detail.

Maintenance and Inspection

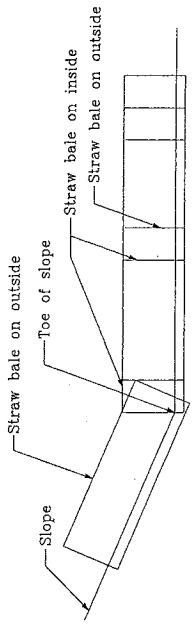
- Inspect straw bale barriers before and after each rainfall event, and weekly throughout the rainy season.
- Inspect straw bale barriers for sediment accumulations and remove sediment when depth reaches one-third the barrier height. Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the highway right-of-way in conformance with the Standard Specifications.
- Replace or repair damage bales as needed or as directed by the RE.
- Repair washouts or other damages as needed or as directed by the RE.
- Remove straw bales when no longer needed. Remove sediment accumulation, and clean, re-grade, and stabilized the area.


Setback varies (See note 3)
50x50 Wood stake (See note 4)
Straw bale barrier
1 m min
See note 6
100
Bale binding
Toe of slope
See note 6
100
450 Min
Slope
SECTION B-B
Angle wood stake toward previously laid bale (See note 7)
Bale binding
300
Wood stake
200
See note 5
PROFILE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
TEMPORARY LINEAR SEDIMENT BARRIER
(TYPE STRAW BALE)
NO SCALE
ALL DIMENSIONS ARE IN
MILLIMETERS UNLESS OTHERWISE SHOWN
LEGEND
DIRECTION OF FLOW
Sandbags
See note 8
SANDBAG CROSS BARRIER



PLAN

TEMPORARY LINEAR SEDIMENT BARRIER (TYPE STRAW BALE)



END DETAIL

NOTES

1. Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/2 the height of the linear barrier. In no case shall the reach length exceed 150 m.
2. The end of barrier shall be turned up slope.
3. Dimension may vary to fit field condition.
4. Stake dimensions are nominal.
5. Place straw bales tightly together.
6. Tamp embedment spoils against sides of installed bales.
7. Drive angled wood stake before vertical stake to ensure tight abutment to adjacent bale.
8. Cross barriers shall be a min of 1/2 and a max of 2/3 the height of the linear barrier.
9. Sandbag rows and layers shall be offset to eliminate gaps.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

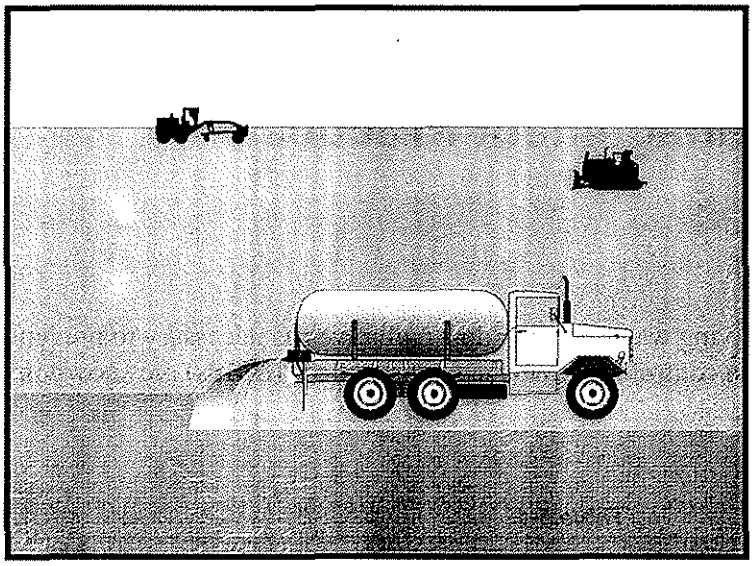
TEMPORARY LINEAR SEDIMENT BARRIER
(TYPE STRAW BALE)

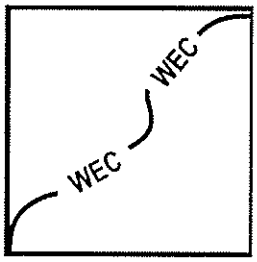
NO SCALE

ALL DIMENSIONS ARE IN
MILLIMETERS UNLESS OTHERWISE SHOWN

Wind Erosion Control

WE-1





Standard Symbol

BMP Objectives

- ● Soil Stabilization
- ● Sediment Control
- ○ Tracking Control
- ● Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

Wind erosion control consists of applying water and/or other dust palliatives as necessary to prevent or alleviate erosion by the forces of wind. Dust control shall be applied in accordance with Caltrans standard practices. Covering of small stockpiles or areas is an alternative to applying water or other dust palliatives.

Appropriate Applications

- This practice is implemented on all exposed soils subject to wind erosion.

Limitations

- Effectiveness depends on soil, temperature, humidity and wind velocity.

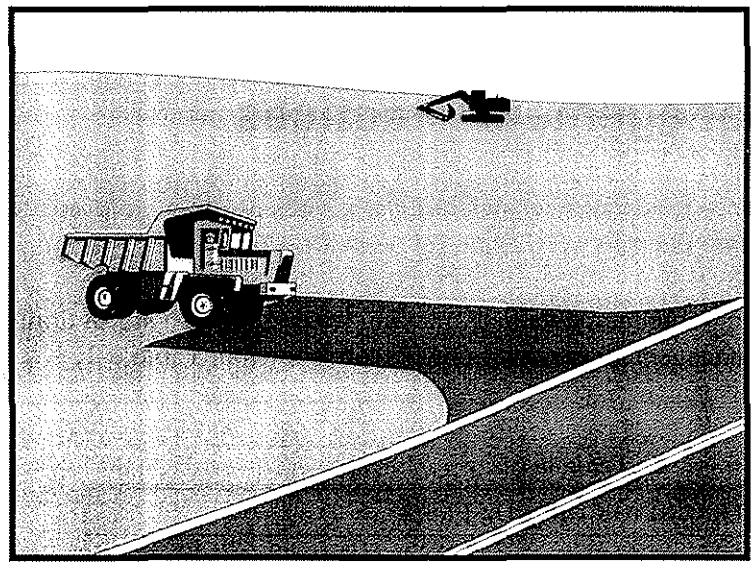
Standards and Specifications

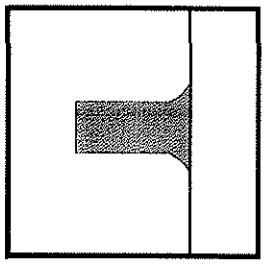
- Water shall be applied by means of pressure-type distributors or pipelines equipped with a spray system or hoses and nozzles that will ensure even distribution.
- All distribution equipment shall be equipped with a positive means of shutoff.
- Unless water is applied by means of pipelines, at least one mobile unit shall be available at all times to apply water or dust palliative to the project.
- If reclaimed water is used, the sources and discharge must meet California Department of Health Services water reclamation criteria and the Regional Water Quality Control Board requirements. Non-potable water shall not be conveyed in tanks or drain pipes that will be used to convey potable water and there shall be no connection between potable and non-potable supplies. Non-potable tanks, pipes and other conveyances shall be marked "NON-POTABLE WATER - DO NOT DRINK."
- Materials applied as temporary soil stabilizers and soil binders will also provide wind erosion control benefits.

Maintenance and Inspection

- Check areas that have been protected to ensure coverage.

Stabilized Construction Entrance/Exit TC-1





Standard Symbol

BMP Objectives

- ● Soil Stabilization
- ○ Sediment Control
- ● Tracking Control
- ● Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

A stabilized construction access is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

Appropriate Applications

- Use at construction sites:
  - Where dirt or mud can be tracked onto public roads.
  - Adjacent to water bodies.
  - Where poor soils are encountered.
  - Where dust is a problem during dry weather conditions.
- This BMP may be implemented on a project-by-project basis in addition to other BMPs when determined necessary and feasible by the Resident Engineer (RE).

Limitations

- Site conditions will dictate design and need.

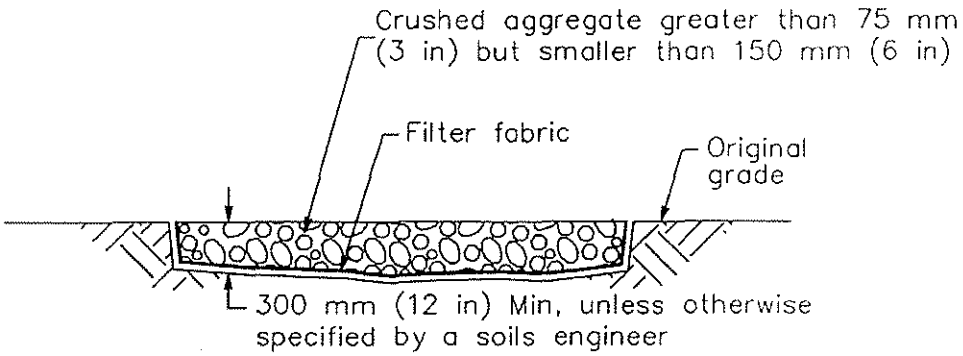
Standards and Specifications

- Limit the points of entrance/exit to the construction site.
- Limit speed of vehicles to control dust.
- Properly grade each construction entrance/exit to prevent runoff from leaving the construction site.
- Route runoff from stabilized entrances/exits through a sediment-trapping device before discharge.
- Design stabilized entrance/exit to support the heaviest vehicles and equipment that will use it.

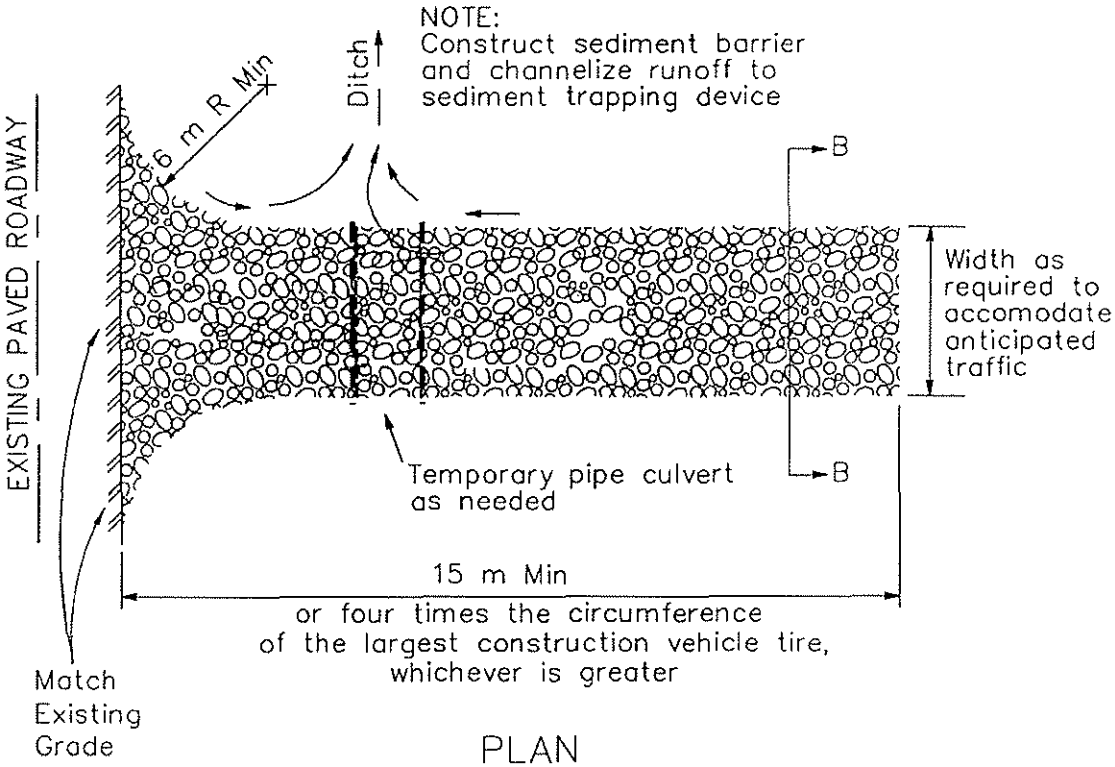
- Select construction access stabilization (aggregate, asphaltic concrete, concrete) based on longevity, required performance, and site conditions. The use of asphalt concrete (AC) grindings for stabilized construction access/roadway is not allowed.
- Use of constructed/manufactured steel plates with ribs for entrance/exit access is allowed with written approval from the RE.
- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 300 mm (12 in) depth, or place aggregate to a depth recommended by the RE. Crushed aggregate greater than 75 mm (3 inches) and smaller than 150 mm (6 inches) shall be used.
- Designate combination or single purpose entrances and exits to the construction site.
- Implement BMP SC-7, "Street Sweeping and Vacuuming" as needed and as required.
- Require all employees, subcontractors, and suppliers to utilize the stabilized construction access.
- All exit locations intended to be used continuously and for a period of time shall have stabilized construction entrance/exit BMPs (TC-1 "Stabilized Construction Entrance/Exit" or TC-3 "Entrance/Outlet Tire Wash").

Maintenance and Inspection

- Inspect routinely for damage and assess effectiveness of the BMP. Remove aggregate, separate and dispose of sediment if construction entrance/exit is clogged with sediment or as directed by the RE.
- Keep all temporary roadway ditches clear.
- Inspect for damage and repair as needed.

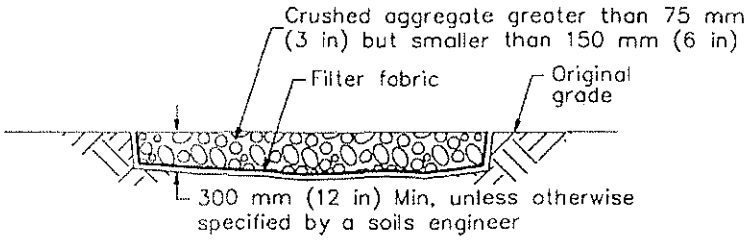


SECTION B–B
NTS



PLAN
NTS

Stabilized Contraction Entrance/Exit (Type 1)



SECTION B–B
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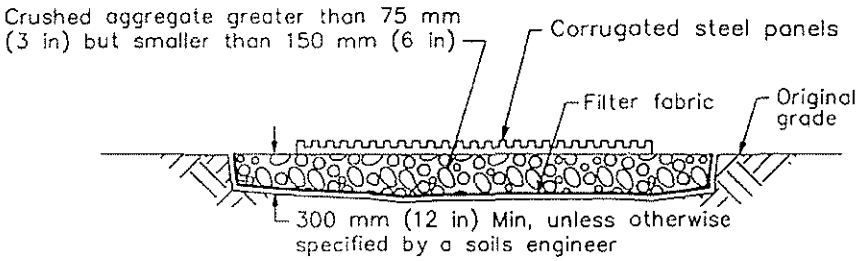
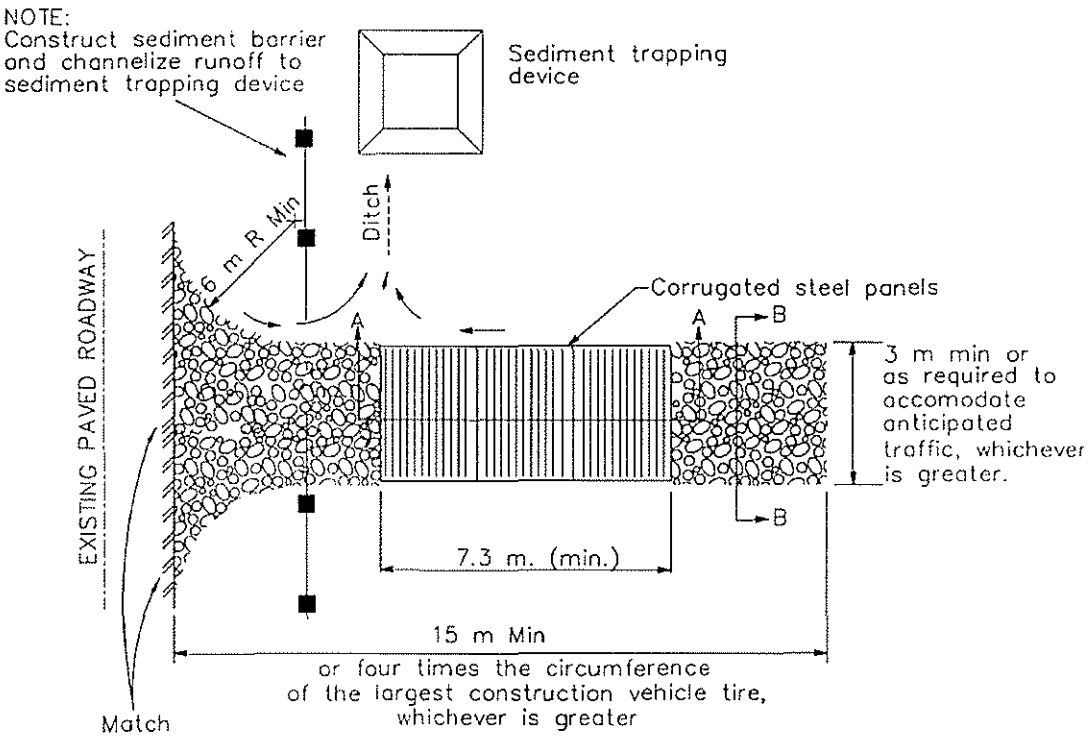


SECTION A–A
NOT TO SCALE

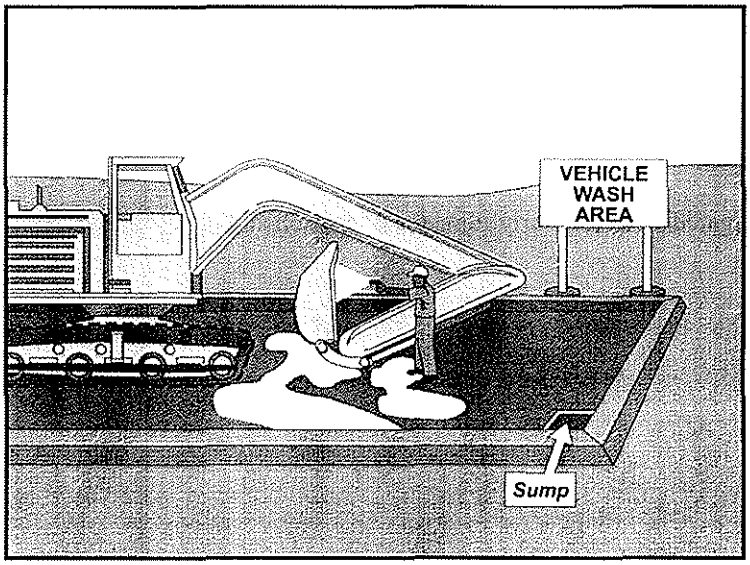


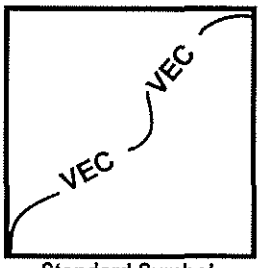
PLAN
NTS

Stabilized Construction Entrance/Exit (Type 2)

Vehicle and Equipment Cleaning

NS-8





Standard Symbol

BMP Objectives

- ○ Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ● Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

Vehicle and equipment cleaning procedures and practices are used to minimize or eliminate the discharge of pollutants from vehicle and equipment cleaning operations to storm drain system or to watercourses.

Appropriate Applications

These procedures are applied on all construction sites where vehicle and equipment cleaning is performed.

Limitations

- None.

Standards and Specifications

- On-site vehicle and equipment washing is discouraged.
- Cleaning of vehicles and equipment with soap, solvents or steam shall not occur on the project site unless the Resident Engineer (RE) has been notified in advance and the resulting wastes are fully contained and disposed of outside the highway right-of-way in conformance with the provisions in the Standard Specifications Section 7-1.13. Resulting wastes and by-products shall not be discharged or buried within the highway right-of-way, and must be captured and recycled or disposed according to the requirements of WM-10, "Liquid Waste Management" or WM-6, "Hazardous Waste Management," depending on the waste characteristics. Minimize use of solvents. The use of diesel for vehicle and equipment cleaning is prohibited.
- Vehicle and equipment wash water shall be contained for percolation or evaporative drying away from storm drain inlets or watercourses and shall not be discharged within the highway right-of-way. Apply sediment control BMPs if applicable.
- All vehicles/equipment that regularly enter and leave the construction site must be cleaned off-site.
- When vehicle/equipment washing/cleaning must occur onsite, and the

operation cannot be located within a structure or building equipped with appropriate disposal facilities, the outside cleaning area shall have the following characteristics, and shall be arranged with the construction storm water coordinator:

- Located away from storm drain inlets, drainage facilities, or watercourses.
- Paved with concrete or asphalt and bermed to contain wash waters and to prevent run-on and runoff.
- Configured with a sump to allow collection and disposal of wash water.
- Wash waters shall not be discharged to storm drains or watercourses.
- Used only when necessary.

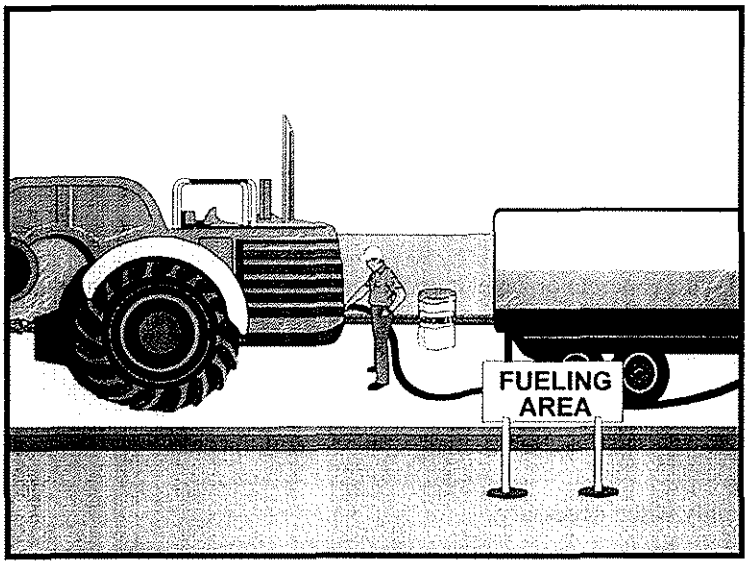
- When cleaning vehicles/equipment with water:
  - Use as little water as possible. High pressure sprayers may use less water than a hose, and shall be considered.
  - Use positive shutoff valve to minimize water usage.
  - Facility wash racks shall discharge to a sanitary sewer, recycle system or other approved discharge system and shall not discharge to the storm drainage system or watercourses.

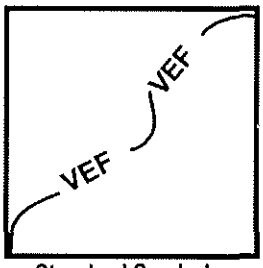
Maintenance and Inspection

- The control measure shall be inspected at a minimum of once a week.
- Monitor employees and subcontractors throughout the duration of the construction project to ensure appropriate practices are being implemented.
- Inspect sump regularly and remove liquids and sediment as needed or as directed by the RE.

Vehicle and Equipment Fueling

NS-9





Standard Symbol

BMP Objectives

- ○ Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ● Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

Vehicle and equipment fueling procedures and practices are designed to minimize or eliminate the discharge of fuel spills and leaks into storm drain systems or to watercourses.

Appropriate Applications

These procedures are applied on all construction sites where vehicle and equipment fueling takes place.

Limitations

- Onsite vehicle and equipment fueling shall only be used where it's impractical to send vehicles and equipment off-site for fueling.

Standards and Specifications

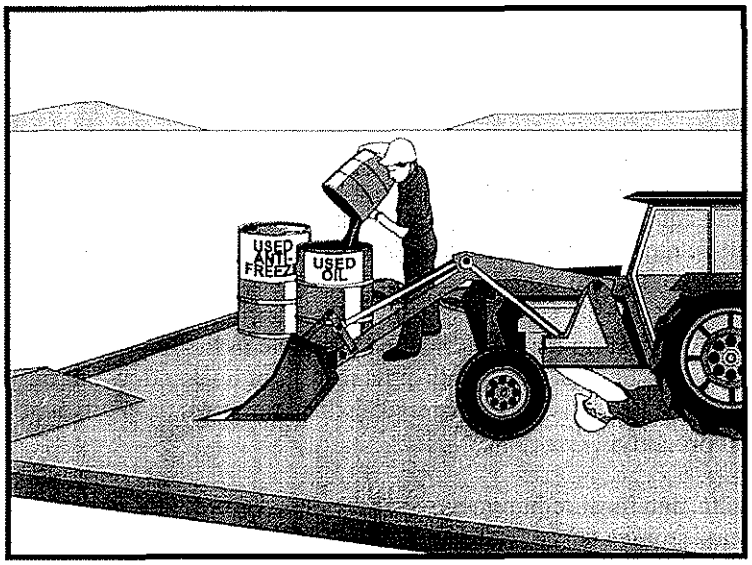
- When fueling must occur onsite, the contractor shall select and designate an area to be used, subject to approval of the Resident Engineer (RE).
- Absorbent spill clean-up materials and spill kits shall be available in fueling areas and on fueling trucks and shall be disposed of properly after use.
- Drip pans or absorbent pads shall be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.
- Dedicated fueling areas shall be protected from storm water run-on and runoff, and shall be located at least 15 m (50 ft) from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.
- Nozzles used in vehicle and equipment fueling shall be equipped with an automatic shut-off to control drips. Fueling operations shall not be left unattended.
- Protect fueling areas with berms and/or dikes to prevent run-on, runoff, and to contain spills.

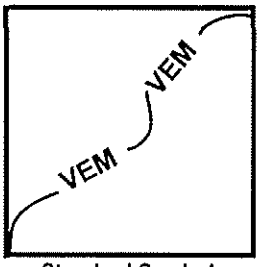
- Use vapor recovery nozzles to help control drips as well as air pollution where required by Air Quality Management Districts (AQMD). Ensure the nozzle is secured upright when not in use.
- Fuel tanks shall not be "topped-off."
- Vehicles and equipment shall be inspected on each day of use for leaks. Leaks shall be repaired immediately or problem vehicles or equipment shall be removed from the project site.
- Absorbent spill clean-up materials shall be available in fueling and maintenance areas and used on small spills instead of hosing down or burying techniques. The spent absorbent material shall be removed promptly and disposed of properly.
- Federal, state, and local requirements shall be observed for any stationary above ground storage tanks. Refer to WM-1, "Material Delivery and Storage."
- Mobile fueling of construction equipment throughout the site shall be minimized. Whenever practical, equipment shall be transported to the designated fueling area.

Maintenance and Inspection

- Fueling areas and storage tanks shall be inspected regularly.
- Keep an ample supply of spill cleanup material on the site.
- Immediately cleanup spills and properly dispose of contaminated soil and cleanup materials.

Vehicle and Equipment Maintenance NS-10





Standard Symbol

BMP Objectives

- ○ Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ● Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

Procedures and practices to minimize or eliminate the discharge of pollutants to the storm drain systems or to watercourses from vehicle and equipment maintenance procedures.

Appropriate Applications

These procedures are applied on all construction projects where an onsite yard area is necessary for storage and maintenance of heavy equipment and vehicles.

Limitations

- None identified.

Standards and Specifications

- Drip pans or absorbent pads shall be used during vehicle and equipment maintenance work that involves fluids, unless the maintenance work is performed over an impermeable surface in a dedicated maintenance area.
- All maintenance areas are required to have spill kits and/or use other spill protection devices.
- Dedicated maintenance areas shall be protected from storm water run-on and runoff, and shall be located at least 15 m (50 ft) from downstream drainage facilities and watercourses.
- Drip Pans or plastic sheeting shall be placed under all vehicles and equipment placed on docks, barges, or other structures over water bodies when the vehicle or equipment is planned to be idle for more than one hour.
- Absorbent spill clean-up materials shall be available in maintenance areas and shall be disposed of properly after use. Substances used to coat asphalt transport trucks and asphalt-spreading equipment shall be non-toxic.
- Use off-site maintenance facilities whenever practical.

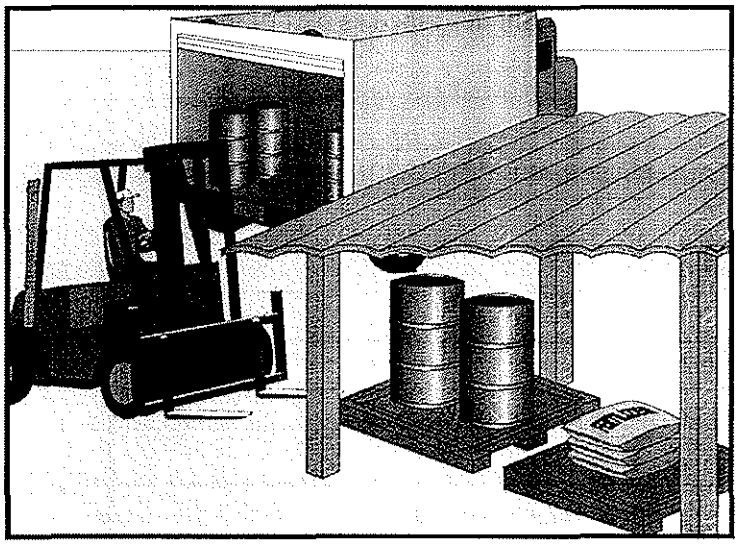
- For long-term projects, consider constructing roofs or using portable tents over maintenance areas.
- Properly dispose of used oils, fluids, lubricants, and spill cleanup materials.
- Do not dump fuels and lubricants onto the ground.
- Do not place used oil in a dumpster or pour into a storm drain or watercourse.
- Properly dispose or recycle used batteries.
- Do not bury used tires.
- Repair of fluid and oil leaks immediately.
- Provide spill containment dikes or secondary containment around stored oil and chemical drums.

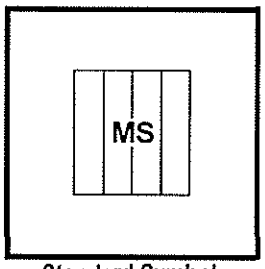
Maintenance and Inspection

- Maintain waste fluid containers in leak proof condition.
- Vehicle and equipment maintenance areas shall be inspected regularly.
- Vehicles and equipment shall be inspected on each day of use. Leaks shall be repaired immediately or the problem vehicle(s) or equipment shall be removed from the project site.
- Inspect equipment for damaged hoses and leaky gaskets routinely. Repair or replace as needed.

Material Delivery and Storage

WM-1





Standard Symbol

BMP Objectives

- ○ Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ● Non-Storm Water Management
- ● Materials and Waste Management

Definition and Purpose

Procedures and practices for the proper handling and storage of materials in a manner that minimizes or eliminates the discharge of these materials to the storm drain system or to watercourses.

Appropriate Applications

These procedures are implemented at all construction sites with delivery and storage of the following:

- Hazardous chemicals such as:
  - Acids,
  - lime,
  - glues,
  - adhesives,
  - paints,
  - solvents, and
  - curing compounds.
- Soil stabilizers and binders.
- Fertilizers.
- Detergents.
- Plaster.
- Petroleum products such as fuel, oil, and grease.
- Asphalt and concrete components.
- Pesticides and herbicides.

- Other materials that may be detrimental if released to the environment.

Limitations

- Space limitation may preclude indoor storage.
- Storage sheds must meet building & fire code requirements.

Standards and Specifications

General

- Train employees and subcontractors on the proper material delivery and storage practices.
- Temporary storage area shall be located away from vehicular traffic.
- Material Safety Data Sheets (MSDS) shall be supplied to the Resident Engineer (RE) for all materials stored.

Material Storage Areas and Practices

- Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, or 302 shall be stored in approved containers and drums and shall be placed in temporary containment facilities for storage.
- Throughout the rainy season, each temporary containment facility shall have a permanent cover and side wind protection or be covered during non-working days and prior to and during rain events.
- A temporary containment facility shall provide for a spill containment volume able to contain precipitation from a 24-hour, 25-year storm event, plus the greater of 10% of the aggregate volume of all containers or 100% of the capacity of the largest container within its boundary, whichever is greater.
- A temporary containment facility shall be impervious to the materials stored therein for a minimum contact time of 72 hours.
- A temporary containment facility shall be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills shall be collected and placed into drums. These liquids shall be handled as a hazardous waste unless testing determines them to be non-hazardous. All collected liquids or non-hazardous liquids shall be sent to an approved disposal site.
- Sufficient separation shall be provided between stored containers to allow for spill cleanup and emergency response access.
- Incompatible materials, such as chlorine and ammonia, shall not be stored in the same temporary containment facility.
- Materials shall be stored in their original containers and the original product labels shall be maintained in place in a legible condition. Damaged or otherwise illegible labels shall be replaced immediately.

-
- Bagged and boxed materials shall be stored on pallets and shall not be allowed to accumulate on the ground. To provide protection from wind and rain, throughout the rainy season, bagged and boxed materials shall be covered during non-working days and prior to rain events.
- Stockpiles shall be protected in accordance with BMP WM-3, "Stockpile Management."
- Minimize the material inventory stored on-site (e.g., only a few days supply).
- Have proper storage instructions posted at all times in an open and conspicuous location.
- Do not store hazardous chemicals, drums, or bagged materials directly on the ground. Place these items on a pallet and when possible, under cover in secondary containment.
- Keep hazardous chemicals well labeled and in their original containers.
- Keep ample supply of appropriate spill clean up material near storage areas.
- Also see BMP WM-6, "Hazardous Waste Management", for storing of hazardous materials.

Material Delivery Practices

- Keep an accurate, up-to-date inventory of material delivered and stored on-site.
- Employees trained in emergency spill clean-up procedures shall be present when dangerous materials or liquid chemicals are unloaded.

Spill Clean-up

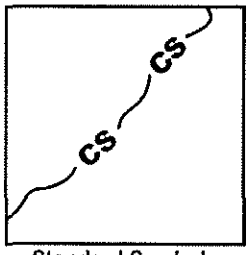
- Contain and clean up any spill immediately.
- If significant residual materials remain on the ground after construction is complete, properly remove and dispose any hazardous materials or contaminated soil.
- See BMP WM-4, "Spill Prevention and Control", for spills of chemicals and/or hazardous materials.

Maintenance and Inspection

- Storage areas shall be kept clean, well organized, and equipped with ample clean-up supplies as appropriate for the materials being stored.
- Perimeter controls, containment structures, covers, and liners shall be repaired or replaced as needed to maintain proper function.
- Inspect storage areas before and after rainfall events, and at least weekly during other times. Collect and place into drums any spills or accumulated rainwater.

Stockpile Management

WM-3



Standard Symbol

BMP Objectives

- ● Soil Stabilization
- ● Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ○ Non-Storm Water Management
- ● Materials and Waste Management

Definition and Purpose

Stockpile management procedures and practices are designed to reduce or eliminate air and storm water pollution from stockpiles of soil, and paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate subbase or pre-mixed aggregate, asphalt binder (so called "cold mix" asphalt) and pressure treated wood.

Appropriate Applications

Implemented in all projects that stockpile soil and other materials.

Limitations

- None identified

Standards and Specifications

- Protection of stockpiles is a year-round requirement.
- Locate stockpiles a minimum of 15 m (50 ft)away from concentrated flows of storm water, drainage courses, and inlets.
- Implement wind erosion control practices as appropriate on all stockpiled material. For specific information see BMP WE-1, "Wind Erosion Control."
- Stockpiles of contaminated soil shall be managed in accordance with BMP WM-7, "Contaminated Soil Management."
- Bagged materials should be placed on pallets and under cover.

Protection of Non-Active Stockpiles

Non-active stockpiles of the identified materials shall be protected further as follows:

- *Soil stockpiles:*
  - During the rainy seasons, soil stockpiles shall be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times.
  - During the non-rainy season, soil stockpiles shall be covered and protected with a temporary perimeter sediment barrier prior to the onset of precipitation.
- ***Stockpiles of portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate subbase:***
  - During the rainy season, the stockpiles shall be covered or protected with a temporary perimeter sediment barrier at all times.
  - During the non-rainy season, the stockpiles shall be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.
- *Stockpiles of "cold mix":*
  - During the rainy season, cold mix stockpiles shall be placed on and covered with plastic or comparable material at all times.
  - During the non-rainy season, cold mix stockpiles shall be placed on and covered with plastic or comparable material prior to the onset of precipitation.
- ***Stockpiles/Storage of pressure treated wood with copper, chromium, and arsenic or ammonical, copper, zinc, and arsenate:***
  - During the rainy season, treated wood shall be covered with plastic or comparable material at all times.
  - During the non-rainy season, treated wood shall be covered with plastic or comparable material and shall be placed on pallets prior to the onset of precipitation.

Protection of Active Stockpiles

Active stockpiles of the identified materials shall be protected further as follows:

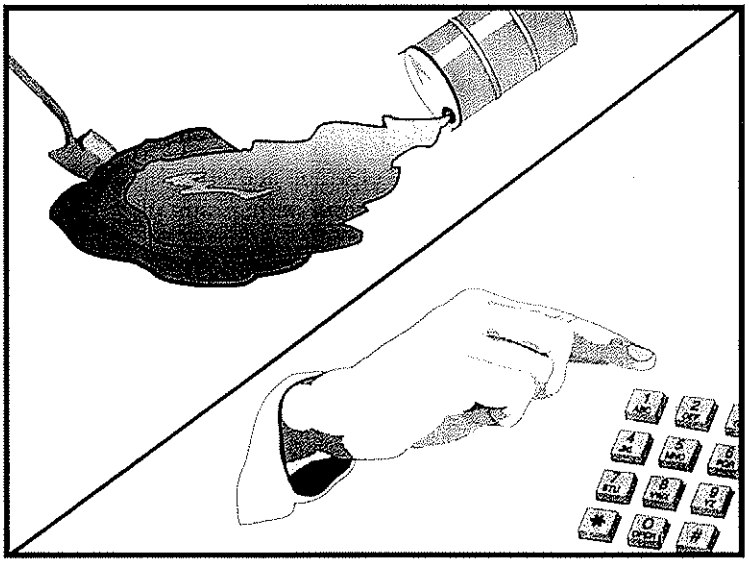
- All stockpiles shall be covered, stabilized, or protected with a temporary linear sediment barrier prior to the onset of precipitation.
- Stockpiles of "cold mix" shall be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Maintenance and Inspections

- Repair and/or replace perimeter controls and covers as needed, or as directed by the RE, to keep them functioning properly. Sediment shall be removed when sediment accumulation reaches one-third (1/3) of the barrier height.

Spill Prevention and Control

WM-4



Standard Symbol

BMP Objectives

- ○ Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ● Non-Storm Water Management
- ● Materials and Waste Management

Definition and Purpose

These procedures and practices are implemented to prevent and control spills in a manner that minimizes or prevents the discharge of spilled material to the drainage system or watercourses.

Appropriate Application

This best management practice (BMP) applies to all construction projects. Spill control procedures are implemented anytime chemicals and/or hazardous substances are stored. Substances may include, but are not limited to:

- Soil stabilizers/binders.
- Dust Palliatives.
- Herbicides.
- Growth inhibitors.
- Fertilizers.
- Deicing/anti-icing chemicals.
- Fuels.
- Lubricants.
- Other petroleum distillates.

To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110, 117, and 302, and sanitary and septic wastes shall be contained and cleaned up immediately.

Limitations

- This BMP only applies to spills caused by the contractor.
- Procedures and practices presented in this BMP are general. Contractor shall identify appropriate practices for the specific materials used or stored on-site.

Standards and Specifications

- To the extent that it doesn't compromise clean up activities, spills shall be covered and protected from storm water run-on during rainfall.
- Spills shall not be buried or washed with water.
- Used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose shall be stored and disposed of in conformance with the special provisions.
- Water used for cleaning and decontamination shall not be allowed to enter storm drains or watercourses and shall be collected and disposed of in accordance with BMP WM-10, "Liquid Waste Management."
- Water overflow or minor water spillage shall be contained and shall not be allowed to discharge into drainage facilities or watercourses.
- Proper storage, clean-up and spill reporting instruction for hazardous materials stored or used on the project site shall be posted at all times in an open, conspicuous and accessible location.
- Waste storage areas shall be kept clean, well organized and equipped with ample clean-up supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers and liners shall be repaired or replaced as needed to maintain proper function.

Education

- Educate employees and subcontractors on what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills.
- Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.
- Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.
- The Contractor's Water Pollution Control Manager (WPCM) shall oversee and enforce proper spill prevention and control measures.

Cleanup and Storage Procedures

- Minor Spills
  - Minor spills typically involve small quantities of oil, gasoline, paint, etc., which can be controlled by the first responder at the discovery of the spill.
  - Use absorbent materials on small spills rather than hosing down or burying the spill.
  - Remove the absorbent materials promptly and dispose of properly.
  - The practice commonly followed for a minor spill is:
    - Contain the spread of the spill.
    - Recover spilled materials.
    - Clean the contaminated area and/or properly dispose of contaminated materials.
- Semi-Significant Spills
  - Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.
  - Clean up spills immediately:
    - Notify the project foreman immediately. The foreman shall notify the Resident Engineer (RE).
    - Contain spread of the spill.
    - If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
    - If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
    - If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

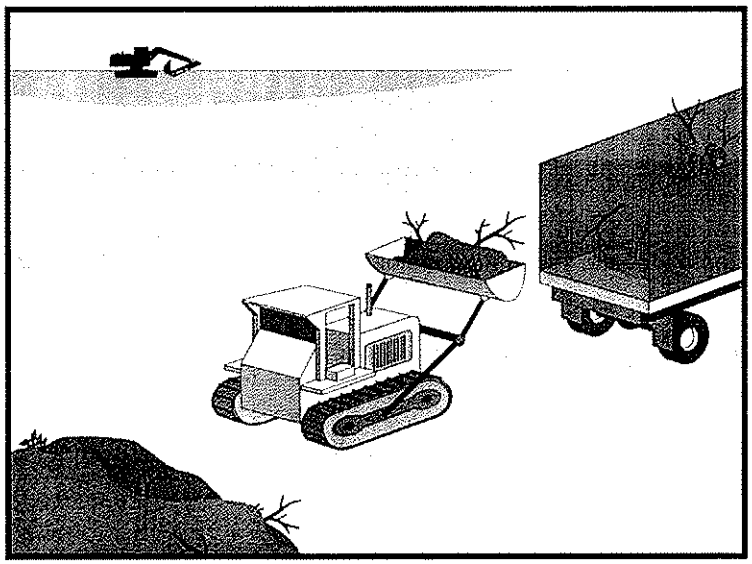
- Significant/Hazardous Spills
  - For significant or hazardous spills that cannot be controlled by personnel in the immediate vicinity, the following steps shall be taken:
    - Notify the RE immediately and follow up with a written report.
    - Notify the local emergency response by dialing 911. In addition to 911, the contractor will notify the proper county officials. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
    - Notify the Governor's Office of Emergency Services Warning Center, (805) 852-7550.
    - For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor shall notify the National Response Center at (800) 424-8802.
    - Notification shall first be made by telephone and followed up with a written report.
    - The services of a spills contractor or a Haz-Mat team shall be obtained immediately. Construction personnel shall not attempt to clean up the spill until the appropriate and qualified staff have arrived at the job site.
    - Other agencies which may need to be consulted include, but are not limited to, the Fire Department, the Public Works Department, the Coast Guard, the Highway Patrol, the City/County Police Department, Department of Toxic Substances, California Division of Oil and Gas, Cal/OSHA, RWQCB, etc.

Maintenance and Inspection

- Verify weekly that spill control clean up materials are located near material storage, unloading, and use areas.
- Update spill prevention and control plans and stock appropriate clean-up materials whenever changes occur in the types of chemicals used or stored onsite.

Solid Waste Management

WM-5



SWM

Standard Symbol

BMP Objectives

- ○ Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ● Non-Storm Water Management
- ● Materials and Waste Management

Definition and Purpose

Solid waste management procedures and practices are designed to minimize or eliminate the discharge of pollutants to the drainage system or to watercourses as a result of the creation, stockpiling, or removal of construction site wastes.

Appropriate Applications

Solid waste management procedures and practices are implemented on all construction projects that generate solid wastes.

Solid wastes include but are not limited to:

- Construction wastes including brick, mortar, timber, steel and metal scraps, sawdust, pipe and electrical cuttings, non-hazardous equipment parts, styrofoam and other materials used to transport and package construction materials.
- Highway planting wastes, including vegetative material, plant containers, and packaging materials.
- Litter, including food containers, beverage cans, coffee cups, paper bags, plastic wrappers, and smoking materials, including litter generated by the public.

Limitations

- Temporary stockpiling of certain construction wastes may not necessitate stringent drainage related controls during the non-rainy season or in desert areas with low rainfall.

Standards and Specifications

Education

- The Contractor's Water Pollution Control Manager (WPCM) shall oversee and enforce proper solid waste procedures and practices.
- Instruct employees and subcontractors on identification of solid waste and hazardous waste.
- Educate employees and subcontractors on solid waste storage and disposal procedures.
- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).
- Require that employees and subcontractors follow solid waste handling and storage procedures.
- Prohibit littering by employees, subcontractors, and visitors.
- Wherever possible, minimize production of solid waste materials.

Collection, Storage, and Disposal

- Dumpsters of sufficient size and number shall be provided to contain the solid waste generated by the project and properly serviced.
- Littering on the project site shall be prohibited.
- To prevent clogging of the storm drainage system litter and debris removal from drainage grates, trash racks, and ditch lines shall be a priority.
- Trash receptacles shall be provided in the Contractor's yard, field trailer areas, and at locations where workers congregate for lunch and break periods.
- Construction debris and litter from work areas within the construction limits of the project site shall be collected and placed in watertight dumpsters at least weekly regardless of whether the litter was generated by the Contractor, the public, or others. Collected litter and debris shall not be placed in or next to drain inlets, storm water drainage systems or watercourses.
- Full dumpsters shall be removed from the project site and the contents shall be disposed of outside the highway right-of-way in conformance with the provisions in the Standard Specifications Section 7-1.13.
- Litter stored in collection areas and containers shall be handled and disposed of by trash hauling contractors.
- Construction debris and waste shall be removed from the site every two weeks or as directed by the RE.

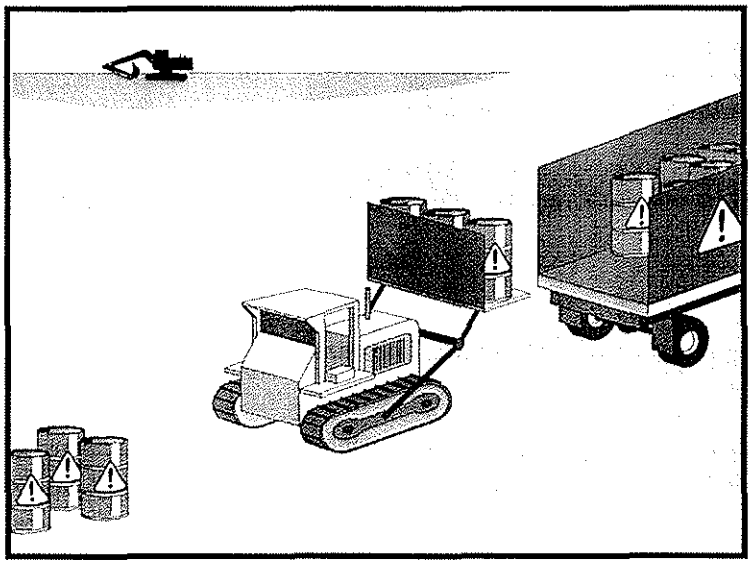
- Construction material visible to the public shall be stored or stacked in an orderly manner to the satisfaction of the RE.
- Storm water run-on shall be prevented from contacting stored solid waste through the use of berms, dikes, or other temporary diversion structures or through the use of measures to elevate waste from site surfaces.
- Solid waste storage areas shall be located at least 15 m (50 ft) from drainage facilities and watercourses and shall not be located in areas prone to flooding or ponding.
- Except during fair weather, construction and highway planting waste not stored in watertight dumpsters shall be securely covered from wind and rain by covering the waste with tarps or plastic sheeting or protected in conformance with the applicable Disturbed Soil Area protection section.
- Dumpster washout on the project site is not allowed.
- Notify trash hauling contractors that only watertight dumpsters are acceptable for use on-site.
- Plan for additional containers during the demolition phase of construction.
- Plan for more frequent pickup during the demolition phase of construction.
- Construction waste shall be stored in a designated area approved by the RE.
- Segregate potentially hazardous waste from non-hazardous construction site waste.
- Keep the site clean of litter debris.
- Make sure that toxic liquid wastes (e.g., used oils, solvents, and paints) and chemicals (e.g., acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Dispose of non-hazardous waste in accordance with Standard Specification 7-1.13, Disposal of Material Outside the Highway Right of Way.
- For disposal of hazardous waste, see BMP WM-6, "Hazardous Waste Management." Have hazardous waste hauled to an appropriate disposal and/or recycling facility.
- Salvage or recycle useful vegetation debris, packaging and/or surplus building materials when practical. For example, trees and shrubs from land clearing can be converted into wood chips, then used as mulch on graded areas. Wood pallets, cardboard boxes, and construction scraps can also be recycled.

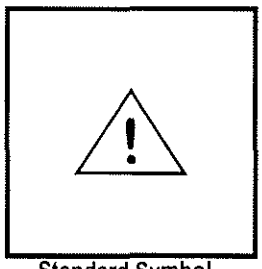
Maintenance and Inspection

- The WPCM shall monitor onsite solid waste storage and disposal procedures.
- Police site for litter and debris.

Hazardous Waste Management

WM-6





Standard Symbol

BMP Objectives

- ○ Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ● Non-Storm Water Management
- ● Materials and Waste Management

Definition and Purpose

These are procedures and practices to minimize or eliminate the discharge of pollutants from construction site hazardous waste to the storm drain systems or to watercourses.

Appropriate Applications

- This best management practice (BMP) applies to all construction projects.
- Hazardous waste management practices are implemented on construction projects that generate waste from the use of:
  - Petroleum Products,
  - Asphalt Products,
  - Concrete Curing Compounds,
  - Pesticides,
  - Acids,
  - Paints,
  - Stains,
  - Solvents,
  - Wood Preservatives,
  - Roofing Tar, or
  - Any materials deemed a hazardous waste in California, Title 22 Division 4.5, or listed in 40 CFR Parts 110, 117, 261, or 302.

Limitations

- Nothing in this BMP relieves the Contractor from responsibility for compliance with federal, state, and local laws regarding storage, handling, transportation, and disposal of hazardous wastes.
- This BMP does not cover aerially deposited lead (ADL) soils. For ADL soils refer to BMP WM-7, "Contaminated Soil Management," and the project special provisions.

Standards and Specifications

Education

- Educate employees and subcontractors on hazardous waste storage and disposal procedures.
- Educate employees and subcontractors on potential dangers to humans and the environment from hazardous wastes.
- Instruct employees and subcontractors on safety procedures for common construction site hazardous wastes.
- Instruct employees and subcontractors in identification of hazardous and solid waste.
- Hold regular meetings to discuss and reinforce hazardous waste management procedures (incorporate into regular safety meetings).
- The Contractor's Water Pollution Control Manager (WPCM) shall oversee and enforce proper hazardous waste management procedures and practices.
- Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.

Storage Procedures

- Wastes shall be stored in sealed containers constructed of a suitable material and shall be labeled as required by Title 22 CCR, Division 4.5 and 49 CFR Parts 172,173, 178, and 179.
- All hazardous waste shall be stored, transported, and disposed as required in Title 22 CCR, Division 4.5 and 49 CFR 261-263.
- Waste containers shall be stored in temporary containment facilities that shall comply with the following requirements:
  - Temporary containment facility shall provide for a spill containment volume able to contain precipitation from a 24-hour, 25 year storm event, plus the greater of 10% of the aggregate volume of all containers or 100% of the capacity of the largest tank within its boundary, whichever is greater.

- Temporary containment facility shall be impervious to the materials stored there for a minimum contact time of 72 hours.

- Temporary containment facilities shall be maintained free of accumulated rainwater and spills. In the event of spills or leaks accumulated rainwater and spills shall be placed into drums after each rainfall. These liquids shall be handled as a hazardous waste unless testing determines them to be non-hazardous. Non-hazardous liquids shall be sent to an approved disposal site.

- Sufficient separation shall be provided between stored containers to allow for spill cleanup and emergency response access.

- Incompatible materials, such as chlorine and ammonia, shall not be stored in the same temporary containment facility.

- Throughout the rainy season, temporary containment facilities shall be covered during non-working days, and prior to rain events. Covered facilities may include use of plastic tarps for small facilities or constructed roofs with overhangs. A storage facility having a solid cover and sides is preferred to a temporary tarp. Storage facilities shall be equipped with adequate ventilation.

- Drums shall not be overfilled and wastes shall not be mixed.

- Unless watertight, containers of dry waste shall be stored on pallets.

- Paint brushes and equipment for water and oil based paints shall be cleaned within a contained area and shall not be allowed to contaminate site soils, watercourses or drainage systems. Waste paints, thinners, solvents, residues, and sludges that cannot be recycled or reused shall be disposed of as hazardous waste. When thoroughly dry, latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths shall be disposed of as solid waste.

- Ensure that adequate hazardous waste storage volume is available.

- Ensure that hazardous waste collection containers are conveniently located.

- Designate hazardous waste storage areas on site away from storm drains or watercourses and away from moving vehicles and equipment to prevent accidental spills.

- Minimize production or generation of hazardous materials and hazardous waste on the job site.

- Use containment berms in fueling and maintenance areas and where the potential for spills is high.

- Segregate potentially hazardous waste from non-hazardous construction site debris.
- Keep liquid or semi-liquid hazardous waste in appropriate containers (closed drums or similar) and under cover.
- Clearly label all hazardous waste containers with the waste being stored and the date of accumulation.
- Place hazardous waste containers in secondary containment.
- Do not allow potentially hazardous waste materials to accumulate on the ground.
- Do not mix wastes.

Disposal Procedures

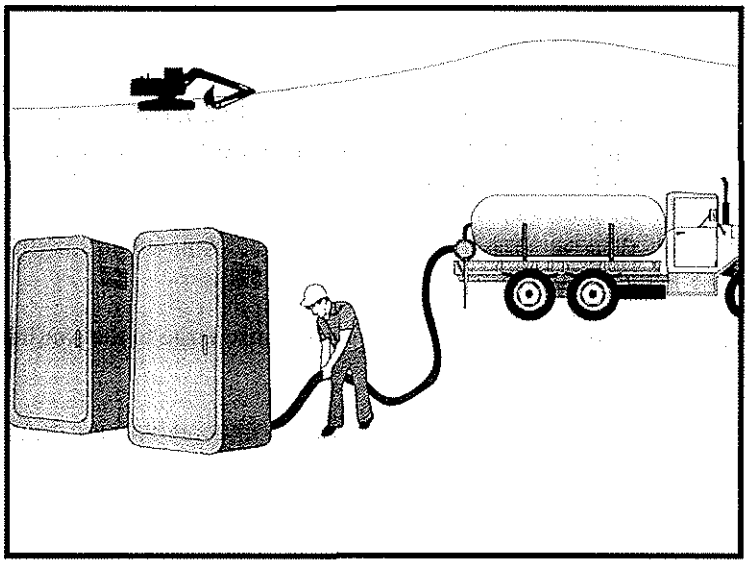
- Waste shall be disposed of outside the highway right-of-way within 90 days of being generated, or as directed by the Resident Engineer (RE). In no case shall hazardous waste storage exceed requirements in Title 22 CCR, Section 66262.34.
- Waste shall be disposed of by a licensed hazardous waste transporter at an authorized and licensed disposal facility or recycling facility utilizing properly completed Uniform Hazardous Waste Manifest forms.
- A Department of Health Services (DHS) certified laboratory shall sample waste and classify it to determine the appropriate disposal facility.
- Make sure that toxic liquid wastes (e.g., used oils, solvents, and paints) and chemicals (e.g., acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for solid waste construction debris.
- Properly dispose of rainwater in secondary containment that may have mixed with hazardous waste.
- Recycle any useful material such as used oil or water-based paint when practical.
- Attention is directed to "Hazardous Material", "Contaminated Material", and "Aerially Deposited Lead" of the contract documents regarding the handling and disposal of hazardous materials.

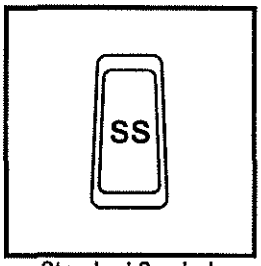
Maintenance and Inspection

- A foreman and/or construction supervisor shall monitor on-site hazardous waste storage and disposal procedures.
- Waste storage areas shall be kept clean, well organized, and equipped with ample clean-up supplies as appropriate for the materials being stored.
- Storage areas shall be inspected in conformance with the provisions in the contract documents.
- Perimeter controls, containment structures, covers, and liners shall be repaired or replaced as needed to maintain proper function.
- Hazardous spills shall be cleaned up and reported in conformance with the applicable Material Safety Data Sheet (MSDS) and the instructions posted at the project site.
- The National Response Center, at (800) 424-8802, shall be notified of spills of Federal reportable quantities in conformance with the requirements in 40 CFR parts 110, 117, and 302.
- Copy of the hazardous waste manifests shall be provided to the RE.

Sanitary/Septic Waste Management

WM-9





Standard Symbol

BMP Objectives

- ○ Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ● Non-Storm Water Management
- ● Materials and Waste Management

Definition and Purpose

Procedures and practices to minimize or eliminate the discharge of construction site sanitary/septic waste materials to the storm drain system or to watercourses.

Appropriate Applications

Sanitary/septic waste management practices are implemented on all construction sites that use temporary or portable sanitary/septic waste systems.

Limitations

- None identified.

Standards and Specifications

Education

- Educate employees, subcontractors, and suppliers on sanitary/septic waste storage and disposal procedures.
- Educate employees, subcontractors, and suppliers of potential dangers to humans and the environment from sanitary/septic wastes.
- Instruct employees, subcontractors, and suppliers in identification of sanitary/septic waste.
- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.

Storage and Disposal Procedures

- Temporary sanitary facilities shall be located away from drainage facilities, watercourses, and from traffic circulation. When subjected to high winds or risk.

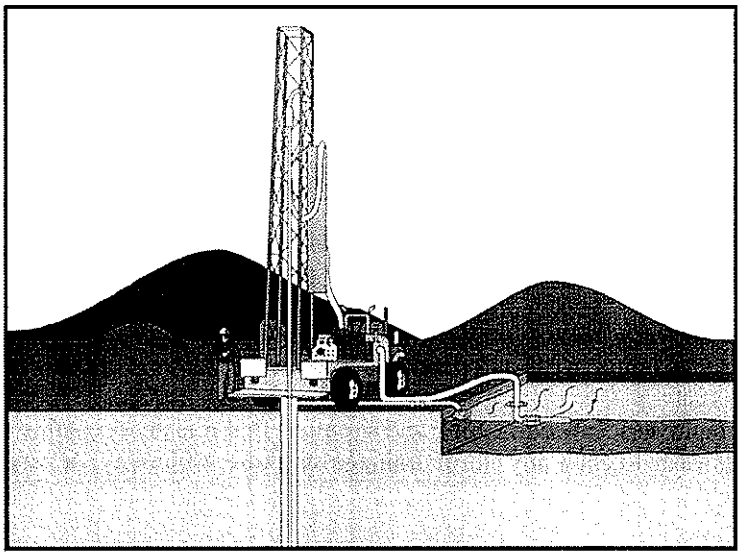
- Wastewater shall not be discharged or buried within the highway right-of-way.
- Sanitary and septic systems that discharge directly into sanitary sewer systems, where permissible, shall comply with the local health agency, city, county, and sewer district requirements.
- If using an on site disposal system, such as a septic system, comply with local health agency requirements.
- Properly connect temporary sanitary facilities that discharge to the sanitary sewer system to avoid illicit discharges.
- Ensure that sanitary/septic facilities are maintained in good working order by a licensed service.
- Use only reputable, licensed sanitary/septic waste haulers.

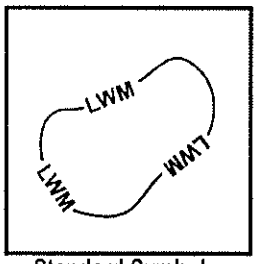
Maintenance and Inspection

- The Contractor's Water Pollution Control Manager (WPCM) shall monitor onsite sanitary/septic waste storage and disposal procedures at least weekly.

Liquid Waste Management

WM-10





Standard Symbol

BMP Objectives

- ○ Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ● Non-Storm Water Management
- ● Materials and Waste Management

Definition and Purpose

Procedures and practices to prevent discharge of pollutants to the storm drain system or to watercourses as a result of the creation, collection, and disposal of non-hazardous liquid wastes.

Appropriate Applications

Liquid waste management is applicable to construction projects that generate any of the following non-hazardous byproducts, residuals, or wastes:

- Drilling slurries and drilling fluids.
- Grease-free and oil-free wastewater and rinse water.
- Dredgings.
- Other non-storm water liquid discharges not permitted by separate permits.

Limitations

- Disposal of some liquid wastes may be subject to specific laws and regulations, or to requirements of other permits secured for the construction project (e.g., National Pollutant Discharge Elimination System [NPDES] permits, Army Corps permits, Coastal Commission permits, etc.).
- Does not apply to dewatering operations (see BMP NS-2, "Dewatering Operations"), solid waste management (see BMP WM-5, "Solid Waste Management"), hazardous wastes (see BMP WM-6, "Hazardous Waste Management"), or concrete slurry residue (see BMP WM-8, "Concrete Waste Management").
- Does not apply to non-stormwater discharges permitted by any NPDES permit held by the pertinent Caltrans District, unless the discharge is determined by Caltrans to be a source of pollutants. Typical permitted non-stormwater discharges can include: water line flushing; landscape irrigation; diverted stream flows; rising ground waters; uncontaminated pumped ground

water; discharges from potable water sources; foundation drains; irrigation water; springs; water from crawl space pumps; footing drains; lawn watering; flows from riparian habitats and wetlands; and, discharges or flows from emergency fire fighting activities.

Standards and Specifications

General Practices

- The Contractor's Water Pollution Control Manager (WPCM) shall oversee and enforce proper liquid waste management procedures and practices.
- Instruct employees and subcontractors how to safely differentiate between non-hazardous liquid waste and potential or known hazardous liquid waste.
- Instruct employees, subcontractors, and suppliers that it is unacceptable for any liquid waste to enter any storm drainage structure, waterway, or receiving water.
- Educate employees and subcontractors on liquid waste generating activities, and liquid waste storage and disposal procedures.
- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).
- Verify which non-stormwater discharges are permitted by the Caltrans Statewide NPDES permit; different regions might have different requirements not outlined in this permit. Some listed discharges may be prohibited if Caltrans determines the discharge to be a source of pollutants.
- Apply the NS-8, "Vehicle and Equipment Cleaning" BMP for managing wash water and rinse water from vehicle and equipment cleaning operations.

Containing Liquid Wastes

- Drilling residue and drilling fluids shall not be allowed to enter storm drains and watercourses and shall be disposed of outside the highway right-of-way in conformance with the provisions in Standard Specifications Section 7-1.13.
- If an appropriate location is available, as determined by the Resident Engineer (RE), drilling residue and drilling fluids that are exempt under California Code of Regulations (CCR) Title 23 §2511(g) may be dried by infiltration and evaporation in a containment facility constructed in conformance with the provisions concerning the Temporary Concrete Washout Facilities detailed in BMP WM-08, "Concrete Waste Management."
- Liquid wastes generated as part of an operational procedure, such as water-laden dredged material and drilling mud, shall be contained and not allowed to flow into drainage channels or receiving waters prior to treatment.

- Contain liquid wastes in a controlled area, such as a holding pit, sediment basin, roll-off bin, or portable tank.
- Containment devices must be structurally sound and leak free.
- Containment devices must be of sufficient quantity or volume to completely contain the liquid wastes generated.
- Take precautions to avoid spills or accidental releases of contained liquid wastes. Apply the education measures and spill response procedures outlined in BMP WM-4, "Spill Prevention and Control."
- Do not locate containment areas or devices where accidental release of the contained liquid can threaten health or safety, or discharge to water bodies, channels, or storm drains.

Capturing Liquid Wastes

- Capture all liquid wastes running off a surface, which has the potential to affect the storm drainage system, such as wash water and rinse water from cleaning walls or pavement.
- Do not allow liquid wastes to flow or discharge uncontrolled. Use temporary dikes or berms to intercept flows and direct them to a containment area or device for capture.
- If the liquid waste is sediment laden, use a sediment trap (see BMP SC-3, "Sediment Trap") for capturing and treating the liquid waste stream, or capture in a containment device and allow sediment to settle.

Disposing of Liquid Wastes

- Typical method is to dewater the contained liquid waste, using procedures such as described in BMP NS-2, "Dewatering Operations", and BMP SC-2, "Sediment/Desilting Basin"; and dispose of resulting solids per BMP WM-5, "Solid Waste Management", or per Standard Specifications Section 7-1.13, "Disposal of Material Outside the Highway Right of Way", for off-site disposal.
- Method of disposal for some liquid wastes may be prescribed in Water Quality Reports, NPDES permits, Environmental Impact Reports, 401 Water Quality Certifications or 404 permits, local agency discharge permits, etc., and may be defined elsewhere in the special provisions.
- Liquid wastes, such as from dredged material, may require testing and certification whether it is hazardous or not before a disposal method can be determined.

- For disposal of hazardous waste, see BMP WM-6, "Hazardous Waste Management."
- If necessary, further treat liquid wastes prior to disposal. Treatment may include, though is not limited to, sedimentation, filtration, and chemical neutralization.

Maintenance and Inspection

- Spot check employees and subcontractors at least monthly throughout the job to ensure appropriate practices are being employed.
- Remove deposited solids in containment areas and capturing devices as needed, and at the completion of the task. Dispose of any solids as described in BMP WM-5, "Solid Waste Management."
- Inspect containment areas and capturing devices frequently for damage, and repair as needed.

4.0 Final Mitigation Monitoring and Reporting Program

4.1 INTRODUCTION

This document is the Final Mitigation Monitoring and Reporting Program (FMMRP) for the Shasta Ranch Mining and Reclamation Plan (Use Permit 05-010 and Reclamation Plan 05-001). This FMMRP has been prepared pursuant to Section 21081.6 of the California Public Resources Code, which requires public agencies to "adopt a reporting and monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. A FMMRP is required for the proposed project because the EIR has identified significant adverse impacts, and measures have been identified to mitigate those impacts.

The numbering of the individual mitigation measures follows the numbering sequence as found in the EIR. All revisions to mitigation measures that were necessary as a result of responding to public comments and incorporating staff-initiated revisions have been incorporated into this FMMRP.

4.2 LEGAL BASIS OF AND PURPOSE FOR THE MITIGATION MONITORING PROGRAM

California Public Resources Code Section 21081.6 requires public agencies to adopt mitigation monitoring or reporting programs whenever certifying an environmental impact report (EIR) or a mitigated negative declaration. This requirement facilitates implementation of all mitigation measures adopted through the California Environmental Quality Act (CEQA) process.

The MMRP contained herein is intended to satisfy the requirements of CEQA as they relate to the EIR for the Shasta Ranch Mining and Reclamation Plan. It is to be used by Shasta County staff, participating agencies, project contractors and mitigation monitoring personnel during implementation of the project.

The EIR for the Shasta Ranch Mining and Reclamation Plan presents a detailed set of mitigation measures that will be implemented throughout the lifetime of the project. Mitigation measures, as defined by CEQA Guidelines Section 15370, are measures that do any of the following:

- Avoid impacts altogether by not taking a certain action or parts of an action.
- Minimize impacts by limiting the degree or magnitude of the action and its implementation.
- Rectify impacts by repairing, rehabilitating or restoring the impacted environment.
- Reduce or eliminate impacts over time by preservation and maintenance operations during the life of the project.
- Compensate for impacts by replacing or providing substitute resources or environments.

The intent of the MMRP is to ensure the effective implementation and enforcement of adopted mitigation measures and permit conditions. The MMRP will provide for monitoring of construction activities as necessary, on-site identification and resolution of environmental problems, and proper reporting to Agency staff.

The timing elements of mitigation measures and definition of the development process have been provided in detail throughout this MMRP to assist existing and future County staff by providing the most usable monitoring document possible.

4.3 MITIGATION MONITORING AND REPORTING PROGRAM

The FMMRP, as outlined in the following table, describes mitigation timing, monitoring responsibilities, and compliance verification responsibility for all mitigation measures identified in this Final EIR.

4.4 RESPONSIBILITIES AND AUTHORITY

Shasta County will be the primary agency, but not the only agency responsible for implementing the mitigation measures. In some cases, the County or other public agencies will implement measures. In other cases, the project applicant will be responsible for implementation of measures and the County's role is exclusively to monitor the implementation of the measures. In those cases, the project applicant may choose to require the construction contractor to implement specific mitigation measures prior to and/or during construction. The County will continue to monitor mitigation measures that are required to be implemented during the operation of the project.

4.5 MONITORING PERSONNEL

Shasta County bears responsibility for ensuring that the mitigation measures in this document are implemented. The County reserves the right to hire technical experts and professionals to help in evaluating compliance. These may include but are not limited to biologists, archaeologists and planning professionals. Some of the measures will be assigned to the contractor as part of the scope of work.

4.6 MONITORING MATRIX

The tables on the back pages of the MMRP identify the mitigation measures proposed for the Shasta Ranch Mining and Reclamation Plan. These mitigation measures are reproduced from the EIR for the project. The tables have the following columns:

The FMMRP is presented in tabular form on the following pages. The components of the FMMRP are described briefly below:

Mitigation Measures: The mitigation measures are taken from the Draft EIR, in the same order that they appear in the Draft EIR. The Final MMRP contains revisions to mitigation measures, as well as new mitigation measures.

Mitigation Timing: Identifies at which stage of the project mitigation must be completed.

Monitoring Responsibility: Identifies the department within the County, project applicant, or consultant responsible for mitigation monitoring.

Compliance Verification Responsibility: Identifies the department of the County or other State agency responsible for verifying compliance with the mitigation. In some cases, verification will include contract with responsible state and federal agencies.

4.7 NONCOMPLIANCE COMPLAINTS

Any person or agency may file a complaint asserting noncompliance with the mitigation measures associated with the project. The complaint shall be directed to the County in written form, providing specific information on the asserted violation. The County shall conduct an

investigation and determine the validity of the complaint. If noncompliance with a mitigation measure has occurred, the County shall take appropriate action to remedy any violation. The complainant shall receive a written response indicating the results of the investigation or the final action corresponding to the particular noncompliance issue.

TABLE 4.0-1
FINAL MITIGATION MONITORING REPORTING PROGRAM

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
4.3 TRAFFIC AND CIRCULATION				
MM 4.3.1	The owner, applicant or successor in interest, shall improve the shoulder width from the Deschutes Road and Balls Ferry Road intersection southeast along Balls Ferry Road to 4th Street, Locust Road from Deschutes Road to Kimberly Road, and Kimberly Road from Locust Road to Balls Ferry Road. Alternatively, the project applicant could consolidate truck routes in this area to Deschutes Road and Balls Ferry Road, which would only require the addition of shoulders to Balls Ferry Road. The identified road improvements shall meet the Shasta County Public Works roadway development standards as directed by the traffic engineer to ensure that vehicles can be comfortably accommodated on the roadway system with shoulders providing areas for vehicle turn-out.	The improvement shall be implemented prior to operation of trucks on the study roadway segments.	Shasta County is responsible for ensuring implementation of the identified mitigation measure.	
MM 4.3.2(a)	No project traffic may use the Bowman/Interstate 5 north bound off-ramp intersection during the am peak hours of 7:00 am to 9:00 am during Monday through Friday work days until improvements at this intersection have been completed. Once the improvements have been completed, this mitigation is no longer necessary.	Ongoing. The restriction shall remain in place until the improvements to the intersection have been completed.	Shasta County Department of Public Works.	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
MM 4.3.2(b)	The owner, applicant or successor in interest shall contribute a pro-rata share of the improvements at the Bowman/Interstate 5 north bound off-ramp intersection. The pro-rata share shall be determined by the lead agency in conjunction with Tehama County.	Prior to issuance of a permit to operate.	Shasta County Department of Public Works.	
MM 4.3.3	The owner, applicant or successor shall enter into an agreement with the City of Anderson to contribute a pro-rata share for the cost of improvements at both the Deschutes Road and Interstate 5 intersections. The pro-rata share shall be determined by the lead agency in conjunction with the City of Anderson.	Prior to issuance of a permit to operate.	Shasta County Resource Management, Planning Division	
4.4 AIR QUALITY				
MM 4.4.1(a)	The applicant shall submit a construction dust mitigation plan to the AQMD for review and approval. The plan shall be deemed adequate and approved by the AQMD for mitigating on-site emissions of fugitive PM_{10} before implementation of the proposed project. This plan shall specify the methods used to control dust and particulate matter, demonstrate the availability of needed equipment and personnel, and identify a responsible individual who can authorize the implementation of additional measures, if needed. Dust control measures shall include County-recommended Best Available Mitigation Measures (BAMM), including, but not limited to, the following:	Prior to and during construction.	*Shasta County AQMD and Resource Management Department*	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	1. All disturbed areas, including storage piles, that are not being actively used shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, or vegetative ground cover. 2. Alternatives to open burning of vegetative material on the project site shall be used by the project applicant unless otherwise deemed infeasible by the AQMD. Among suitable alternatives are chipping, mulching, or conversion to biomass fuel. 3. The applicant shall be responsible for ensuring that all adequate dust control measures are implemented in a timely and effective manner during all phases of project development and construction. 4. All material excavated, stockpiled, or graded shall be sufficiently watered to prevent fugitive dust from leaving property boundaries and causing a public nuisance or a violation of an ambient air standard. Watering shall occur at least twice daily with complete site coverage, preferably in the mid-morning and after work is completed each day. 5. All on-site unpaved roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant. 6. On-site vehicle speeds on unpaved surfaces shall be limited to 15 mph. 7. All land clearing, grading, earth moving or			

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	excavation activities on the project site shall be suspended when winds are expected to exceed 20 miles per hour. 8. All inactive portions of the development site shall be seeded and watered until a suitable grass cover is established. Seeding shall be with an approved native seed mix. 9. The applicant shall be responsible for applying Department of Public Works approved non-toxic soil stabilizers (according to manufacturers' specifications) to all inactive construction areas (previously graded areas which remain inactive for 96 hours), in accordance with the Shasta County Grading Ordinance. 10. When materials are transported offsite, all material shall be covered and effectively wetted to limit visible dust emissions, or at least 6 inches of freeboard space from the top of the container shall be maintained. 11. All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. 12. The site access road shall be paved prior to conducting other on-site construction activities (e.g., grading of the processing area, construction of equipment footings, equipment installation).			

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
MM 4.4.2(a)	The applicant shall develop and implement a fugitive dust control plan (FDCP) for purpose of reducing project-related fugitive dust emissions associated with the long-term operation of the proposed project. At a minimum, the FDCP shall include those measures identified in Mitigation Measure 4.4.1(a), and shall be submitted to and approved by the AQMD before implementation of the proposed project.	Prior to project implementation.	Shasta County AQMD and Department of Resource Management.	
MM 4.4.2(b)	To reduce short-term emissions from on-site mobile source construction equipment, (e.g., NO_x and PM_{10}), the applicant shall implement the following mitigation measures: 1. Idling time for all diesel-powered equipment shall be limited to no more than 5 minutes when not in use. 2. Heavy-duty (>50 horsepower) off-road vehicles to be used in the initial construction process, including owned, leased and subcontractor vehicles, shall achieve a minimum fleet-average 45 percent particulate reduction, compared to the most current ARB fleet average at the time of construction. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. 3. On-site truck and equipment engines shall be maintained in good running condition, in	Prior to and during construction operations.	Shasta County Department of Resource Management.	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	accordance with manufacturer's specifications. Maintenance records demonstrating compliance shall be kept on-site by the applicant and shall be made available.			
MM 4.4.2(c)	Off-road and on-road vehicles, including owned, leased and subcontractor vehicles, shall comply with all applicable rules and regulations, including applicable diesel-risk reduction program rules and air toxic control measures (ATCMs) for diesel particulate matter. The ARB is currently in the process of adopting rules pertaining to the use of off-highway and on-highway vehicles, including those used in the mining industry. These rules are anticipated to establish emission standards for new engines and to require the use of best-available control technologies, which includes use of alternative diesel fuels or retrofit technologies such as diesel oxidation catalysts or diesel particulate filters. In the event these rules are not in effect at the time the project is implemented, off-road and on-road vehicles, including owned, leased and subcontractor vehicles shall be equipped with applicable ARB-certified diesel PM reduction technologies, including but not limited to diesel oxidation catalysts, diesel particulate filters, or use alternative diesel fuels. Prior to operation, the AQMD shall be consulted to determine applicable control measures to be implemented.	During mining operational period.	Shasta County Department of Resource Management.	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
MM 4.4.2(d)	Off-road and on- road vehicles, including owned, leased and subcontractor vehicles, shall use the lowest sulfur-content fuel available.	During mining operational period.	Shasta County Department of Resource Management	
MM 4.4.2(e)	The applicant shall comply with all AQMD rules and regulations, including AQMD Rule 2-1, New Source Review. Rule 2-1 requires, in part, that the applicant comply with measures to reduce operational emissions of PM_{10}, including but not limited to, the installation of spray bars on screens and transfer points. Rule 2-1 also requires the applicant to provide offsets for any increase in cumulative emissions, including emissions of NO_X and PM_{10}, associated with the operation of any new or modified emission sources that exceed 25 tons per year (137 lbs/day equivalent) (AQMD 2006). Based on the analysis conducted for this project, annual emissions offsets to be provided by the applicant would total approximately 25.4 tons of NO_X and 3.4 tons of PM_{10}. Based on discussions with the AQMD, emission offsets may be obtained by purchase of emission credits or through implementation of AQMD-approved emission reduction measures.	Prior to mining operations.	Shasta County AQMD and Department of Resource Management.	
MM 4.4.9	If a crystalline silica risk value is adopted by ARB during the life of the project, the applicant shall comply with the AB 2588 facility prioritization and health risk assessment requirements. In accordance with AQMD requirements implementation of	During mining operational period.	Shasta County AQMD and Department of Resource Management.	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	mitigation measures would be required to ensure that health risks to sensitive receptors remain within established acceptable levels of risk.			
4.5 BIOLOGICAL RESOURCES				
MM 4.5.4	The following measures shall be implemented to reduce the indirect impacts to waters of the United States: 1. Silt fencing or straw bale siltation barriers shall be installed between all waters of the United States and the construction area. 2. Initial site grading and levee construction shall be conducted during the dry summer months (June 15 through October 15). 3. Hydromulch and/or hydroseed (using native plant species) will be applied to all soil stockpiles to minimize wind and water erosion. 4. Disturbed soil, including roads, shall be watered frequently to prevent dust emissions. 5. Fueling and maintenance of construction equipment shall occur only at the processing facility to reduce the area of potential fuel spills, lubricant spills, etc. 6. Spill containment materials shall be kept on site at all times to contain any accidental spill. 7. The design of the aggregate haul roads and pond levees shall be sloped toward the pond areas to prevent storm water runoff from leaving the site	Prior to initiating construction and ongoing throughout construction for each phase.	U.S. Army Corps of Engineers	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	and flood waters from entering the ponds. 8. Work conducted within jurisdictional waters would be limited to the summer dry months, June 15 though October 15. 9. Additional mitigation measures may be implemented as conditions of the Water Quality 401 Certification issued by the Central Valley Regional Water Quality Control Board and/or the Section 1602 Streambed Alteration Agreement issued by the California Department of Fish and Game.			
MM 4.5.5	Preconstruction surveys for fox sedge shall be conducted, prior to construction of each phase. The survey shall be conducted the same year that construction is anticipated. If special-status plant species cannot be avoided during construction, the CDFG shall be contacted immediately and determine the appropriate salvage and relocation measures. Special-status plant species populations that can be avoided shall be protected with exclusionary fencing to prohibit disturbance.	Prior to implementing construction	Shasta County	
MM 4.5.6(a)	In the event that flood events exceed the 50-year (Phases 1, 2 and 3) design flood capacities of the proposed quarry levees, a qualified fishery biologist shall be retained to conduct site surveys to quantify the extent of anadromous fish stranding that may occur. Fish shall be salvaged and returned to the Sacramento River to the extent practicable using fish		Shasta County	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	collection and handling protocols approved by the California Department of Fish and Game and National Marine Fisheries Service.			
MM 4.5.6(b)	The design of the Phase 2 and Phase 3 quarry ponds shall include a controllable drainage system that allows any juvenile salmonids that may enter the ponds during floods exceeding the 50-year recurrence level to be passively returned to the Sacramento River.	To be implemented during project operation and maintained in good operation for perpetuity.	Shasta County.	
MM 4.5.6(c)	Grading of the restored Phase 1 quarry shall avoid creating pits or swales and insure that slopes and contours drain to the Sacramento River in order to prevent stranding of fish species during high flow events. Further, mitigation measures MM 4.9-3 (a-c) shall be implemented to reduce the potential for impacts to spawning gravels and aquatic invertebrates as a result of erosion and sedimentation.	During reclamation activities.	Shasta County and National Marine Fisheries Service.	
MM 4.5.8	In order to avoid and/or minimize the impacts to federally listed valley elderberry longhorn beetle, the following measures shall be implemented: 1. Prior to the start of construction activities in the project area, exclusionary fencing shall be erected around all elderberry shrubs within 100 feet of the project construction areas (e.g., roads, levees). Fencing shall be erected a minimum of 20 feet from the dripline (core avoidance area) of	Prior to any ground disturbance within 100 feet of elderberry shrubs.	U.S. Fish and Wildlife Service	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	each elderberry shrub. In areas where encroachment within 100 feet of an elderberry shrub is necessary to complete construction activities, approval from the USFWS must be received. The exclusionary fencing shall be periodically inspected throughout each period of construction and be repaired as necessary. Signs shall be erected every 50 feet along the avoidance area that state the following: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be readily visible and must be maintained for the duration of construction and mining operations. 2. Prior to construction, a Worker Environmental Awareness Program for construction workers and miners shall be conducted by a qualified biologist. The program shall provide all workers with information on their responsibilities with regard to sensitive biological resources, specifically the status of the federally threatened VELB and the need to protect its elderberry host plant. 3. All construction-related disturbances in buffer areas shall be minimized, and any damaged area shall be promptly restored after construction. 4. All construction personnel shall be excluded from core avoidance areas before, during, and after construction. 5. The Project Engineer shall oversee the construction			

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	by the subcontractors, to ensure that the required mitigation measures are being properly implemented (i.e., placement of the temporary exclusionary fencing, monitoring of construction-related activities within the 20-foot buffer area, protection of existing habitat). 6. The USFWS shall be provided with a map and written details identifying the avoidance areas. 7. Should complete avoidance of elderberry shrub buffer zones and core avoidance areas be impossible, the Applicant shall immediately halt construction and consult with the USFWS for further mitigation measures. Construction will continue upon receipt of written authorization from USFWS to proceed. 8. The following additional mitigation measures are identified in the event that intentional/ unintentional damage (due to project construction activities) occurs to any qualifying elderberry plant. These include the following: a. Any damage to the buffer area during construction shall be restored following construction. Restoration shall include erosion control and re-vegetation with appropriate native plants as appropriate. b. Continue to protect the buffer areas from adverse effects following construction. These measures may include fencing, signs, weeding, and trash removal as appropriate. c. No insecticides, herbicides, fertilizers, or other			

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	chemicals that might harm the beetle or its host plant shall be used within the buffer areas, or within 100 feet of any elderberry plant with one or more stems measuring one-inch or greater in diameter at ground level. d. Mowing of grasses and other ground cover may occur from July through April to reduce fire hazard. No mowing shall occur within 5 feet of elderberry stems. Mowing must be done in a manner that avoids damaging plants (e.g., stripping away bark by mowing/trimming equipment). e. The applicant shall provide the USFWS with a brief written description of how the core and buffer avoidance areas are to be restored, protected, and maintained after construction is completed.			
MM 4.5.9	In order to avoid and/or minimize the impacts to the habitat of bald eagles, the following measures shall be implemented during construction activities: 1. Grading and levee construction activities shall be scheduled to avoid the nesting season (February 15 through September 30) to the extent possible. 2. If vegetation is to be removed by the Project and all necessary approvals have been obtained, potential nesting substrate (e.g. trees) that will be removed by the Project may be removed between October 1 and February 14 *(i.e.*, outside the nesting season) to ensure that active bald eagle nest trees are not removed as a result of construction activities.	Prior to initiating construction activities for each phase.	U.S. Fish and Wildlife Service	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	3. The project proponent shall retain a qualified biologist to conduct a minimum of one survey for nesting eagles in the proposed construction and mining activities area and in a surrounding 500-foot buffer of the area. The survey shall be conducted no more than one week prior to the onset of construction. Active bald eagle nests located within 500 feet of construction activities shall be mapped. 4. If an active nest is found, Section 10 consultation with the USFWS will be required before any construction activities can begin.			
MM 4.5.10	A California red-legged frog habitat assessment shall be conducted in accordance with guidelines provided by the USFWS (U.S. Fish and Wildlife Service 2005). This assessment shall be submitted to the USFWS who will make a determination as to whether protocol-level surveys will be required. If surveys are required by the USFWS, the applicant shall retain a qualified biologist to complete red-legged frog surveys per the USFWS protocol (U.S. Fish and Wildlife Service 2005). If it is determined that red-legged frogs may occur on the site, formal Section 10 consultation with the USFWS will be required to determine the mitigation measures that will be required. These measures will include, but are not limited to, the following: 1. Only USFWS-approved biologists will participate in activities associated with the capture, handling, and monitoring of California red-legged frogs. 2. Ground disturbance will not begin until written	Prior to initiating construction activities for each phase.	Shasta County	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	approval is received from the USFWS that the biologist is qualified to conduct work. 3. A USFWS-approved biologist will survey the project site 48 hours before the onset of work activities. If any life stage of the California red-legged frog is found and these individuals are likely to be killed or injured by work activities, the approved biologist will be allowed sufficient time to move them from the site before work activities begin. The USFWS-approved biologist will relocate the California red-legged frogs the shortest distance possible to a location that contains suitable habitat and will not be affected by activities associated with the proposed project. 4. Before any activities begin, a USFWS-approved biologist will conduct a training session for all construction personnel. At a minimum, the training will include a description of the California red-legged frog and its habitat, the specific measures that are being implemented to conserve the California red-legged frog, and the boundaries within which the project may be accomplished. 5. Compensatory mitigation for directly impacted California red-legged frog habitat will be provided at a ratio of not less than 1:1			
MM 4.5.11	In order to avoid and/or minimize the impacts to the habitat of northwestern pond turtle, the following measures shall be implemented: 1. Prior to any disturbance in suitable pond turtle habitat, the project proponent shall retain a	Prior to implementing construction activities for each phase.	Shasta County	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	qualified biologist to survey for pond turtles in the areas to be disturbed. Surveys shall occur in no more than 48 hours prior to the onset of disturbance. Surveys of the area shall be repeated if a lapse in construction activity of two weeks or greater occurs. If the species is detected, individuals shall be relocated to a suitable site within the same drainage by a qualified biologist, and a monitoring biologist will be present during initiation of construction activities to ensure that no turtles are present during the onset of disturbance activities. 2. If a northwestern pond turtle is encountered during construction, activities shall cease until appropriate corrective measures have been implemented or it has been determined that the turtle will not be harmed. Any trapped, injured, or killed northwestern pond turtles shall be reported immediately to the CDFG.			
MM 4.5.12	In order to avoid and/or minimize the impacts to nesting raptors, the following measures shall be implemented: 1. Grading and levee construction activities shall be scheduled to avoid the nesting season (February 15 through September 30) to the extent possible. 2. If vegetation is to be removed by the Project and all necessary approvals have been obtained, potential nesting substrate (e.g. trees, shrubs) that will be removed by the Project may be removed between October 1 and February 14 *(i.e.*, outside the nesting season for raptor species) to ensure	Prior to initiating construction activities for each phase.	Shasta County	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	that active raptor nest trees are not removed as a result of construction activities. 3. The project proponent shall retain a qualified biologist to conduct a minimum of one survey for nesting raptors in the proposed construction and mining activities area and in a surrounding 500-foot buffer of the area. The survey shall be conducted no more than one week prior to the onset of construction. Active raptor nests located within 500 feet of construction activities shall be mapped. 4. If an active nest (a nest containing eggs or young) is found a qualified biologist, in consultation with CDFG, will determine the extent of a construction-free buffer zone to be established around the nest. A qualified biologist shall monitor the nest(s) to determine when the young have fledged and submit status reports to the CDFG, as appropriate, throughout the nesting season. An active nest may only be removed after the young have fledged (based on field verification).			
MM 4.5.13	Grading and other construction activities shall be scheduled to avoid the nesting season (March 1 through September 30) to the extent feasible. 1. If vegetation is to be removed and all necessary approvals have been obtained, potential nesting substrate (e.g. bushes, trees, grass) that will be removed by the Project may be removed between October 1 and February 28 (i.e., outside	Prior to initiating construction activities for each phase.	Shasta County	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	of the nesting season) to help preclude nesting. 2. A qualified biologist shall be retained to conduct a minimum of one survey for nesting birds within the proposed construction and mining activities area and in a surrounding 250-foot buffer of the area. The survey shall be conducted no more than one week prior to the onset of construction. If no active nests are located, no further mitigation is necessary. 3. If active nests (nests containing eggs or young) are located within 250 feet of construction activities, their location shall be mapped and a qualified biologist, in consultation with CDFG, will determine the extent of a construction-free buffer zone to be established around the nest. Active nests may not be removed until after the young have fledged (based on field verification). A qualified biologist shall monitor the nest to determine when the young have fledged and submit status reports to the CDFG throughout the nesting season.			
MM 4.5.14	In order to avoid and/or minimize the impacts to the pallid bat and Townsend's western big-eared bat, the following measures shall be implemented: 1. A pre-construction survey for roosting bats shall be conducted prior to any removal or disturbance of large trees ≥12 inches in diameter at 4.5 feet above grade. The survey will be conducted by a qualified biologist. No activities that would result in	Prior to initiating construction activities for each phase.	Shasta County	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	disturbance to active roosts of special-status bats shall proceed prior to the completed surveys. If no active roosts are found, then no further action would be warranted. If an active roost is located in a tree not scheduled to be removed, a qualified biologist will determine the extent of a construction-free zone to be implemented around the roost. If either a maternity roost or hibernacula is present and located in a tree scheduled to be removed, the Mitigation Measures detailed below shall be implemented. CDFG shall also be notified of any active nurseries within the construction zone. 2. If an active maternity roost or hibernacula is found in a tree schedule to be removed, the Project will be redesigned to avoid the loss of the tree if feasible. 3. If an active maternity roost is located and the Project cannot be redesigned to avoid removal of the occupied tree, demolition of that tree should commence before maternity colonies form (i.e., prior to March 1) or after young are volant (flying) (i.e., after July 31). The disturbance-free buffer zone described above should be observed during the maternity roost season (March 1 - July 31). 4. If a non-breeding bat hibernacula is found in a tree scheduled to be removed, the individuals shall be safely evicted, under the direction of a qualified biologist by opening the roosting area to allow air flow through the cavity. Demolition shall then follow no less than the following day (i.e., there will be no less than one night between initial			

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	disturbance for air flow and the demolition). This action should allow bats to leave during dark hours, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight. Trees with roosts that need to be removed shall first be disturbed at dusk, just prior to removal that same evening, to allow bats to escape during the darker hours.			
MM 4.5.15(a)	A pre-construction survey for ringtails shall be conducted prior to any removal of trees ≥12 inches in diameter at 4.5 feet above grade. The survey will be conducted by a qualified biologist. No activities that would result in disturbance to active dens of ring-tail cats shall proceed prior to completion of the surveys. If no active dens are found, no further action would be warranted.	Prior to initiating construction activities for each phase.	Shasta County	
MM 4.5.15(b)	If an active ring-tail nest is found, the project will be redesigned to avoid the loss of the tree occupied by the nest if feasible. If the project cannot be redesigned to avoid removal of the occupied tree, demolition of that tree should commence outside of the breeding season (February 1 to August 30). If a non-breeding den is found in a tree scheduled to be razed, the individuals shall be safely evicted under the direction of a qualified biologist. Trees with dens that need to be removed shall first be disturbed at dusk, just prior to removal that same evening, to allow ring-tail cats to escape during the darker hours.	Prior to initiating construction activities for each phase.	Shasta County	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
MM 4.5.19(a)	In order to avoid and/or minimize the potential introduction and/or spread of noxious weeds, the following measures shall be implemented: 1. Use only certified weed-free erosion control materials, mulch, and seed. 2. Preclude the use of rice straw in riparian areas. 3. Limit any import or export of fill to material not known to be weed free. 4. Annual weed monitoring of the project area will be conducted until habitat performance criteria (as detailed in the Reclamation Plan) have been met for two consecutive years. Areas planted with native species will be weeded between the months of April and August using the best available method. Herbicide treatment for invasive species that cannot be eradicated through manual or mechanical removal will be permitted as needed.	Throughout project construction and reclamation.	Shasta County	
MM 4.5.19(b)	All slopes shall be vegetated with indigenous grasses or plants to minimize surface erosion.	Prior to issuance of the final grading permit, Conditional Use Permit and Reclamation Plan.	Shasta County Department of Resource Management, and Planning Division.	
4.6 CULTURAL RESOURCES				
MM 4.6.2(a)	Ground disturbing project activity should not be conducted within boundaries of site CA-SHA-779. Site preservation (as-is) should be retained through impact avoidance. To ensure site preservation the boundaries of the site and the site area should be flagged by an	As a condition of project approval, and implemented prior to and during grading, mining	Shasta County Department of Resource Management Department,	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	archaeologist with a 30 ft. buffer accurately located through formal survey. Once the area is flagged and mapped then the area should be designated as an impact avoidance zone on project and county development maps.	and/or construction activities.	Planning Division	
MM 4.6.2(b)	If ground disturbing activity within boundaries of this site cannot be avoided, one of the following options shall be implemented: 1. An archaeologist meeting the Secretary of Interior's Professional Qualifications Standards in prehistoric archaeology shall be retained to excavate the sites to determine their eligibility for inclusion on the NRHP and the CRHR and recover the data potential of the sites, if appropriate; or 2. An archaeologist meeting the Secretary of Interior's Professional Qualifications Standards in prehistoric archaeology shall be retained to: prepare an inadvertent discovery plan; monitor any ground disturbing activities within site boundaries; and update the records for the sites; or A representative of the Wintu Tribe shall be on-site to monitor all ground disturbing activity within the boundaries of CA-SHA-779. If significant cultural resources are identified during monitoring the protocols presented in the inadvertent discovery plan shall be implemented.	As a condition of project approval, and implemented prior to and during grading, mining and/or construction activities.	Shasta County Department of Resource Management Department, Planning Division	
MM 4.6.3	If any prehistoric and/or historic resources, or other indications of cultural resources are found once	During grading, mining and/or	Shasta County Department of	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	project implementation is underway, all work in the immediate vicinity of the find must stop and the County shall be immediately notified. An archaeologist meeting the Secretary of Interior's Professional Qualifications Standards in prehistoric or historical archaeology, as appropriate, shall be retained to evaluate the finds and recommend appropriate mitigation measures.	construction activities.	Resource Management, Planning Division	
MM 4.6.4	If any paleontological resources are found once project implementation is underway, all work in the immediate vicinity of the find must stop and the County shall be immediately notified. A qualified paleontologist (i.e. one with a graduate degree in paleontology, geology, or related field, and having demonstrated experience in the vertebrate, invertebrate, or botanical paleontology of California) shall be retained to evaluate the finds and recommend appropriate mitigation measures.	During grading, mining and/or construction activities.	Shasta County Department of Resource Management, Planning Division	
MM 4.6.5	If human remains are discovered, all work must stop in the immediate vicinity of the find, and the County Coroner must be notified, according to Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native American, the coroner will notify the Native American Heritage Commission, and the procedures outlined in CEQA Section 15064.5(d) and (e) shall be followed.	During grading, mining and/or construction activities.	Shasta County Department of Resource Management, Planning Division	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
4.7 NOISE				
MM 4.7.1(a)	Use of construction equipment during initial placement of the on-site equipment and paving of the access road shall be limited to the hours between 7 a.m. and 6 p.m., Monday through Saturday. Construction activities shall be prohibited on Sundays, and federal-/state-recognized holidays.	Upon commencement of project operation	Shasta County Department of Resource Management.	
MM 4.7.1(b)	Construction equipment shall be properly maintained and equipped with noise control, such as mufflers and engine shrouds, in accordance with manufacturer specifications.	Upon commencement of project operations	Shasta County Department of Resource Management.	
MM 4.7.2(a)	Mining equipment shall be properly maintained and equipped with noise control devices, such as mufflers and engine shrouds, in accordance with manufacturer specifications.	Upon commencement of project operations	Shasta County Resource Management Department	
MM 4.7.2(b)	Mining and processing operations shall be limited to hours between 7 a.m. and 6 p.m.	Upon commencement of project operations	Shasta County Resource Management Department	
MM 4.7.2(c)	A sound barrier (e.g., earthen berms, walls, etc.) shall be constructed to shield nearby residential dwellings from line-of-sight to nearby mining areas. Recommended barrier locations are depicted in **Figure 4.7-2**. The recommended barrier located along the southwestern boundary of the Phase 2 mining area shall be constructed concurrent with removal of	Upon commencement of project operations	Shasta County Resource Management Department.	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	material from Phase 1 mining area and prior to commencing Phase 2 mining activities. The recommended barrier located along the northwestern boundary of the Phase 3 mining area shall be constructed prior to commencing Phase 3 mining activities.			
MM 4.7.2(d)	The proposed levee located along the southeastern boundary of the project site shall be constructed to a minimum height of 12 feet above ground level (AGL) (refer to Figure 4.7-3).	Upon commencement of project operations	Shasta County Resource Management Department	
MM 4.7.2(e)	Material screens and crushers shall be strategically located on the project site, enclosed, or reflective barriers installed sufficient to shield line-of-sight between the noise-generating source of the equipment and the nearest adversely affected receptors (i.e., Receptors 4 and 5). As an alternative, the height of the proposed levee located immediately southwest of the processing area may be increased to a minimum height of 8 feet, provided the increased levee height would interrupt line-of-sight between the noise-generating source(s) of the equipment and the nearest adversely affected receptors (i.e., Receptors 4 and 5).	Upon commencement of project operations	Shasta County Resource Management Department	
MM 4.7.2(f)	Excavation of the proposed Phase 1 mining area shall commence at the northern-most boundary (Phase 1d), at the furthest distance, from the nearest residential dwelling (i.e., Receptor 7).	Upon commencement of project operations	Shasta County Resource Management Department	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
4.8 GEOLOGY AND SOILS				
MM 4.8.2	Prior to approval of the project, a detailed erosion control plan shall be prepared by the project applicant and submitted to the County for approval. The erosion control plan will be designed to limit the effects of soil erosion and water degradation during construction, and limit the hazards associated with streambank erosion within the creek areas. This plan will be prepared and implemented in accordance with any current regulation, and shall include (but not limited to) the following: 1. Construction timing for initial placement of on-site equipment (processing area), road grading/ paving, and levee construction operations (May 15- Oct 15); 2. Erosion control methods which utilized sediment traps, barriers, covers or other methods approved by the County; 3. Recommendations for cut and fill slopes, consistent with the geotechnical report; 4. Recommendations for mulching, seeding, revegetation and other stabilization measures as approved by the County; 5. Plans for deposition and storage of excavated materials; and 6. Construction phasing plans for each excavation pit that identifies the sequence and extent (acreage) of graded areas for the phase under mining.	Prior to the construction and equipment installation.	Shasta County Department of Resource Management, Planning Division.	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
MM 4.8.3(a)	All excavated slopes shall be hydroseeded with indigenous grasses or plants to minimize surface erosion.	During project implementation and thereafter as part of the annual mine inspection program.	Shasta County Department of Resource Management, Planning Division.	
MM 4.8.3(b)	Topsoil and overburden piles shall be treated with hydroseed and/or mulch to restore the structure of the bare soil during storage and reduce soil erosion from wind and heavy rains.	During project implementation and thereafter as part of the annual mine inspection program.	Shasta County Department of Resource Management, Planning Division.	
MM 4.8.3(c)	Soil disturbance, grading, and other site preparation (levee construction, road improvements, and construction of the processing area), including vegetative clearance shall occur between May 1 and October 15 of any project construction year to avoid the rainy season and reduce soil erosion and potential runoff.	During project implementation and thereafter as part of the annual mine inspection program.	Shasta County Department of Resource Management, Planning Division.	
MM 4.8.3(d)	Drainage and storm water runoff control systems and related facilities shall be designed to fit the hydrology of the site under full development and have full flow capacity plus adequate safety features. The systems shall be non-erosive in design, should conduct runoff to a stable outlet, and be installed prior to October 15 of each construction year.	During the initial road construction and equipment installation.	Shasta County Department of Resource Management, Planning Division.	
MM 4.8.3(e)	Excavated slopes shall be protected from concentrated runoff and sheet flows using v-ditches	During project implementation	Shasta County Department of	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	at the tops of the slopes to keep the drainage from running over the slope face.	and thereafter as part of the annual mine inspection program.	Resource Management, Planning Division.	
MM 4.8.4	For portion of the project site where structures would be placed, the project applicant shall submit a report from a qualified engineer or soils specialist that identifies the location of expansive soils and demonstrates how the potential negative impacts of these soils can be minimized or avoided, in accordance with Policy SG-e of the Shasta County General Plan.	Prior to construction and equipment installation.	Shasta County Department of Resource Management, Planning Division.	
4.9 HYDROLOGY AND WATER QUALITY				
MM 4.9.3(a)	Prior to the construction of any drainage improvements for the access roadway to the project site in the vicinity of the crossing(s) of Anderson Creek that will raise the elevation of the roadway embankment or result in construction outside of the limits of the existing roadway, plans and specifications for the modifications to the access roadway and crossing(s) shall be prepared by a registered professional engineer and submitted to the County for approval. Additionally, the design shall be supported by a hydrologic and hydraulic analysis that demonstrates that the proposed crossing modifications will not impede or redirect flood flows.	Prior to the acquisition of a Floodplain Use Permit.	Shasta County Department of Public Works.	
MM 4.9.3(b)	The project shall incorporate the following provisions for local drainage control as represented in the	Prior to the acquisition of a	Shasta County Department of	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	submitted Reclamation Plan: 1) Surface runoff generated within proposed mining operation areas will be prevented from discharging into the river; 2) Construction of the site levees and grading performed during mining operations will be performed in a manner such that on-site runoff will be directed to the interior of the mining phases. The on-site haul roads and pond levees will be sloped toward the pond areas and the internal Oak Woodland/ Riparian/Wetland Reserve area to prevent storm water from leaving the site; and 3) A flood control levee will be constructed along the south boundary of the project site to prevent runoff from mining operations from entering the property to the south.	Conditional Use Permit.	Public Works.	
MM 4.9.3(c)	Construction plans and specifications and a maintenance plan shall be prepared by a registered professional engineer and submitted to the County for the proposed flood control levee (spur dike) along the south boundary of the project site. This levee will be constructed in conjunction with the initial phase of the project using topsoil and overburden produced by initial grading operations. The construction plans and specifications and maintenance plan shall include and conform to the following: 1) Relevant provisions set forth in the geotechnical investigation report prepared for the project by Kleinfelder; 2) Provision for an appropriate level of freeboard for the levee height above the 100-year flood elevation for the Sacramento River, considering wave action, velocity head, settlement potential and other factors; 3) Provision for armoring of any portions of the levee that may be subject to	Prior to the acquisition of a Conditional Use Permit.	Shasta County Department of Public Works.	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	erosion due to flow velocities or other concerns; and 4) A plan/program for inspection and maintenance of the levee, including the period beyond the life of the project.			
4.10 AESTHETICS AND VISUAL RESOURCES				
MM 4.10.2	All mining stockpiles, spoils, and recycled material shall be stored at least 200 feet away from natural waterways (i.e. Anderson Creek, and Sacramento River) unless it is fully screened by a berm and/ or vegetation. New structures shall be located at least 200 feet away from existing waterways. No junk, debris, non-operative vehicles, or equipment that is not already existing and/or unrelated to the quarry shall be stored anywhere on the property, unless visually screened from off-site views.	Upon commencement of mining operations.	Shasta County Department of Resource Management - Planning Division.	
MM 4.10.3	All lighting on the site shall meet the Illuminating Engineering Society of North America (IESNA) requirements for reduction/illuminations of light trespass as set forth in Recommended Practice Manual: Lighting for Exterior Environments (RP-33-99). The location of lighting shall be shown on building/ site plans for review and approval by the Planning Division.	The location of lighting shall be approved prior to issuance of a building permit for the first phase of construction.	Shasta County Department of Resource Management, Planning Division.	
4.12 HAZARDS AND HAZARDOUS MATERIALS				
MM 4.12.1	A designated parking area shall be paved for vehicles and equipment not in use. See MM 4.4.1(a) and MM 4.4.2(a) in Section 4.4, Air Quality and the	Prior to initiating quarry operations.	Shasta County Resource Management	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	following mitigation measure:		Department, Planning Division.	
MM 4.12.2	The Phase 3 overburden material may not be used as fill material for the Phase 2 reclamation activities below existing groundwater levels.	During Phase 2 site reclamation activities.	Regional Water Quality Control Board and Shasta County Resource Management Department, Planning Division	
MM 4.12.3(a)	Trenches constructed around the stockpiles containing Phase 3 soils/ overburden shall have a minimum setback distance of 30 feet from the trench toe of slope to the Phase 3 excavated slope to ensure the trenches remain undisturbed. This 30-foot setback area does not prohibit the use of a haul road.	Prior to grading and excavation activities for Phase 3 operations.	Shasta County Resource Management Department, Planning Division.	
MM 4.12.3(b)	Bright colored exclusionary fencing shall be placed around the primary sludge trenches (Figure 3.0-3 of the DEIR) and between the stockpile trenches and Phase 3 mining pit (Figure 3.0-5 of the DEIR) to ensure the area remains undisturbed.	Prior to grading and excavation activities for Phase 3 operations.	Shasta County Resource Management Department, Planning Division.	
MM 4.12.4	The applicant shall consult with the Shasta Mosquito and Vector Control District in designing and developing the settling basins. Any recommendations made by the Control District shall be incorporated into the basin designs. At minimum, the shorelines of the banks shall be graded out to the maximum extent practical to minimize potential breeding grounds. Banks and slopes shall be constructed to inhibit the growth of emergent vegetation while maintaining	Prior to granting of occupancy permit.	Shasta Mosquito and Vector Control District.	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	slope stability (2:1 ratio). The Control District design guidelines and mosquito prevention measures shall also be incorporated into the project's continual maintenance program.			
MM 4.12.5	The project applicant shall comply with the standard requirements and recommendations of the Shasta County Fire Department, as described in the letter from Ken McClean, County Fire Warden, to Russ Mull, Director of Department of Resource Management, dated April 25, 2005 (See Appendix 3.0-2) These standard and requirements shall be incorporated into the condition of approval for the use permit, and include the following: 1. The access road shall be in accordance with Section 6.12 of the Fire Safety Standards. 2. Bridges and culverts shall be designed and constructed in accordance with the Fire Safety Standards and shall be capable of supporting 40,000-pound vehicle load. 3. The applicant shall properly dispose of any vegetation cleared for this project. Disposal shall be in accordance with the Air Quality Management regulations and/or local Fire Department regulatory requirements (i.e., burn permits). 4. Storage, use, and dispensing of flammable/combustible liquids shall be in accordance with the adopted edition of the California Fire Code. Plans shall be submitted for review and approval prior to construction,	Prior to approval of the conditional use permit.	Shasta County Fire Department and Department of Resource Management.	

Proposed Mitigation	Summary of Measure	Timing	Monitoring Responsibility	Verification (Date and initial)
	storage, or use. 5. Any welding and storage of cylinders shall be in accordance with the adopted edition of the California Fire Code. 6. Accumulations of waste paper, weeds, combustible waste material, waste petroleum products, tires, or rubbish of any type shall be prohibited. 7. Rags, cloth, or paper towels saturated with oil, solvent, or petroleum products shall be kept in a metal can with a tight fitting cover. 8. In accordance with Public Resources Code 4291 (a) the applicant shall provide "Defensible Space" by removing all flammable vegetation from around all buildings for a minimum of 100 feet or to the property line, whichever is closer. 9. All mobile and stationary equipment with non-turbocharged internal combustion engines shall be equipped with a property functioning, approved spark arrestor. 10. Each vehicle shall be equipped with a portable fire extinguisher.			

Attachment 1

Letter of Agreement between Tullis Inc. and Tehama County

Tullis Inc.
GENERAL ENGINEERING CONTRACTORS
License #295418

RECEIVED
NOV 27 2006

November 22, 2006

Tehama County Public Works
9380 San Benito Ave.
Gerber, Ca. 96035

Att: Gary Antone
Re: Shasta Ranch Gravel Project

Dear Gary,

As we agreed, Tullis, Inc. will furnish Tehama County 500 tons of asphalt concrete per year from our Cottonwood Sand & Gravel location to be used at your discretion. This will serve as mitigation for our use of Bowman and Draper Roads as delivery routes of gravel from the Shasta Ranch to our Cottonwood Creek Sand & Gravel location.

Sincerely,

Lyle Tullis, President
Tullis, Inc.

Cc: Bill Walker – Shasta County Resource Management
Wendy Johnston – Vestra Resources, Inc.

P.O. Box 493416 • Redding,CA 96049-3416 • (530) 241-5105 • Fax (530) 241-5570

Attachment 2

Letter from Vestra Resources to Office of Mine Reclamation

VESTRA Resources, Inc.
962 Maraglia Street
Redding, California, 96002
Telephone: (530) 223-2585
info@vestra.com
www.vestra.com
FAX (530) 223-1145/223-6985

December 15, 2006

70542

Mr. James S. Pompy
Manager, Reclamation Unit
Office of Mine Reclamation, Department of Conservation
801 K Street
Sacramento, CA 95814

Re: Shasta Ranch Mining and Reclamation Plan

Dear Mr. Pompy:

Shasta Ranch Aggregates is in receipt of a letter from the Department of Conservation, Office of Mine Reclamation, dated 17 June 2005. The Shasta County Planning Division, which is the lead agency for the proposed project, provided the letter to Shasta Ranch Aggregates. The 17 June 2005 letter presented questions and comments regarding the Shasta Ranch Mining and Reclamation Plan submitted to the Department of Conservation in April 2005.

The Shasta Ranch Aggregates project required a Special Use Permit from Shasta County, California. Shasta County determined that an Environmental Impact Report (EIR) was required for the project. Comments on the Draft EIR were received from the Department of Conservation, Office of Mine Reclamation and numerous other agencies. Shasta County has determined that an amended Reclamation Plan that incorporates comments from responsible agencies should be prepared. The proposed amendments to the plan are presented in this letter. Responses to individual comments follow. Although EIP prepared the original plan, VESTRA is responsible for responding to comments and completion of the amended work plan.

1. ***SMARA §2770.5 requires that Caltrans be notified of this operation and allowed to comment prior to approval.***

Shasta County, as lead agency, requested initial input from numerous agencies including Caltrans. In addition, because Shasta County determined that an EIR was required for the project, additional agency input was obtained during the CEQA process.

2. ***The project is located within the 100-year floodplain. The probability of a 100-year flood flow occurring at least once in the next 30 years is 26 percent. The Shasta Ranch project proposes to construct levees to permanently alter the 50-year flood flows across the site. The probability of a 50-year flood during a 30-year period is nearly 50 percent. The provided geotechnical report states that the levees will***

3. ***require maintenance in the event of a possible seismic event. It is our understanding that a hydrology study has been prepared for the project and will be submitted to our office for review. Excerpts from that study appear in Section 4, but copies of the stamped and signed original are needed for review.***

   The Sacramento River Conservation Forum, and advisory council established by law, has included the 100-year floodplain and the project site within a conservation area or riparian habitat. The reclamation plan must be compatible with the surrounding environment and land use. Supplemental information that may be included in the anticipated hydrology report is needed to asses the potential long-term consequences of the proposed mining and reclamation plan on the adjoining resources.

A copy of the Hydrologic Evaluation prepared by Hydmet, Inc. is attached. The evaluation developed site-specific models for river height during flood stage and the effect of levees on river flow.

The project has been designed to be protective of adjoining resources and surrounding land uses. Current surrounding land uses are agricultural and rural residential. The Shasta County general plan designation for the project is AG (agricultural). Specific land parcels occupied by the project are zoned EA-MR (Exclusive Agriculture-Mineral Resource). The State of California Department of Conservation, Division of Mines, identified the site as MRZ-2b, indicating significant deposits. The site materials were identified as "SG (pcc-3)," which indicates alluvial sands and gravel suitable for use as concrete (PCC) aggregate. This reserve represents one of the last PCC aggregate reserves in Shasta County

Shasta Ranch Aggregates has discussed the proposed mine plan with the SRCF on a tour conducted in November 2006.

The CEQA review process identified a number of impacts from the proposed project to a adjo8ining resources. These included air quality, agriculture noise and traffic. Mitigation measures have been developed for and incorporated in the project to address impacts.

4. ***Shasta Ranch has been designated as a Superfund Site, with toxic contaminants in the subsurface. Accordingly, some of the aggregate may be contaminated and the water quality of the proposed ponds may be undesirable.***

The comment that "The site was designated as a Superfund Site" is not correct. The site has never been designated as a superfund site. Historically, waste water from the paper mill process was used to irrigate agricultural crops at the site. Because of the bleaching process used in the production of pulp and paper, the waste water contained low levels of dioxin components. While dioxins are produced through manmade combustion emissions, they are also produced from natural sources such as volcanoes and forest fires, and are found naturally in the ecosystem.

Dioxin Background

Dioxin levels in the environment have declined significantly since the 1970s, following U.S. Environmental Protection Agency (EPA) regulatory controls and industry actions. EPA's best estimates of emissions from sources that can be reasonably quantified indicate that dioxin emissions in the United States decreased by about 80 percent between 1987 and 1995, primarily due to reductions in air emissions from municipal and medical waste incinerators. Recently, the U.S. EPA has pinpointed the open burning of trash, or backyard trash burning, as the largest single source of dioxins to the environment today. Research suggests that in the past few years forest fires probably emitted nearly as much dioxin to the environment as did all EPA-quantified sources combined. As dioxin emissions from industrial sources have declined steadily over the past several decades, emissions from forest fires have increased. Combusted particles are introduced to the atmosphere by fire and are then deposited onto soil and water by atmospheric deposition. Because dioxins are generally measured in very low units, such as parts per trillion (ppt) or parts per quadrillions (ppq), they can be found naturally in the environment due to airborne deposition.

In 1987, EPA released the results of a 3-year National Dioxin Study on the extent of dioxin contamination in the United States. Results from the National Dioxin Study provided one of the first indications that bleached kraft paper mills were a possible source of dioxin in the environment. In response to this finding, EPA conducted a cooperative study with the National Council of the Paper Industry for Air and Stream Improvement to investigate dioxin contamination in process and discharge water from five bleached kraft and paper mills in 1986. This study is known as the Five Mill Study, and indicated that bleaching of kraft pulp with elemental chlorine and chlorine derivatives results in the formation of 2,3,7,8-TCDD and 2,3,7,8-TCDF. These results led to a more comprehensive survey of all 104 domestic pulp and paper mills manufacturing chemically bleached pulp (the 104 Mill Study).

Based on the results of the Five Mill Study and the 104 Mill Study, dioxin fish consumption advisories were issued on many rivers, including the Sacramento River between Keswick Dam and Red Bluff in 1988. At this time, EPA began developing a strategy to regulate and eliminate dioxin from pulp and paper mill discharge. As a result of this strategy, dioxin levels in mill discharge declined significantly. For example, based on improvements at the Shasta Paper Mill, the dioxin fish consumption advisory was lifted from the Sacramento River in 1994. As part of this strategy, EPA issued final effluent limitation guidelines and pre-treatment standards for pulp and paper mills in 1998. These EPA effluent limitations are enforced by the Regional Water Quality Control Board (RWQCB) via the National Pollution Discharge Elimination System (NPDES) permit process.

EPA Evaluation

Shasta ranch was identified as a potential hazardous waste site due to dioxins in wastewater used for irrigation and entered into the Comprehensive Environmental Response, Compensation, and Liability System (CERCLIS) on June 1, 1981. CERCLIS is not a superfund designation; it is a screening assessment that was developed in the early years of the environmental movement to assist EPA in identification of discharges and industries that warranted further study and review. A preliminary assessment of the Shasta Ranch was conducted by EPA on September 1, 1982, and a detailed site

inspection was conducted on August 6, 1990. A site inspection prioritization was completed on September 9, 1994.

After reviewing the preliminary assessment and site inspection reports, EPA determined additional information was required to evaluate the Shasta Ranch site prior to inclusion on the National Priority List (NPL or Superfund List). An expanded site inspection was completed in September 1996, and included collection of six sludge samples from the Shasta Ranch property and seven sediment samples from the Sacramento River for dioxin analyses. Based on the findings, EPA concluded:

- Concentrations of site-related hazardous substances detected in sediment samples collected downstream from the site are comparable to background concentrations.
- No site-related hazardous substances were detected in groundwater samples collected from onsite drinking water wells.
- The site is completely fenced, except along the Sacramento River, and there are no schools or day care centers on, or within 200 feet of the site.

EPA's overall conclusion was the Shasta Ranch ***did not qualify*** for further remedial site assessment under CERCLA. EPA's only follow up recommendation was that the discharger continue to monitor onsite groundwater for dioxins.

Recent Investigations

The Shasta Aggregates Phase 1 and Phase 2 operating areas never received treated effluent from the paper mill; therefore, the issue regarding the release of dioxin compounds to surface soils from use of waste water for irrigation is only an issue on the proposed Phase 3 mining area.

Sludge, soil, and groundwater samples have been collected from the Shasta Ranch property and analyzed for dioxins for many years. Unfortunately, the early data were collected using different laboratory procedures with higher detection limits than laboratory data collected more recently. For this reason, the early data samples were not included in the recent analysis. Recent investigations using current laboratory procedures are summarized below. These results are representative of baseline conditions at the ranch. The following sampling has been completed to assess current dioxin levels at the site:

Geomatrix Soil Sampling Program (2004)

The ranch property consists of a veneer of clayey silt underlain by sandy gravel. The depth to the sandy gravel varies between 1.5 feet to more than 5 feet. Geomatrix collected 11 onsite soil samples for dioxin analyses in 2004. The samples were collected from the clayey silt layer in areas that received mill effluent (Phase 3 area). The samples were collected from approximately 6 inches below ground surface. The Geomatrix samples were collected from overburden (e.g. topsoil) that will not

be processed or transported from the site. Locations outside of the area that had received mill effluent (Phase 1 and Phase 2 areas) were not sampled at this time.

Dioxin toxic equivalent (TEQ) results were compared to current regulatory levels. Soil dioxin levels were less than the Agency for Toxic Substance and Disease Registry (ATSDR) residential Environmental Medial Evaluation Guide (EMEG) level of 50 ppt, and 9 out of 11 results are less than EPA industrial Preliminary Remediation Goal (PRG) level of 16 ppt. It is also important to note that the 95 percent upper confidence level concentration is less than the EPA industrial PRG of 16 ppt. The 95 percent upper confidence level concentration is typically used as the exposure point concentration when conducting a baseline risk assessment.

VESTRA Resources Investigation (2006)

The Geomatrix soil sampling program focused on collecting shallow soil samples from fields that had received mill sludge and/or effluent (Phase 3 area). VESTRA collected a total of 10 additional soil samples for dioxin analyses from areas proposed for aggregate extraction that were not sampled as part of the Geomatrix (2004) sampling. Three samples were collected from the Phase 1 area, and three samples were collected from the Phase 2 area – both areas did not receive effluent discharge. Four samples were collected from the Phase 3 areas, at depths greater than the sampling depth of the Geomatrix (2004) study. In general, individual samples were collected from the clayey silt overburden material approximately 18 inches (1.5 feet) below ground surface, from the sandy gravel just below the clayey silt at approximately 42 to 48 inches (4 feet), and from the sandy gravel approximately 96 inches (8 feet) below the clayey silt.

The results were compared to current regulatory levels. A summary of the findings include:

- The TEQ results from the Phase 1, Phase 2, and Phase 3 areas are less than the EPA residential PRGs.
- At a given depth, the TEQ results in areas that did not receive mill effluent (Phase 1 and Phase 2) are an order of magnitude lower than the corresponding TEQ results in areas that received effluent (Phase 3).
- TEQ results decrease with depth. The highest concentrations are in shallow soils that will be stripped and stockpiled for rehabilitation. TEQ results in the underlying sandy gravel that will be processed for aggregate are orders of magnitude less.

In areas where effluent was applied, the highest dioxin concentration in the underlying aggregate was 0.034 ppt. In areas where effluent was not applied, the highest dioxin concentration in the underlying aggregate was 0.008 ppt. These levels are at least two orders of magnitude less than the EPA residential PRG 0f 3.9 ppt, and the average near-surface background concentrations of 4.1 ppt observed in urban areas. Background dioxin concentrations are generally higher near the surface because the primary source of background dioxin is the airborne deposition from combustion sources.

Geomatrix Groundwater Monitoring Program (2005)

Groundwater occurs at depths of approximately 10 to 15 feet below ground surface and flows northeast toward the Sacramento River. There are approximately 70 groundwater wells on the Shasta Ranch, 17 of which have been used to monitor water quality. The wells are typically 2 inches in diameter. These wells were installed to monitor hydrologic conditions when the fields were irrigated. In addition, a total of three water supply wells are located onsite: near the laboratory, ranch house, and chemical storage shed (Geomatrix 2004).

The RWQCB requested that the new property owners, Shasta Ranch LLC, undertake groundwater monitoring abandoned by the Shasta Paper Company. Geomatrix submitted a monitoring and reporting program to the RWQCB in January 2005. The objective of the work was to collect additional groundwater and surface water data to further evaluate concentrations of dioxins/furans in groundwater and to assess the potential for groundwater containing dioxins/furans to migrate to the Sacramento River. The scope was developed in coordination with the RWQCB. In part, the program included collecting quarterly groundwater samples for dioxin analyses from seven on site monitoring wells on a quarterly basis for 1 year. The RWQCB approved the program in March 2005. As outlined in the approved monitoring program, quarterly groundwater samples were collected from the seven onsite monitoring wells during 2005.

Groundwater results were compared to current regulatory levels for drinking water. The maximum TEQ result of 0.0261 parts per quadrillion (ppq) observed during the 4th quarter 2005 is less than the current regulatory levels. Only one TEQ result collected during 2005 exceeded the EPA tap water PRG of 0.45 ppq. A TEQ of 0.62 ppq was observed in Monitoring Well MW-62 during the third quarter. The TEQ results in this well during the other three quarters (0 ppq, 0.0006 ppq, and 0.0003 ppq) were less than the EPA tap water PRG. The quarterly reports and work plan, in addition to results from one additional river sampling requested by the RWQCB are on file at the RWQCB office. The RWQCB has determined no additional well sampling is required, and all onsite monitoring wells, with the exception of five wells located in the Phase 3 area, may be abandoned. See letter dated December 5, 2006.

Summary

Dioxin TEQ results in the shallow overburden soil and in the underlying material to be processed for aggregate during the first 20 years of the proposed project (Phase 1 and Phase 2) are less than current regulatory levels, including the EPA residential PRG. These areas did not receive mill effluent. Furthermore, the dioxin TEQ results in all of the samples collected from the sandy gravel that will be processed for aggregate (including Phase 3) are less than the EPA residential PRG, and are significantly less than the overburden levels.

Within areas proposed for aggregate extraction, the only TEQ results that exceeded the EPA residential or industrial PRG were observed in the Phase 3 overburden. The maximum TEQ result in samples collected from the Phase 3 overburden was 18.5 ppt. This level exceeds the EPA industrial PRG of 16 ppt, and is less than the ATSDR residential EMEG of 50 ppt. The Phase 3 overburden is not suitable for aggregate and will be stockpiled onsite and used for site restoration.

Aggregate extracted from the Phase 3 operating area will not be used for an estimated 20 years following commencement of mining activities at Shasta Ranch.

Dioxin TEQ results in the underlying groundwater are less than the federal and state drinking water standards, and 28 out of 29 samples were less than the EPA tap water PRG. Additional project reviews by numerous agencies have determined that additional investigations for dioxin compounds are not required.

This discussion, including tables and analytical results has been added to the reclamation plan.

5. ***Article 9 provides performance standards for reclamation. The reclamation plan should include measurable criteria for implementation of erosion control methods. The reclamation plan states that a Storm Water Pollution Prevention Plan (SWPPP) will be developed. The goals of a SWPPP and reclamation plan are somewhat different and the SWPPP alone may not adequately address erosion. The reclamation plan needs to be complete prior to approval.***

Comment noted. Project proponent appreciates the need to control erosion and release of sediment at the site. Widely accepted best management practices (BMPs) will be followed. These include published documentation from the following:

- Caltrans Storm Water Quality Handbook, March 1, 2003
- Rehabilitation of Disturbed Lands in California Special Publication 123, Department of Conservation 2003 (Section 4.0)

A copy of the SWPPP prepared for the site is included as Attachment 3.
These references and notes that they will serve as the basis for erosion control at the site have been added to the Reclamation plan.

6. ***The USGS topographic maps indicate the presence of several siphons within the areas to be mined. The proposed mining and the creation of ponds should describe the relevance and potential impact on these features.***

The site has been inspected to address the siphon locations on the historical USGS map. The only siphon-like structures located on the site are associated with movement of onsite irrigation water. There is currently no direct connection with the site to the river. The "siphons" shown on the USGS topographic map could not be located and may have been mis-mapped.

7. ***Sections 4 and 5 of the reclamation plan contain figures and conclusions that apparently derive from a hydrology study conducted by Sharrah Dunlap Sawyer Incorporation that should have been included as Appendix F but is missing. Drawings show a proposed 100-year flood control levee but it is not discussed in the text. The text and levee cross sections pertain to 25-year and 50-year flood control levees. The information provided on levee design is incomplete and needs to be revised to correlate with the missing report.***

The Hydrological Evaluation report by Hydmet Inc. is included as Attachment 1 to this letter. The 100-year Spur Dike was designed to respond to concerns of adjacent owners. It was designed to provide protection to adjoining properties in the event that the river would re-channel into the area due to mining activities. The other levees were designed at the request of National Marine Fisheries Service to prevent entrapment of endangered salmonids during a significant flood event.

During the CEQA process, California Department of Fish and Game requested that all fish exclusion levees be designed to withstand the 100-year flood event. The levees have been redesigned in the attached addendum to meet the 50-year flood event with 1.5 feet of freeboard. This is equivalent to a 100-year event with 0.8 feet of freeboard. The amended fish exclusion levee figures are included as Attachment 2.

- ***Section 4.3.b states that the missing report concludes that the project's impact on 100-year flood elevation would be an approximately 0.1 foot increase adjacent to the site, but would be negligible both upstream and downstream. The 100-year levee runs perpendicular to the river on the downstream end of the site. Given the submitted information, the conclusion is not supported.***

The Hydrological Evaluation report is included in Attachment 1. The Spur Dike was designed in response to concerns of neighbors that the main river channel would re-adjust through the gravel mining areas. The Spur Dike is designed to redirect river flow back to the main channel in the event of flood flows. The Spur Dike is under jurisdictional review of the Department of Water Resources Reclamation Board.

- ***The proposed 50-year levee parallels the river. The effect of the 50-year levee on high flows is expected to be more frequent. Flow changes due to the levee may affect the sediment bars that form riparian habitat on the left bank as well as upstream and downstream.***

The flood fish exclusion levees have been redesigned to meet 50-year flood with 1.5 feet of freeboard. This is equivalent to the 100-year flow event with 0.8 feet of freeboard. Because river flow at the site is controlled by Shasta Dam, significant uncontrolled flood flows are not anticipated. The hydrologic study conducted modeling, specific to the site, suggesting no significant impact was anticipated to banks, bars or riparian habitat. This conclusion was confirmed by a third party analysis during CEQA review.

8. ***The geotechnical report, Appendix G, states that due to foundation conditions the possibility of deformation from liquefaction is significant. The report states that maintenance will be needed in perpetuity. The reclamation plan does not provide provisions for this.***

Provisions for long-term maintenance were discussed on page 49 of the Reclamation Plan. Long-term maintenance is addressed by deed-related conditions on future owners. The maintenance of levees can be included in financial assurance bonds for site operation.

9. ***The reclamation plan discusses hazardous materials in Secion 2.6 and Appendix D contains a groundwater quality report. Additional characterization of the contamination is needed. An evaluation is needed to determine whether the creation of ponds with connectivity to the river is a viable end use. The processing and storage of contaminated sediments should also be considered in the mining and reclamation plan.***

See response to Comment #3. The evaluation has been completed and no additional work or special treatment for sediments are planned.

10. ***<u>"Section 2 Introduction"</u> of the reclamation plan describes severe impacts due to historic mining and predicts ecosystems will benefit due to the project. Supporting evidence of those claims is lacking. Toxic chemical contamination is mentioned in Section 3.6 and should be reflected in the introduction.***

    The potential effects of proposed permanent levees on the fluvial geomorphologic features that currently provide riparian habitat are not described. These fluvial features are located within the Inner River Zone of the Sacramento River Conservation Area. Special guidelines have been developed to protect or improve the Inner River Zone. Statements within the reclamation should be accurate and supported with documentation. The following sections should be revised.

See response to Comment #3 regarding past use of treated mill effluent at the site. A detailed discussion has been added to the Reclamation Plan.

Most areas of the Sacramento River, and its tributaries, in the vicinity of Redding were mined with hydraulic dredges for gold between 1870 and 1940. The dredging resulted in significant changes to the fluvial processes of the river, and resulted in numerous negative impacts to wildlife, habitat, and the environment. During this period, flood flows in the Sacramento River were uncontrolled.

The construction of Shasta Dam in 1942 resulted in significant control of flows and fluvial processes in the upper Sacramento, especially in the upper reaches directly below the Dam and above major tributary streams. The proposed Shasta Ranch Aggregates project is located in this upper controlled section of the river. Significant flows in the vicinity of the site in excess of the 50 or 100-year event are unlikely due to requirements to regulate flows within tributary influence further downstream. Furthermore, the Hydrological Evaluation Report suggests minimal impacts upon flow conditions and river depth even at the 100-year flood flow events.

The introduction has been amended to downplay positive impacts of the project.

- *"Section 2.3 General Site Characteristics[0] and "Section 2.5a Previous Mining Activity" of the reclamation plan discuss the alteration of the project site by historic gold dredging but do not cite references. These sections appear to be erroneous. Although extensive gold dredging occurred along Clear Creek, a tributary to the north, Shasta Ranch and the adjoining Sacramento River do not show evidence of previous gold mining impacts. The sand and gravel appears to be mainly natural terrace deposits as indicated in Section 3 and*

  Appendix G of the geotechnical report. The discussion of past mining impacts should either be deleted, or clarified and cited. The following reference may be useful: Mines and Mineral Resources of Shasta County, California, published by the California Division of Mines and Geology as County Report 6 in 1974.

Whether the deposits are from past dredge mining activity, or whether the deposits are natural is irrelevant to the project and Reclamation Plan. These discussions have been omitted from the project description in the introduction to the revised Reclamation Plan document.

- *"Section 2.1 Plan Overview and Contents'* states in the fourth paragraph that the reclamation plan "would reestablish a productive ecosystem...", "provide adequate protection of Sacramento River anadromous fish resources", and "achieve visual compatibility with the surrounding landscape." Levees - proposed to control 25-year and 50-year flows- are discussed as a means of fish exclusion to prevent salmon becoming stranded within the pit during high flows. The construction of levees and the creation of permanent ponds where none currently exist may not be visually compatible.*

Comment noted. Visual impacts of the project were evaluated pursuant to CEQA in the DEIR prepared for the project. The impacts were not found to be significant.

11. *Appendix A, Shasta Ranch Project Biological Characterization Report, provides a good analysis of special status plant and wildlife species likely to be found on site. As this report states, focused surveys for species potentially occurring in the project area must be conducted to determine appropriate mitigation measures. Mitigation measures may alter the manner in which reclamation of the site is accomplished.*

In the DEIR, Pages 4.5-7 and 4.5-13 discuss the site reconnaissance level surveys completed for botanical and wildlife in the study area. Impacts have been incorporated in order to avoid and/or minimize impacts on species identified within the project area.

12. *Page 44 of the Reclamation Plan states that a small area of riparian vegetation located in Phase 2 will be removed. Although Appendix A provides an analysis of the acreages of the vegetation habitats found on site, it is not clear how much of each vegetation habitat will actually be disturbed by the proposed project. This information is necessary to ascertain the cumulative effects of the project on the biotic resources of the site.*

Only areas currently farmed or fallow from past farming are to be disturbed by mining activities. California Department of Fish and Game has required that all mining activities be conducted greater than 50 feet from riparian areas. No riparian areas will be disturbed by mining activity. See the amended project description and addendum to the Reclamation Plan.

13. ***CCR §3502(b)(1) requires that the environmental setting of the project be described along with the effect that alternate reclaimed site conditions may have on existing and future uses of surrounding lands. The description of the environmental setting omits important water quality and watershed management information. SMARA Section 2733 defines "reclamation" as the combined process of land treatment that minimizes water degradation, air pollution, damage to aquatic or wildlife habitat, flooding, erosion, and other adverse effects from surface mining operations. Adverse effects from the proposed project should be addressed during the Initial Study in the environmental review process and subsequent Environmental Impact Report. The reclamation plan cannot be finalized until all impacts from water quality are identified and addressed.***

The RWQCB Central Valley Region is responsible for the evaluation of water quality impacts at the site (see response to Comment #3). A letter from the RWQCB addressing proposed site monitoring is included as Attachment 4. In addition, a Report of Waste Discharge (ROWD) was submitted to the RWQCB Redding office on March 27, 2006, requesting issuance of waste discharge requirements for the proposed project. The ROWD was originally deemed incomplete due to the need to submit a Notice of Intent (NOI) and Storm Water Pollution Prevention Plan (SWPPP); an application fee; a request to address above ground storage tanks (AGST); a Spill Prevention and Countermeasures Plan (SPCC), and a completed CEQA review.

In response, an NOI, SWPPP, and application fee were submitted to the RWQCB in spring of 2006. The ROWD has been deemed complete, pending completion of CEWA. The letter from the RWQCB is included in Attachment 4. A Spill Prevention Control and Countermeasure plan (SPCC) was submitted to the RWQCB in May 2006. An EIR has been required by the Shasta County Planning Department (lead agency for the project), and is underway. Anticipated completion date for the EIR is January 2007.

14. ***CCR 3711 (a-e) requires that all salvageable topsoil be removed and provides requirements for topsoil salvage, management and reapplication. Section 5.6 Topsoil Replacement and Erosion Control states that topsoil that has been stockpiled will be replaced, but fails to discuss the requirements of CCR 3711 (a-e).***

Top soil resources have been inventoried at the site, as required in 3711(b). Approximately 12 inches of topsoil covers the Phase 1 area, 18-48 inches cover the Phase 2 area, and greater than 4 feet covers the Phase 3 area. Figure 20A has been added to show areas of topsoil depth and storage areas. Sufficient topsoil is available onsite to revegetate all areas to be regenerated. Additional stockpiles of growth media are not required. Topsoil will be redistributed in a manner that results in

a stable, uniform soil thickness across reclaimed areas, consistent with approved land use and drainage. The revised Figure 20A is included as Attachment 5.

The Reclamation Plan presented a schedule for reclamation. Reclamation activities intend to follow this schedule. Reclamation and mining will minimize disturbed areas and have been designed to achieve maximum revegetation success. Wording from this response is included in the addendum to the Reclamation Plan.

15. ***CCR 3705(a) requires that the vegetative cover, suitable to the end use, be self-sustaining and that baseline studies documenting cover, density and species richness be included in the reclamation plan. Specific baseline data was omitted from the reclamation plan.***

Vegetation to be removed at the site is non-native agricultural field crops and alfalfa, therefore, baseline data was not relevant.

16. ***CCR 3705(b) requires that test plots be established if success has not been proven previously. The information provided on page 69 of the Reclamation Plan is largely conceptual, providing few details to actually implement test plots. A description of how the test plots will be created and what parameters will be tested must be provided in a manner that a third party could employ.***

The topsoil found within the alluvial flood plain of the project is high quality agricultural soil (sandy clay loam). Test plots for the Phase 1 area are not anticipated to be necessary due to the high quality of topsoil to be used for reclamation, and the success of non-native agricultural crops and alfalfa currently being grown in the Phase 1 area. All of the Phase 1 area will be reclaimed for use as agricultural land (see Figure 20A in the Reclamation Plan).

The open water marsh areas planned for Phase 2 and Phase 3 areas have been redesigned at the request of the CDFG to provide gentler-sided slopes. Due to recent interest and success in riparian restoration, extensive test plots along open water buffer areas are not anticipated. Native grasses will be re-established in the operating area of the site. The discussion of test plots will remain in the Reclamation Plan in the event that they are determined to be necessary.

17. ***CCR 3705(g) requires that native plants be used. The Reclamation Plan states that sycamores (Platanus racemose) will be planted in upland areas. Sycamores are not upland species, they are species found in riparian areas. We recommend that sycamores be planted in the riparian zone where they are more likely to establish. In addition, a plant species list was not provided. Though the species chosen for the plant palette are excellent choices, it is not evident if all those species are found on or in the vicinity of the project.***

Phase 1 areas are not currently defined as "Prime Agricultural" lands. CCR Section 3708 allows for the reclamation of lands for the "economically viable production of crops commonly grown in surrounding

areas." The Phase 1 area will be reclaimed for agricultural use. Therefore, the native plan requirement does not apply. No distinct soil horizons were identified, so segregation of top soil was not required.

Sycamores have been deleted from the upland planting discussion and will be planted in newly-created riparian zones. All plan species proposed for regeneration at the site are documented to exist in and around the Shasta Ranch site. A plant palette was included on Figure 17 and Figure 18 of the Reclamation Plan.

13. ***CCR 3705(m) requires that revegetation success be quantified by percent cover, density, and species-richness. The success criteria set forth in the Reclamation Plan have omitted several key criteria. The success criteria presented in the Reclamation Plan omitted unit area for density and species-richness as well as several other criteria. For this reason we recommend that the criteria be presented in a table such as the one illustrated on the next page.***

Comment noted. A table similar to that provided in the Department of Conservation comments will be used to evaluate reclamation success.

18. ***The Reclamation Plan states that straw will be applied as an erosion control measure. We highly recommend that rice straw or weed-free straw be used to prevent the introduction of noxious weeds.***

Weed-free straw will be used for reclamation activities. Specific criteria for straw application will be taken from the *Rehabilitation of Disturbed Lands in California: A Manual for Decision Making, Special Publication 123*.

If you have any questions, or these changes do not adequately address department concerns, please contact me at (530) 223-2585.

Sincerely,

VESTRA Resources, Inc.
Environmental Services Division

Wendy Johnston
Project Management

Cc: Lyle Tullis / Tullis, Inc.
Dori Blackburn / PMC
Bill Walker / Shasta County
Dan Warner / RWQCB

Attachment 1

HYDMET REPORT

From:
John (Jack) H. Humphrey, Ph.D., P.E.
Hydmet, Inc.
9855 Meadowlark Way
P.O. Box 678
Palo Cedro, CA 96073
530-474-1415 (office and fax)
530-547-4743 (home)
Email: hydmetjack@aol.com

To:
Wendy Johnston
VESTRA Resources, Inc.
962 Maraglia Street
Redding, CA 96002
530-223-2585
Fax 223-6985

Shasta Ranch Flood Studies

Introduction

The project site is bordered on the east by the Sacramento River and on the west by Anderson Creek. Floodplains from both of these water courses cover portions of the project site. 100-year releases in the Sacramento River from Lake Shasta are known to nearly completely inundate the site. The flood studies had several purposes:

(1) Define the 100-year floodplain for Anderson Creek.
(2) Define the 100-year floodplain for the Sacramento River
(3) Determine Sacramento River water surface elevations for 2-, 5-, 10-, 25, and 50-year events for fish studies. Determine extraction area fish exclusion dike design to prevent fish trapping in selected flood events
(4) Determine south boundary spur dike design to prevent any downstream impacts on the west bank of the Sacramento River from flows entering the extraction areas.
(5) Determine the frequency and duration of Sacramento River flood flows inundating project wetlands
(6) Determine net water consumption for pre- and post-project conditions.

Methodology

Cross sections were surveyed by SDS Engineers for the Sacramento River and Anderson Creek as shown on Figure 1. HECRAS USACE computer models were set up to determine the water surface elevations and extent of the 100-year floodplains. A flood frequency analysis was made of annual peak flows recorded by the U.S. Geological Survey at Keswick Dam upstream of Redding and Big Bend Bridge, downstream of Cottonwood Creek. Tables 1 and 2 list these flows and rank them from low to high. Using the 60 years of record, which reflects Shasta Dam regulation, a peak flow frequency analysis was made for the two stations. Table 3 lists these flood flows and shows the interpolation between the peak flow frequency relationships at Keswick Dam and Big Bend Bridge. The drainage area at Keswick Dam is 6,468 square miles, Shasta Ranch 7,460 square miles and Big Bend Bridge 8,900 square miles. An area interpolation (using the 0.77 area factor of Waananen and Crippen) provided an estimate of the peak flow frequency relationship for the Sacramento River at Shasta Ranch. The HECRAS models were used to determine the 100-year floodplains. The 100-year floods were 3,200 cfs for Anderson Creek (FEMA) and

130,400 cfs for the Sacramento River. Figure 1 shows the 100-year floodplains from these analyses.

Figure 1.
Shasta Ranch
100-Year Floodplains

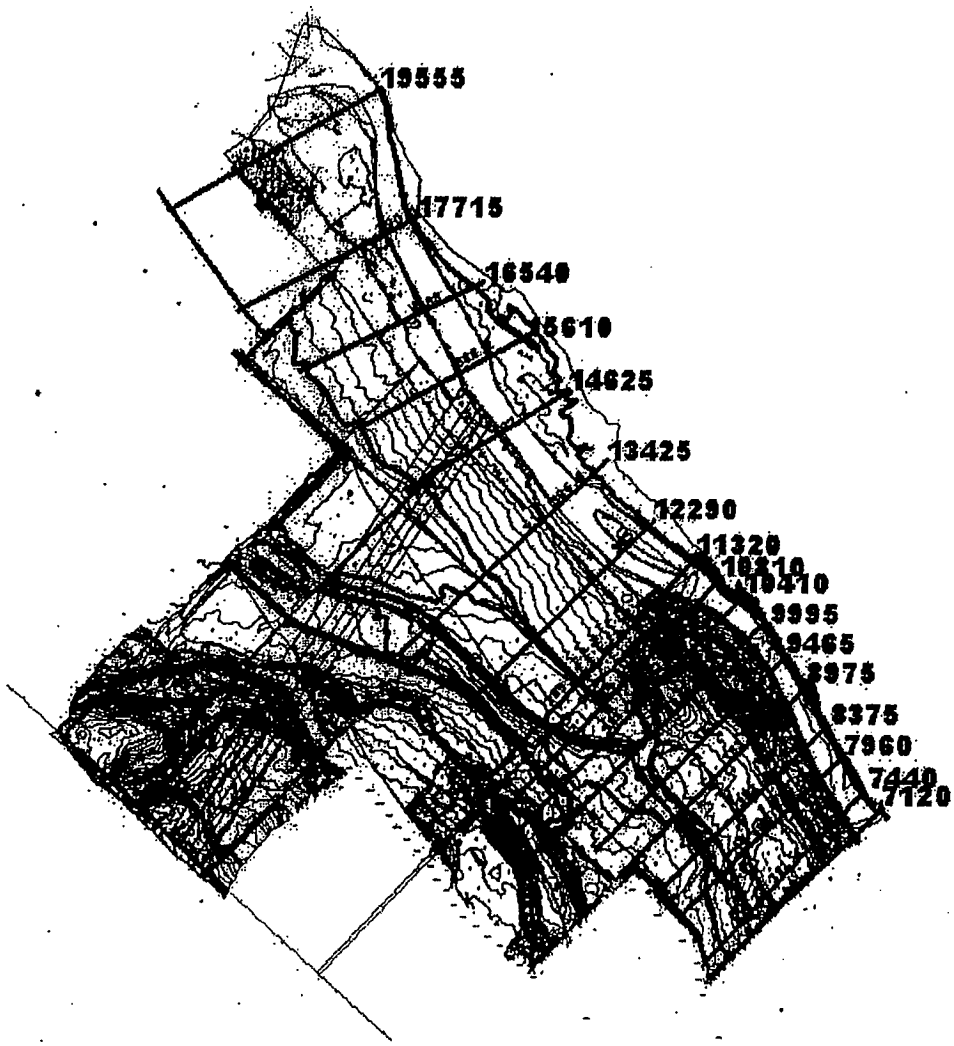


Table 1. Sacramento River at Keswick Peak Flows 1944-2003

(following page)

Station	Date	Peak	Rank	Plot	Date	Flow
11370500	2/3/1944	7650	1	1.6	2/3/1944	7650
11370500	8/1/1945	9290	2	3.3	5/31/1947	7650
11370500	1/4/1946	29400	3	4.9	8/1/1945	9290
11370500	5/31/1947	7650	4	6.6	7/31/1991	10300
11370500	4/3/1948	21900	5	8.2	2/13/1962	11500
11370500	8/17/1949	12900	6	9.8	7/5/1955	11600
11370500	8/2/1950	12100	7	11.5	7/10/1960	11800
11370500	12/17/1950	42100	8	13.1	7/7/1977	11800
11370500	2/6/1952	35300	9	14.8	8/16/1990	12000
11370500	1/16/1953	73100	10	16.4	8/2/1950	12100
11370500	2/17/1954	51100	11	18.0	8/17/1949	12900
11370500	7/5/1955	11600	12	19.7	8/4/1964	13200
11370500	2/24/1956	53800	13	21.3	5/5/1976	14200
11370500	3/4/1957	52600	14	23.0	2/15/1961	14500
11370500	2/21/1958	78800	15	24.6	7/7/1979	15000
11370500	2/20/1959	32600	16	26.2	7/5/1981	15400
11370500	7/10/1960	11800	17	27.9	1/2/2002	15400
11370500	2/15/1961	14500	18	29.5	9/2/1994	15500
11370500	2/13/1962	11500	19	31.1	3/17/1972	15700
11370500	4/10/1963	45300	20	32.8	7/16/1987	15700
11370500	8/4/1964	13200	21	34.4	7/30/1988	15700
11370500	12/27/1964	54000	22	36.1	8/9/1989	15700
11370500	1/17/1966	17300	23	37.7	11/25/1984	15800
11370500	12/9/1966	56200	24	39.3	7/27/2001	15800
11370500	2/24/1968	53300	25	41.0	1/17/1966	17300
11370500	1/21/1969	56000	26	42.6	4/3/1948	21900
11370500	1/24/1970	78900	27	44.3	3/16/1992	24800
11370500	12/9/1970	37600	28	45.9	1/4/1946	29400
11370500	3/17/1972	15700	29	47.5	3/6/1999	30900
11370500	1/19/1973	41200	30	49.2	4/29/2003	31100
11370500	4/1/1974	81400	31	50.8	2/20/1959	32600
11370500	3/19/1975	37600	32	52.5	2/6/1952	35300
11370500	5/5/1976	14200	33	54.1	12/9/1970	37600
11370500	7/7/1977	11800	34	55.7	3/19/1975	37600
11370500	3/9/1978	39800	35	57.4	12/13/1983	38800
11370500	7/7/1979	15000	36	59.0	3/9/1978	39800
11370500	2/20/1980	51300	37	60.7	1/19/1973	41200
11370500	7/5/1981	15400	38	62.3	12/17/1950	42100
11370500	12/22/1981	61800	39	63.9	4/10/1963	45300
11370500	1/31/1983	65200	40	65.6	2/17/1954	51100
11370500	12/13/1983	38800	41	67.2	2/20/1980	51300
11370500	11/25/1984	15800	42	68.9	3/4/1957	52600
11370500	2/19/1986	76900	43	70.5	2/24/1968	53300
11370500	7/16/1987	15700	44	72.1	2/24/1956	53800
11370500	7/30/1988	15700	45	73.8	12/27/1964	54000
11370500	8/9/1989	15700	46	75.4	3/2/2000	55000
11370500	8/16/1990	12000	47	77.0	3/20/1993	55500

11370500	7/31/1991	10300	48	78.7	1/21/1969	56000
11370500	3/16/1992	24800	49	80.3	2/24/1996	56100
11370500	3/20/1993	55500	50	82.0	12/9/1966	56200
11370500	9/2/1994	15500	51	83.6	2/4/1998	56500
11370500	3/17/1995	75500	52	85.2	12/22/1981	61800
11370500	2/24/1996	56100	53	86.9	1/31/1983	65200
11370500	1/4/1997	79200	54	88.5	1/16/1953	73100
11370500	2/4/1998	56500	55	90.2	3/17/1995	75500
11370500	3/6/1999	30900	56	91.8	2/19/1986	76900
11370500	3/2/2000	55000	57	93.4	2/21/1958	78800
11370500	7/27/2001	15800	58	95.1	1/24/1970	78900
11370500	1/2/2002	15400	59	96.7	1/4/1997	79200
11370500	4/29/2003	31100	60	98.4	4/1/1974	81400

Table 2. Sacramento River at Big Bend Bridge Peak Flows 1944-2003

11377100	2/1/1945	59600
11377100	12/27/1945	79200
11377100	2/12/1947	41400
11377100	3/23/1948	65900
11377100	3/11/1949	58600
11377100	2/6/1950	51600
11377100	12/14/1950	70100
11377100	12/27/1951	137000
11377100	1/17/1953	94500
11377100	1/28/1954	80000
11377100	11/15/1954	35200
11377100	1/15/1956	115000
11377100	3/5/1957	66400
11377100	2/19/1958	139000
11377100	2/16/1959	92300
11377100	2/8/1960	77600
11377100	12/1/1960	86200
11377100	2/15/1962	65400
11377100	2/1/1963	76700
11377100	1/21/1964	61600
11377100	12/22/1964	156000
11377100	1/5/1966	79300
11377100	1/31/1967	93600
11377100	2/24/1968	64000
11377100	1/22/1969	91700
11377100	1/24/1970	157000
11377100	12/4/1970	104000
11377100	2/29/1972	32100
11377100	1/16/1973	82300

Position	Plot	Date	Flow
1	1.7	6/3/1977	11700
2	3.3	2/10/1994	19300
3	5.0	3/4/1991	24900
4	6.7	2/29/1976	28800
5	8.3	2/29/1972	32100
6	10.0	11/15/1954	35200
7	11.7	1/8/1990	35200
8	13.3	1/4/1988	41000
9	15.0	11/23/1988	41300
10	16.7	2/12/1947	41400
11	18.3	2/12/1992	44700
12	20.0	11/24/1984	45600
13	21.7	2/14/1979	48200
14	23.3	2/6/1950	51600
15	25.0	3/13/1987	51600
16	26.7	3/5/2001	53300
17	28.3	3/11/1949	58600
18	30.0	2/1/1945	59600
19	31.7	2/14/1981	60600
20	33.3	1/21/1964	61600
21	35.0	2/24/1968	64000
22	36.7	2/15/1962	65400
23	38.3	1/2/2002	65800
24	40.0	3/23/1948	65900
25	41.7	2/9/1999	66200
26	43.3	3/5/1957	66400
27	45.0	2/21/1996	69900
28	46.7	12/14/1950	70100
29	48.3	2/1/1963	76700

11377100	1/16/1974	133000	30	50.0	3/5/2000	76900
11377100	2/13/1975	84600	31	51.7	2/8/1960	77600
11377100	2/29/1976	28800	32	53.3	12/27/1945	79200
11377100	6/3/1977	11700	33	55.0	1/5/1966	79300
11377100	1/9/1978	106000	34	56.7	1/28/1954	80000
11377100	2/14/1979	48200	35	58.3	1/16/1973	82300
11377100	2/19/1980	104000	36	60.0	2/13/1975	84600
11377100	2/14/1981	60600	37	61.7	12/1/1960	86200
11377100	12/19/1981	117000	38	63.3	12/31/2002	86200
11377100	3/1/1983	152000	39	65.0	1/22/1969	91700
11377100	12/25/1983	93300	40	66.7	2/16/1959	92300
11377100	11/24/1984	45600	41	68.3	12/25/1983	93300
11377100	2/17/1986	134000	42	70.0	1/31/1967	93600
11377100	3/13/1987	51600	43	71.7	1/17/1953	94500
11377100	1/4/1988	41000	44	73.3	2/14/1998	98600
11377100	11/23/1988	41300	45	75.0	12/4/1970	104000
11377100	1/8/1990	35200	46	76.7	2/19/1980	104000
11377100	3/4/1991	24900	47	78.3	1/9/1978	106000
11377100	2/12/1992	44700	48	80.0	1/15/1956	115000
11377100	3/24/1993	115000	49	81.7	3/24/1993	115000
11377100	2/10/1994	19300	50	83.3	12/19/1981	117000
11377100	3/15/1995	127000	51	85.0	1/1/1997	121000
11377100	2/21/1996	69900	52	86.7	3/15/1995	127000
11377100	1/1/1997	121000	53	88.3	1/16/1974	133000
11377100	2/14/1998	98600	54	90.0	2/17/1986	134000
11377100	2/9/1999	66200	55	91.7	12/27/1951	137000
11377100	3/5/2000	76900	56	93.3	2/19/1958	139000
11377100	3/5/2001	53300	57	95.0	3/1/1983	152000
11377100	1/2/2002	65800	58	96.7	12/22/1964	156000
11377100	12/31/2002	86200	59	98.3	1/24/1970	157000

Table 3. Shasta Ranch Sacramento River Hydrology

USGS No.	11370500 Sacramento River at Keswick	6468	1938	1944-2003	60 years
	11372000 Clear Creek near Igo	225	1940		
	11374000 Cow Creek near Millville	425	1949		
	11376000 Cottonwood Creek nr Cottonwood	927	1940		
	11376550 Battle Creek below Coleman FH	357	1961		
	11377100 Sacramento River abv Bend Bridge	8900	1879	1944-2003	60 years

Regulation by Shasta Lake started in January 1944

Area between Keswick and Bend Bridge is 2432 sq mi of which 1934 sq mi is gaged

Magnitude and Frequency of Floods in California
Waananen, A.O. and J.R. Crippen
U.S. Geological Survey Water-Resources Investigations 77-21 1977
Area Factor = .77 for Sierra Nevada Region

Area at Balls Ferry Bridge = 7460
Flow at Balls Ferry Bridge = Keswick+ .42*(Bend Bridge minus Keswick)

Recurrence	Keswick	Bend Bridge	**Shasta Ranch**		
2-year	35000	78000	**53060**		
5-year	58000	115000	**81940**	January 1956	January 1997
10-year	76000	135000	**100780**	February 1986	April 1974
25-year	79000	155000	**110920**	March 1983	
50-year	80000	180000	**122000**	December 1964 and January 1970	
100-year	80000	200000	**130400**	Not observed yet	

Flow-Duration Data

The frequency of inundation of the project site was also determined as a function of recurrence interval and days of flow per year and days of flows exceeding indicated values. Table 4 summarizing this data.

Table 4. Sacramento River at Shasta Ranch
Flow Duration Statistics

Days of Flow for Indicated Range (thousands of cfs)

Recurrence	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110
5-Year	10	6	4	2	1	1	0	0	
10-Year	30	19	11	7	4	3	2	1	
25-Year	56	35	22	14	8	5	3	2	
50-Year	80	50	31	19	12	8	5	3	
100-Year	105	65	40	24	15	10	6	4	

Days of Flow Exceeding Indicated Value (in cfs)

Recurrence	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000	100,0(
5-Year	24	14	8	4	2	1	0	0	
10-Year	77	46	28	17	10	6	3	1	
25-Year	146	90	55	33	19	11	6	3	

50-Year	210	130	80	49	30	18	10	5
100-Year	273	168	102	63	39	24	14	8

Fish Exclusion Dikes and Spur Diversion Dike

Figure 2 shows the proposed extraction areas, fish exclusion dikes, and south boundary spur dike.

The flood studies addressed several other concerns. Fish exclusion dikes surrounding the excavation areas were proposed by the review agencies to limit fish capture in flood events. It was eventually decided to use the 10-year water surface elevation for design of fish exclusion dikes.

A spur dike at the south boundary of the project was proposed to prevent excavation induced re-direction of overbank flood runoff from the Sacramento River continuing to the south. This dike was designed for 100-year water surface elevations and velocities.

All of the dikes were tested as encroachments in the HECRAS model to assess possible increases in 100-year water surface elevations upstream. The maximum increase in water surface elevation was 0.1 ft, which was limited to the project property and some steep undevelopable land east of the Sacramento River.

Figure 2
Sheste Ranch
Fish Exclusion and
Flood Protection Dikes

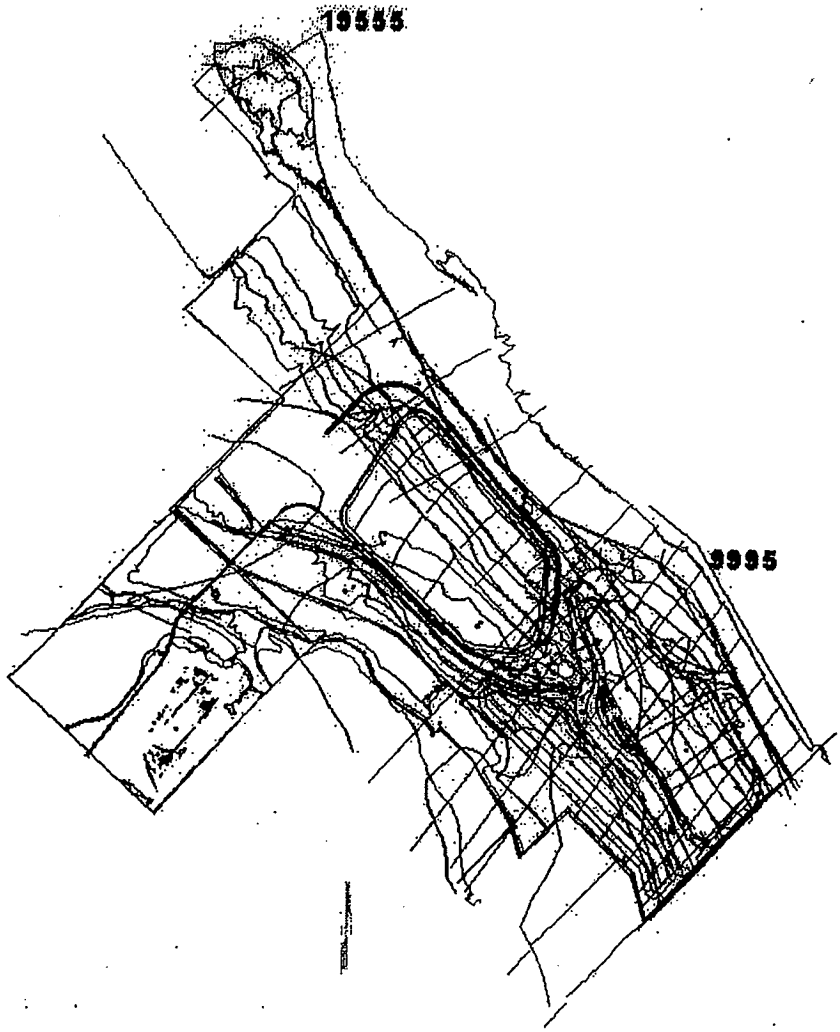


Table 5. Sacramento River at Shasta Ranch – Dike Design Parameters

Recurrence Intervals 100-, 50-, 25-, 10-, 5-, and 2-years
1st row is the existing conditions, 2nd row is the encroached conditions for the fish exclusion dike

Line #	River Sta	Q Total 100-yr	W.S. Elev (ft)	Vel Chnl (ft/s)	Top Width (ft)	Q Total 50-yr	W.S. Elev (ft)	Vel Chnl (ft/s)	Top Width (ft)	Q To 25-
Line 24	22000	130400	392.5	6.6	2089	122000	391.8	6.4	1946	1 10
	22000	130400	392.6	6.6	2100	122000	391.9	6.4	1954	1 10
Line 23	19555	130400	391.3	8.0	1669	122000	390.6	7.7	1570	1 10
	19555	130400	391.3	8.0	1678	122000	390.7	7.7	1582	1 10
Line 22	17715	130400	390.0	8.2	2510	122000	389.3	8.0	2218	1 10
	17715	130400	390.1	8.1	2548	122000	389.4	7.9	2246	1 10
Line 21	16540	130400	388.7	9.6	2473	122000	388.1	9.4	2286	1 10
	16540	130400	388.8	9.5	2515	122000	388.2	9.4	2320	1 10
Line 20	15610	130400	388.2	8.6	2494	122000	387.5	8.5	2338	1 10
	15610	130400	388.3	8.5	2530	122000	387.6	8.4	2364	1 10
Line 19	14625	130400	387.6	7.9	2181	122000	386.9	7.8	2039	1 10
	14625	130400	387.7	8.1	1300	122000	387.0	7.9	1300	1 10
Line 18	13425	130400	386.6	7.7	1857	122000	385.9	7.5	1728	1 10
	13425	130400	386.6	7.9	954	122000	385.9	7.7	949	1 10
Line 17	12290	130400	385.9	7.3	2049	122000	385.2	7.2	1960	1 10
	12290	130400	385.8	7.6	1076	122000	385.2	7.3	1075	1 10
Line 16	11320	130400	385.5	6.5	3652	122000	384.7	6.4	3223	1 10
	11320	130400	385.4	6.7	1370	122000	384.7	6.5	1369	1 10
Line 15	10810	130400	385.1	6.8	3468	122000	384.4	6.7	2977	1 10
	10810	130400	385.1	6.8	1987	122000	384.4	6.7	1986	1 10
Line 14	10410	130400	384.3	9.7	2793	122000	383.6	9.6	2569	1 10
	10410	130400	384.3	9.7	2644	122000	383.6	9.6	2551	1 10
Line 13	9995	130400	384.2	7.8	2819	122000	383.5	7.7	2286	1 10
	9995	130400	384.2	7.8	2819	122000	383.5	7.7	2286	1 10
Line 12	9465	130400	383.6	8.6	2072	122000	382.9	8.4	1850	1 10
	9465	130400	383.6	8.6	2072	122000	382.9	8.4	1850	1 10

Line 11	8975	130400	383.2	8.6	2355	122000	382.5	8.4	2090	110
	8975	130400	383.2	8.6	2355	122000	382.5	8.4	2090	110
Line 10	8375	130400	382.4	9.8	2104	122000	381.7	9.7	1936	110
	8375	130400	382.4	9.8	2104	122000	381.7	9.7	1936	110
Line 9	7960	130400	381.9	10.1	2281	122000	381.2	10.0	2137	110
	7960	130400	381.9	10.1	2281	122000	381.2	10.0	2137	110
Line 8	7440	130400	381.4	10.3	2102	122000	380.7	10.1	1886	110
	7440	130400	381.4	10.3	2102	122000	380.7	10.1	1886	110
Line 7	7120	130400	381.2	9.2	1309	122000	380.6	8.9	1121	110
South Boundary	7120	130400	381.2	9.2	1309	122000	380.6	8.9	1121	110

Consumptive Water Use at Shasta Ranch

Land use in the project changes from irrigated alfalfa and fallow ground to water surfaces and wetlands. Estimates were made on potential changes in net consumption.
Pan evaporation records at Shasta Dam show 1736 mm/yr or 6.8 ft of evaporation. Using a pan factor of 0.75 (note: due to wind turbulence, boundary layer effects, and warmer water temperatures, evaporation pans always have higher annual evaporation than lake surfaces), lake water surfaces would evaporate 5.1 ft/yr. (California Department of Water Resources, Bulletin 73-79, Evaporation from Water Surfaces in California, 1979, p.35.)

California Department of Water Resources Bulletin 113-2, Vegetative Water Use, 1967, Table 6, p.34, shows typical irrigated fields in Davis, California and the Central Valley having evapotranspiration of 4.2 ft. Vacant land would exhibit November-May evapotranspiration similar to pasture; then with exhaustion of soil moisture, near zero values from June through October (est. 1.7 ft annual)

These values are gross evapotranspiration; correction for reduced evaporation in rain periods would be the same for water and alfalfa. Actually, evapotranspiration from irrigated alfalfa fields and large water surfaces is very similar, the principal differences occur when alfalfa evapotranspiration is reduced after mowing.

Phase 1.
Southwest Excavation
Present Irrigated Area: 70 ac: 294 ac-ft
Future Water Surface: 40 ac: 204 ac-ft
Future Vacant Land: 30 ac: 51 ac-ft
Net gain: 39 ac-ft

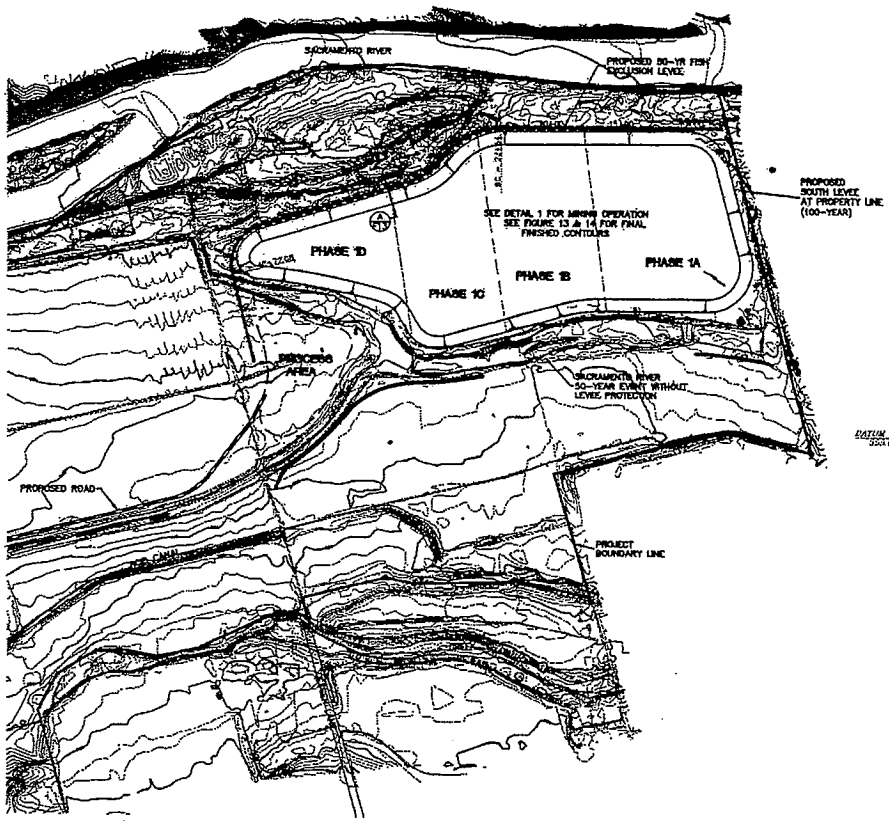
Southeast Excavation
Vacant land: 72 ac: 122 ac-ft
Future Water Surface (wetlands): 50 ac: 255 ac-ft
Future Vacant land 12 ac: 20 ac-ft
Net loss: 113 ac-ft

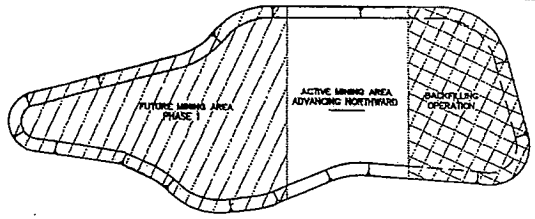
Phase 2.
Northeast Excavation
Present Irrigated Area 180 ac: 756 ac-ft
Future Water Surface 120 ac: 612 ac-ft
Future Vacant Land: 60 ac: 102 ac-ft
Net Gain: 42 ac-ft

Overall the project would increase net consumptive use by 32 ac-ft, due to the new wetlands created at the end of excavation in the southeast area..

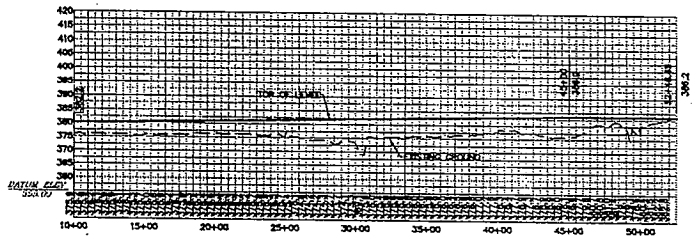
Attachment 2

AMENDED LEVEE FIGURES

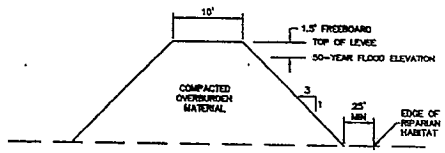




DETAIL 1
NTS



TEMPORARY 50-YEAR LEVEE PROFILE
NTS



TEMPORARY 50-YEAR LEVEE DETAIL
NTS

EIP ASSOCIATES

Source: Sharrah Dunlap Sawyer, Inc. and EIP Associates.

400 0 200 400
1 INCH = 400 FEET

FIGURE 12
PHASED OPERATIONS PLAN
PHASE 1

Shasta Ranch Restoration
Shasta County, CA

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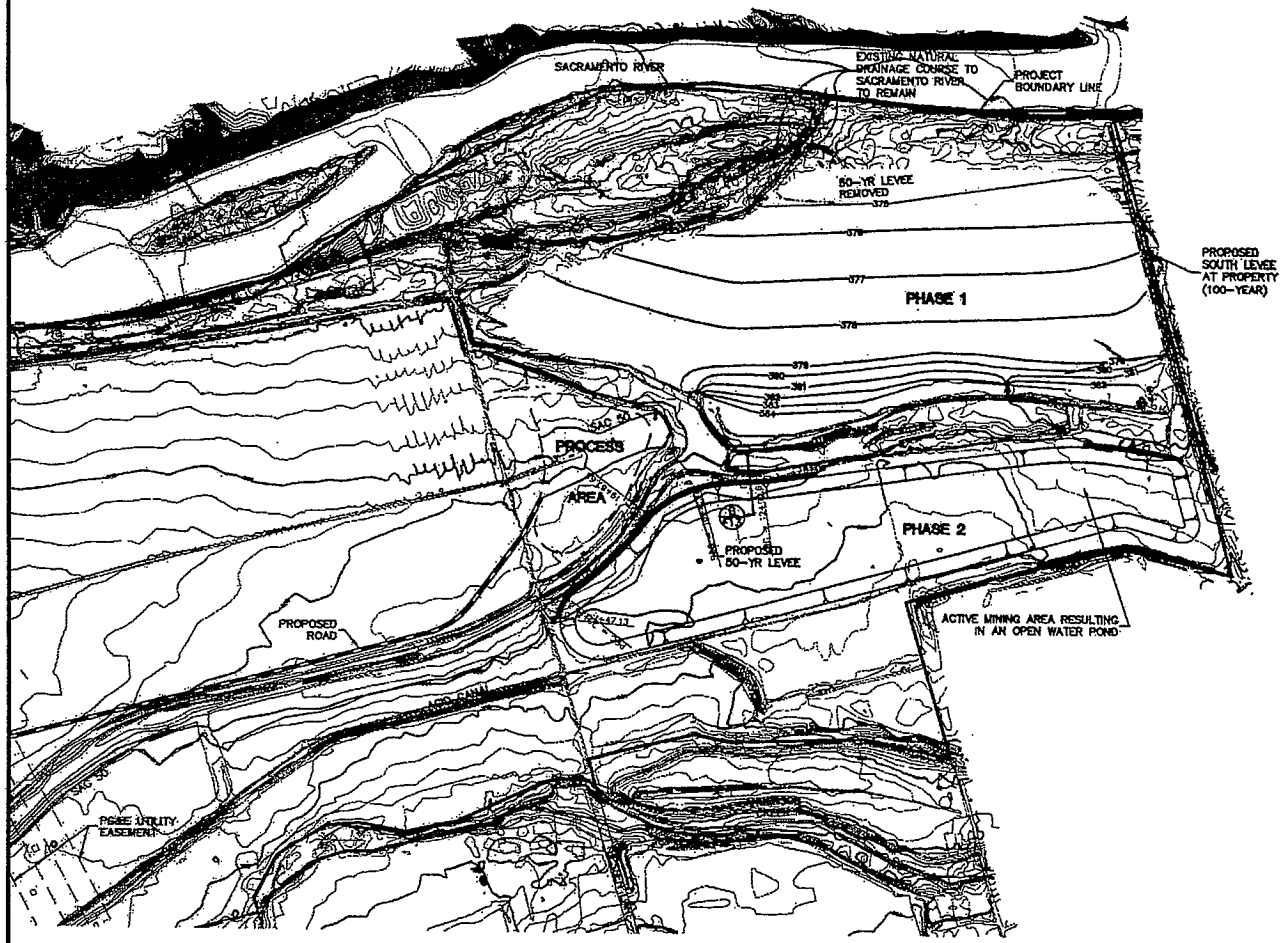
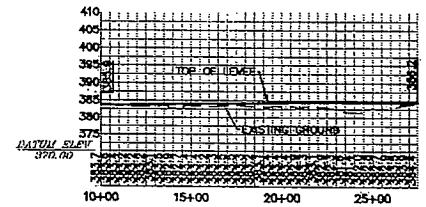
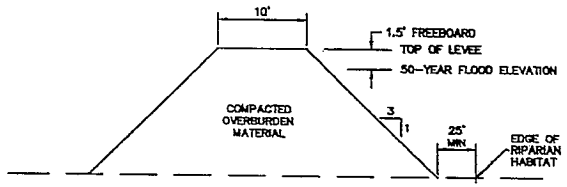




PHASE 2 50-YEAR LEVEE PROFILE



50-YEAR LEVEE DETAIL (B)
NTS

EIP ASSOCIATES

Source: Sharesh Dunlap Sawyer, Inc. and EIP Associates.

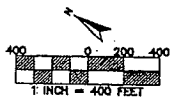
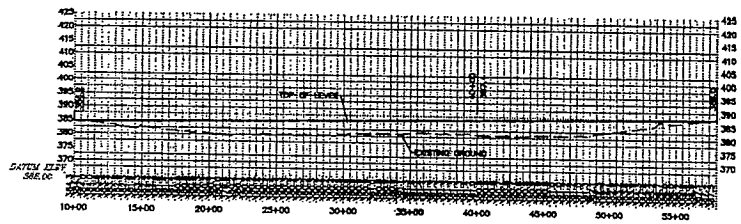
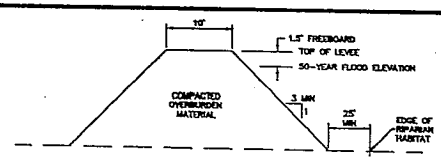


FIGURE 13
PHASED OPERATIONS PLAN
PHASE 2

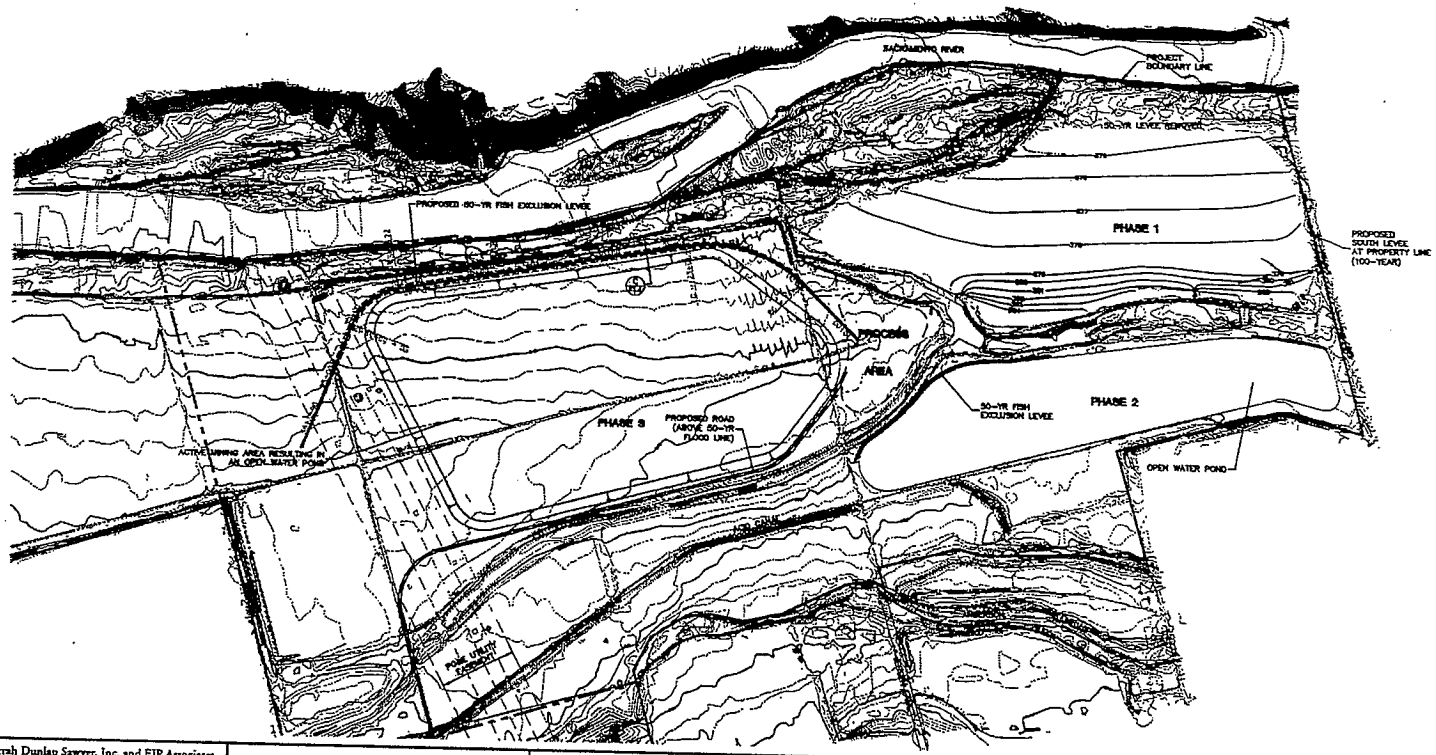
Shasta Ranch Restoration
Shasta County, CA



PHASE 3 50-YEAR LEVEE PROFILE



50-YEAR LEVEE DETAIL
NTS



EIP ASSOCIATES

Source: Sharrah Dunlap Sawyer, Inc. and EIP Associates.

400 0 200 400
1 INCH = 400 FEET

FIGURE 14
PHASED OPERATIONS PLAN
PHASE 3

Shasta Ranch Restoration
Shasta County, CA

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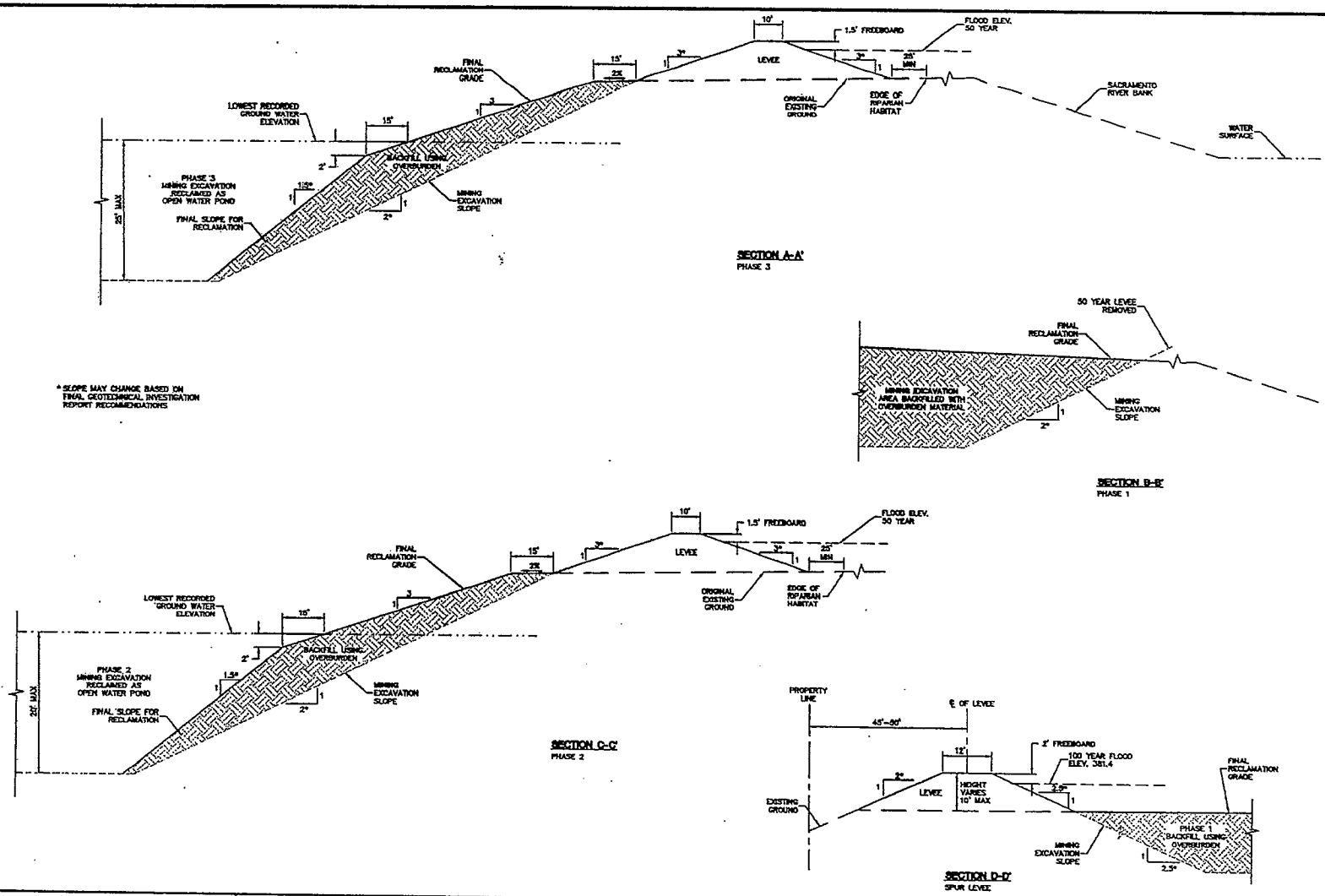


EIP ASSOCIATES

Source: Sharrah Dunlap Sawyer, Inc. and EIP Associates.

NOT TO SCALE

FIGURE 15
FINAL RECLAMATION CROSS SECTIONS

Shasta Ranch Restoration
Shasta County, CA

EIP ASSOCIATES

Source: Sharrah Dunlap Sawyer, Inc. and EIP Associates.

1 INCH = 400 FEET

FIGURE 16
FINAL RECLAMATION SITE TOPOGRAPHY

Shasta Ranch Restoration
Shasta County, CA

Attachment 3

(Reproduced in Final EIR as Appendix 4.9-7) **SWPPP**

Attachment 4
RWQCB LETTERS

California Regional Water Quality Control Board
Central Valley Region

Linda S. Adams
Secretary for
Environmental Protection

Redding Office
415 Knollcrest Drive, Suite 100, Redding, California 96002
(530) 224-4845 • Fax (530) 224-4857
http://www.waterboards.ca.gov/centralvalley

Arnold Schwarzenegger
Governor

RECEIVED
DEC 0 6 2006

5 December 2006

Mr. Lyle Tullis
Shasta Ranch Aggregate
P.O. Box 493416
Redding, CA 96049-3416

SHASTA RANCH – ADDITIONAL WATER MONITORING SUMMARY REPORT, ANDERSON, SHASTA COUNTY

The Shasta Ranch Project proposes to excavate and process aggregate on an approximately 660-acre site east of the City of Anderson. Beginning in 1976, a portion of the wastewater from the former Shasta Paper Mill was diverted and used for irrigation on the Shasta Ranch property. Shasta Paper Mill routed approximately 11 million gallons per day of treated effluent and domestic wastewater to the Sacramento River and the Shasta Ranch property by 2000. Discharge to the Sacramento River ceased in 2001. Effluent from the Shasta Paper Mill continued to be used for irrigation of the Shasta Ranch property through 2002.

An investigation into the presence of dioxin and furan compounds remaining at the site in soil and groundwater was conducted by the property owner. The Central Valley Regional Water Quality Control Board (Central Valley Water Board) has received the *Additional Water Monitoring Summary Report* (Report) dated 29 August 2006 prepared by Geomatrix. Based on our review of the Report, a meeting with Wendy Johnston of Vestra Resources, Inc., and consideration of other information for this site, we have the following comments:

Applicable Water Quality Criteria

The USEPA National Recommended Ambient Water Quality Criteria for Human Health and Welfare Protection (NRA) based on a one-in-a-million cancer risk estimate for sources of drinking water and consumption of organisms for dioxins/furans reported as 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) is 0.005 picograms per liter (pg/L). The California Toxics Rule (CTR) criteria for human health based on consumption of water and aquatic organisms is 0.013 pg/L. The Cal/EPA Cancer Potency Factor as a drinking water level based on one-in-a-million incremental cancer risk estimate is 0.270 pg/L. The California Department of Health Services (DHS) primary maximum contaminant level (MCL) is 30 pg/L. These water quality criteria are summarized in Table 1, below.

Table 1. Water Quality Criteria for 2,3,7,8-TCDD

Criteria	pg/L
USEPA National Recommended Ambient Water Quality Criteria (NRA) Human Health and Welfare Protection (One-in-a-Million Cancer Risk Estimate) Sources of Drinking Water (water and organisms)	0.005
California Toxics Rule Criteria (CTR) Human Health (30-day average) Drinking Water Sources (consumption of water and aquatic organisms)	0.013
Cal/EPA Cancer Potency Factor as a Drinking Water Level One-in-a-Million Incremental Cancer Risk Estimates for Drinking Water	0.270
California Department of Health Services (DHS) Drinking Water Standards Maximum Contaminant Level (MCL) Primary MCL	30

Data Re-evaluation

Central Valley Water Board staff concurs with the use of U.S. EPA CDD/CDF Validation SOP to qualify sample results[1]. Further, Central Valley Water Board staff concurs with re-evaluating previous sample data based on the SOP.

Results From Additional Investigation Of Phase 1 And Phase 2 Areas

The historical groundwater monitoring data for monitoring wells 2, 42, 45, 47, 57, 62, 63a, 64, 65, 66, and 67 located within and around the Phase 1 and Phase 2 areas of the Shasta Ranch property have been below all four water quality criteria for 2,3,7,8-TCDD since March 2005 with the exception of detections in monitoring wells 47, 57, and 62 as described below.

On 15 September 2005, 2,3,7,8-TCDD was detected at 0.015 pg/L (above the NRA and CTR criteria) in monitoring well 47. All previous monitoring data for monitoring well 47 was below all four water quality criteria.

On 15 September 2005, 2,3,7,8-TCDD was detected at 0.0239 pg/L (above the NRA and CTR criteria) in monitoring well 57. All previous monitoring data for monitoring well 57 was below all four water quality criteria.

On 7 September 2005, 2,3,7,8-TCDD was detected at 0.595 pg/L (above the NRA, CTR, and Cal/EPA criteria) in monitoring well 62. In two previous and one subsequent sampling event, 2,3,7,8-TCDD was below all four water quality criteria. On 11 May 2006, 2,3,7,8-TCDD was detected at 0.0001 pg/L, below all four water quality criteria, in a sample collected from monitoring well 62.

[1] United States Environmental Protection Agency (U.S. EPA) Region IV, 2002, Data Validation Standard operating Procedures for Chlorinated Dioxins/Furans Analysis by High Resolution Gas Chromatography/High Resolution Mass Spectrometry (CDD/CDF Data Validation SOP, Revision 3, May 2002)

Results From Additional Investigation Of Phase 3 Area

Historical groundwater monitoring data for monitoring wells located on the northern half of the Shasta Ranch property, within and around the Phase 3 area have all been below detection limits for 2,3,7,8-TCDD, with the exception of one sample from monitoring well 22 collected on June 1, 2005. On 1 June 2005, 2,3,7,8-TCDD was detected at 0.116 pg/L in monitoring well 22. 2,3,7,8-TCDD has been reported below all four water quality criteria in three subsequent sampling events.

Results From Additional Surface Water Sampling

Surface water samples were collected on 11 May 2006 from the Sacramento River at R-1 and R-2. 2,3,7,8-TCDD TEQ was not detected in the sample collected from R-1. However, 2,3,7,8-TCDD TEQ was detected in the R-2 sample at a concentration of 0.0092 pg/L, above the NRA criteria, but below the CTR, Cal/EPA, and DHS MCL criteria.

Monitoring Well Removal

Central Valley Water Board staff concurs that the monitoring wells located on the southern half of the Shasta Ranch property, within and surrounding the Phase 1 and Phase 2 areas, may be abandoned. Staff also concurs with the request to abandon monitoring wells located on the northern half of the Shasta Ranch property, within and around the Phase 3 area, with the exception of monitoring wells GMX-1, 8A7, 22, 25, and 32a. These excepted wells should be retained for possible future monitoring. Monitoring wells to be removed should be abandoned in accordance with the California Department of Water Resources California Well Standards (Bulletin 74-90). You must contact the Shasta County Environmental Health Division to obtain a monitoring well decommissioning permit.

Summary

Based on our review of the information available for the Shasta Ranch property, no further action to evaluate the presence of dioxin and furan compounds in soil and groundwater at the site is required at this time. However, if the proposed aggregate mining operation proceeds, then Central Valley Water Board staff plan to require additional surface water sampling for dioxins/furans during mining operations, when groundwater is encountered in each pond.

If you have any questions regarding the above information, please contact Mr. Daniel Warner at (530) 224-4848, or at the letterhead address above.

JAMES C. PEDRI, P.E.
Assistant Executive Officer

DLW/BJS:sae

cc: Ann Holbrow, Geomatrix, Oakland
Wendy Johnston, Vestra Resources, Inc., Redding
Mr. Bill Walker, Shasta County Department of Resource Management, Redding

U:\Clerical Documents\Correspondence_Final\North Regulatory Unit\WarnerD\2006\Fourth Quarter\December\ShastaRanch_NFA letter.doc

California Regional Water Quality Control Board
Central Valley Region

Linda S. Adams
Secretary for
Environmental Protection

Redding Office
415 Knollcrest Drive, Suite 100, Redding, California 96002
(530) 224-4845 • Fax (530) 224-4857
http://www.waterboards.ca.gov/centralvalley

Arnold Schwarzenegger
Governor

13 June 2006

Mr. Lyle Tullis
Shasta Ranch Aggregate
P.O. Box 493416
Redding, CA 96049-3416

SHASTA RANCH AGGREGATE – COMPLETE REPORT OF WASTE DISCHARGE, ANDERSON, SHASTA COUNTY

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) has received your application fee/first annual fee for waste discharge requirements (WDRs) in the amount of $4676.10 on 5 June 2006 for the Shasta Ranch Aggregate Project. At this time we consider your application complete. Please note that the discharge of wastewater to the surface shall not occur until WDRs are adopted, and statutorily the Central Valley Water Board has 140 days to issue WDRs once a report of waste discharge, deemed complete by the Central Valley Water Board, is received.

CEQA
Please note that Waste Discharge Requirements cannot be adopted until environmental review under the California Environmental Quality Act (CEQA) is complete. Please copy us on all relevant correspondence regarding the CEQA process for Shasta Ranch Aggregate.

Industrial Storm Water Permit
Quarry operations are normally required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Industrial Activities (Industrial Storm Water Permit). In order to ensure strict compliance with all regulations you will need to submit a Notice of Intent to obtain coverage under the Industrial Storm Water Permit. The Industrial Storm Water General Permit Order 97-03-DWQ (General Industrial Permit) is an NPDES permit that regulates discharges associated with 10 broad categories of industrial activities. The General Industrial Permit requires the implementation of management measures that will achieve the performance standard of best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT). The General Industrial Permit also requires the development of a Storm Water Pollution Prevention Plan (SWPPP) and a monitoring plan. The Industrial Storm Water Permit can be obtained from the Regional Water

Quality Control Board office or website:
www.waterboards.ca.gov/stormwtr/industrial.html. For more information on the Industrial Storm Water Permit, please contact Andrew Jensen at (530) 224-4783.

Aboveground Storage Tanks
The project proponent must comply with the Aboveground Petroleum Storage Act should he/she manage single tanks that store greater than 660 gallons of petroleum or several tanks with a cumulative storage capacity of greater than 1,320 gallons of petroleum. The Aboveground Petroleum Storage Act requires owners or operators of aboveground storage tanks to file a storage statement and pay a fee. In addition, a Spill Prevention Control and Countermeasures Plan, certified by a registered engineer, must be prepared and implemented. While this is not a requirement to obtain Waste Discharge Requirements, the Spill Prevention and Countermeasures Plan must be completed and the fee paid prior to the start of operations.

If you have any questions regarding the above comments, please contact the undersigned staff person at (530) 224-4848 or at the letterhead address above.

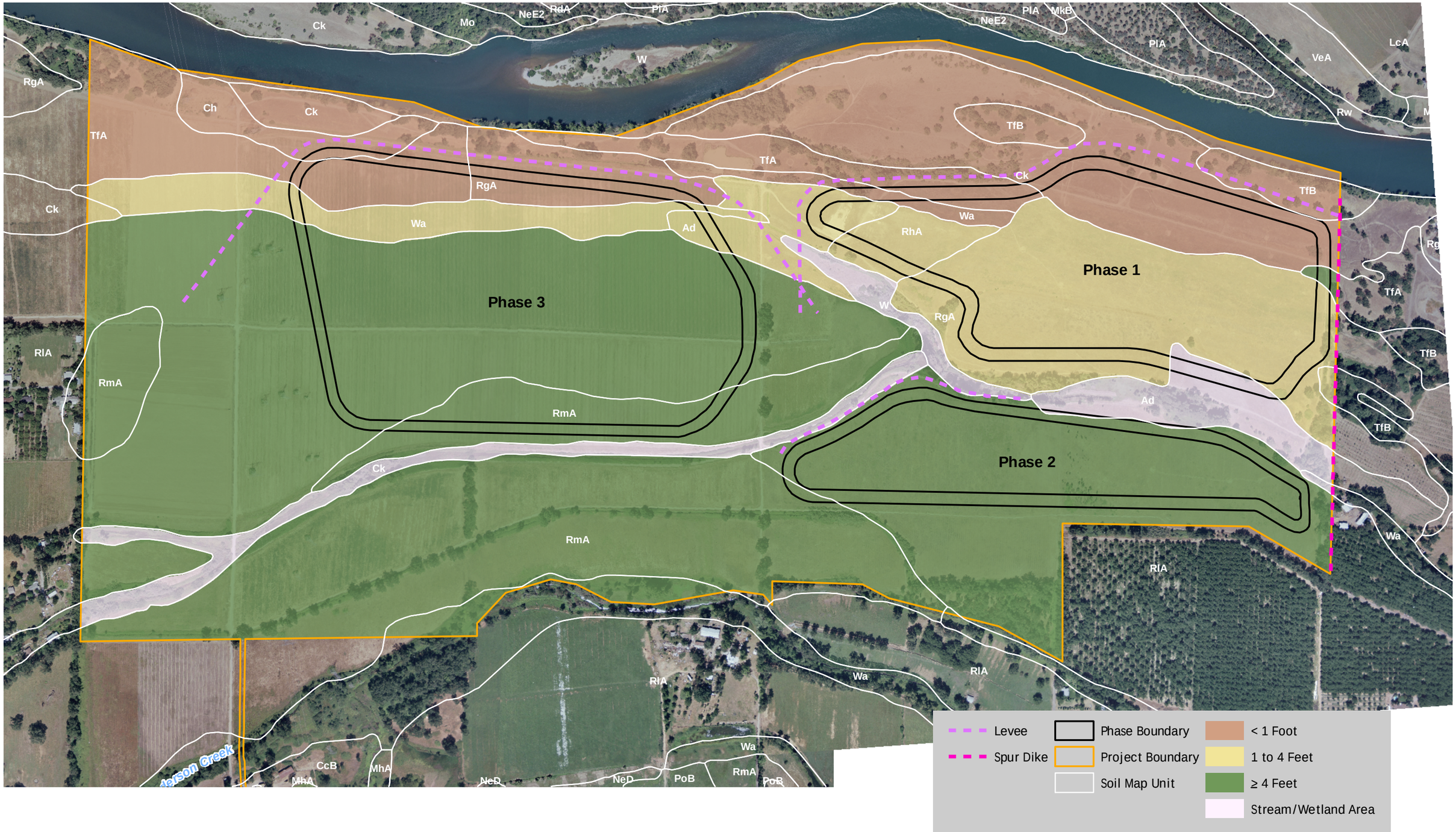
Daniel L. Warner
Water Resource Control Engineer
North Regulatory Unit

DLW: reb

DLW:/SR-03 Complete Report of Waste Discharge

cc: Wendy Johnston, Vestra Resources, Inc., Redding

Attachment 5
FIGURE 20A



VESTRA

SOURCE: USGS 2006

Note: Top soil storage will be determined in the field during operations if necessary

FIGURE 20A
ESTIMATED SOIL DEPTHS
SHASTA RANCH AGGREGATE
ANDERSON, CALIFORNIA

P:\GIS\70542\RevisedReclamationBoardPermit\Figure20A_SoilDepth.mxd

Attachment 3

Letter from Vestra Resources to Department of Fish and Game

December 14, 2006

70542

Bruce Webb
California Department of Fish and Game
Northern California-North Coast Region
601 Locust Street
Redding, CA 96001

Hand Delivered & Via U.S. Mail

Re: Shasta Ranch Aggregates Project
Mining and Reclamation Plan Amendments

Dear Mr. Webb:

Shasta Ranch Aggregates is in receipt of a letter from the California Department of Fish and Game (DFG) dated 26 September 2006. The Shasta County Planning Division, which is the lead agency for the proposed project, provided the letter to Shasta Ranch Aggregates in order to amend proposed mining and reclamation activities to address DFG concerns.

The Shasta Ranch Aggregates project required a Special Use Permit from Shasta County. The County determined that an Environmental Impact Report (EIR) was required for the project. Comments on the Draft EIR (DEIR) were received from numerous agencies. In order to incorporate comments from responsible agencies, the Shasta Ranch Aggregates Mining and Reclamation Plan has been amended. The amendments to the plan to address DFG concerns are discussed herein.

The purpose of this correspondence is to present project modifications to address the primary issues of:

1) Possible entrapment of salmonids during flood events and need for incidental take permit
2) Fish exclusion levees and mine area setbacks from wetlands and other biological resources

All DFG comments in the 26 September 2006 letter will be addressed in the Final EIR being completed for the site by Pacific Municipal Consultants (PMC). Comments not included in this letter are being addressed directly by Shasta County and PMC under the CEQA process.

DFG Comment 1: ***DFG provided comments on this project in its letters dated May 26 and November 29, 2005 (copies enclosed). Our review indicates the DEIR has satisfactorily addressed some of the issues identified in those letters. However, in those letters we expressed concern that the project could***

result in "capture" of flood waters from the Sacramento River, resulting in significant impacts to special-status fish, including State and federally-listed winter-run and spring-run Chinook salmon (*Oncorhynchus tshawtscha*), and federally-listed steelhead (*Oncorhynchus nyskiss*). Bank erosion and flood channel instability during flood events could result in capture and redirection of the river into the gravel pit(s), trapping, stranding, or entombing juvenile fish and releasing accumulated pond sediments and eroded bank or levee materials into the river. This type of event has occurred at gravel operations adjacent to the river. Project plans call for construction of levees to prevent flood waters from entering the gravel pits. The Phase 1 levee is proposed to be designed to withstand a 25-year flood and the Phase 2 and Phase 3 levees designed to contain a 50-year flood. DFG strongly suggests these design goals are inadequate, and the levees should be capable of withstanding a 100-year storm event to prevent impacts to the river and to the State and federally-listed salmon and steelhead.

Prior to regulation by Shasta Dam in 1944, winter and spring flows in the upper Sacramento were largely uncontrolled. Flow regulation by the dam has significantly reduced the likelihood of large, damaging flood events, and a 100-year storm event is not anticipated. However, in order to reduce the potential "capture" of flood waters within the Shasta Ranch Aggregates project area, fish exclusion levees were redesigned. The original levees were designed to meet the 25-year and 50-year flood elevation without freeboard. The difference in the 50-year flood event and 100-year flood event water surface elevation is 0.7 feet, or approximately 8 inches (see Hydmet report). All of the fish exclusion levees, (including the temporary levee in the Phase 1 area previously designed for the 25-year flood event) have been redesigned to address a 50-year storm event with 1.5 feet (18 inches) of freeboard. This equates to protection from the 100-year flood event with approximately 8 inches of freeboard. The Spur Dike was originally designed for the 100-year flood event with 2 feet of freeboard.

The hydrologic report prepared by Hydmet for Shasta Ranch Aggregates is included as Attachment 1. The report shows that a 50-year flood is calculated at 122,000 cubic feet per second (cfs), while a 100-year event is calculated at 130,400 cfs. The hydrologic evaluation contained modeling specific to the site, indicating no damage will occur under high-flow conditions and that the amended levee designs are adequate. This conclusion was confirmed by a third party analysis during CEQA review.

The amended figures for the fish exclusion levees are included as Attachment 2.

<u>DFG Comment 2:</u> Mitigation measure 4.5-6(a) provides that in the event a flood exceeds a levee design capacity, a qualified fish biologist would conduct site surveys to quantify anadromous fish stranding and would salvage and return fish to the river. DFG does not believe this measure would be practical nor would it be effective in reducing to below a level of significance, as required by CEQA, the impact of salmon and steelhead mortality from a levee breach. It would be extremely difficult to quantify stranded fish or capture and relocate fish during a major storm event that breaches a levee, due to turbidity, access and safety constraints. Additionally, fish mortality from stranding or other consequences of a levee breach would constitute "take" as defined by the California Endangered Species Act

(CESA). Mortality to State listed Chinook salmon represents a significant impact that is not mitigated to below significance merely by the capture and relocation of some of the stranded individuals that may survive. Also, capture and relocation of stranded juvenile salmon would require an incidental take permit pursuant to Section 2081 of CESA.

See response to Comment 1 above. The redesign of the levees to meet 100-year and 50-year flood events should eliminate any potential "capture" of flood waters from the Sacramento River, and will protect against incidental take of State and federally-listed anadromous salmon species. Therefore, the need for an incidental take permit is no longer necessary. Likewise, any need for a qualified fish biologist to conduct site surveys and physical mitigation is no longer necessary.

***DFG Comment 3:* DFG believes a breach of a levee designed for 25-year or 50-year flood events may results in significant impact to State listed winter-run and spring-run Chinook salmon and in the event of a breach, the proposed mitigations would not be adequate. DFG recommends the project include the feasible alternative of designing the levees to withstand a 100-year flood event.**

See response to Comment 1 above. The levees have been redesigned to accommodate a 50-year flood event with 1.5 feet of freeboard, and a 100-year event with 0.7 feet of freeboard. The amended figures addressing the levee redesigns are included as Attachment 2. The exterior footprint of the levees will not change and any additional footing requirements will be accommodated by movement into the proposed mining area. This will ensure the setbacks discussed below are maintained.

***DFG Comment 7:* in our May 26, 2005 letter, DFG expressed concern that the 100-foot no disturbance buffer zone from fresh emergent wetlands must apply to all wetlands on the project site as well as extend from the drip-line of riparian zones. We further explained that adequate buffer distances to protect wetlands from both direct and indirect project impacts should be clearly stated. Although the DEIR acknowledges at Impact 4.5-4 that indirect impacts to wetlands are potentially significant, the DEIR contains no discussion of buffer zones necessary to project site wetlands from indirect project impacts. Furthermore, buffer zones must be vegetated to provide effective filtering function. DFG recommends that a 100-foot minimum no disturbance buffer be established between project operations and all wetlands to prevent indirect impacts. If the buffer is reduced to less than 100 feet, but no more than 50 feet, additional vegetation planted within the buffer could enhance its function.**

The location of the levees and project boundaries has been adjusted to accommodate a buffer around emergent wetlands and Elderberry plants. Emergent wetlands and Elderberry locations will be staked in the field prior to construction and development activities so that a well-defined buffer is left around these plants. These buffer areas will remain vegetated and provide adequate filtering of potential sediments. The location of the adjusted levees and project boundaries, in relation to special-status species identified within the project area, has been added to the Reclamation Plan as Figure 14 A and is included with this letter (showing setback distances) as Attachment 3.

All special-status species and emergent wetlands are a minimum of 50 feet from project-related construction activities, and most are a minimum of 100 feet from any project-related activity. The distance from special-status species to levees or project boundaries is shown on Figure A-1. The 100-foot buffer is provided for 85 percent of the wetland buffer areas. Of the 23 Elderberry plants observed within the project boundaries, 22 will be at least 100 feet from project related construction. The sole remaining plant is approximately 65 feet from the Spur Dike. Standard practice for USFWS notification and protection will be followed relating to this individual.

Levees will be constructed from overburden material found within the project area. The levees and pit areas are subject to a reseeding and revegetation plan, as detailed in the Reclamation Plan. Buffer zones will surround the levees, placing a minimum of 50 feet between all construction-related activities, emergent wetlands and the Sacramento River. These buffer zones will remain vegetated, and will adequately filter sediment and other potential contaminants. Consequently, as storm water and eroded materials within the levees will be directed towards the center of the construction area and contained by the levees, and any potential erosion on the outer margins of the levees will be mitigated by the reseeding and revegetation plan and the 50-foot minimum buffer vegetation zones, there will be a less than significant impact to spawning gravels and aquatic vertebrates.

<u>DFG comment 8:</u> DFG also expressed in its May 26, 2005 letter concern that following the reclamation of the Phase 2 and Phase 3 extraction pits, ponds would be created that may be too deep to encourage sufficient vegetation around the edges to provide viable replacement wildlife habitat. DFG requested that the Phase 2 and Phase 3 sites be reclaimed in such a way as to optimally provide habitat for riparian and wetland-dependent species. The DEIR does not address the design of reclaimed ponds to adequately provide for vegetated pond edge habitats that represent effective replacement mitigation. The DEIR must specifically call for a pond edge design and vegetation plan that would encourage effective replacement of vegetated habitat.

Following input by CDFG and other responsible agencies, the design of the proposed ponds in the Phase 2 and Phase 3 areas has been modified. The slope of the pond banks will be between 3:1 and 4:1 to allow for greater vegetation growth and habitat development. Page 4.5-43 of the DEIR states that "Phase 2 and Phase 3 areas will be specifically reclaimed so as to provide habitat to riparian and wetland species (details are provided in Section 5.4 of the Shasta Ranch Aggregate Reclamation Plan). The Reclamation Plan also provides for monitoring of the restoration areas to ensure successful revegetation."

<u>DFG Comment 9:</u> in the same May 26, 2005 letter we pointed out that the Department of Water Resources should be consulted regarding the design of the levees. The State Reclamation Board, administered by the Department of Water Resources, has primary authority over activities that may affect the flood capacity of the river and the levees and banks that contain it. The Reclamation Board is not mentioned in the DEIR as a regulatory agency with authority over aspects of the project, nor is there any information in the

document to indicate that any consultation with that agency has occurred. DFG recommends the project proponent consult with the Reclamation Board regarding these concerns.

Two separate applications have been filed with the Reclamation Board. One for mining operations within the Reclamation Board jurisdictional area and one for construction of the fish exclusion levees and Spur Dike within the Reclamation Board jurisdictional area. The Reclamation Board had responded that it can take no action until completion of CEQA.

DFG Comment 10: The DEIR states in Chapter 4.9 Hydrology and Water Quality on Page 4.9-10: "It was eventually decided that all fish exclusion levees would be constructed to the elevation of the 10-year flood." This statement is not consistent with the Project Description nor with the discussion contained in Chapter 4.5 Biological Resources. DFG recommends that these inconsistencies be addressed.

Comment noted. All fish exclusion levees will be constructed as specified above and included as an amendment to the reclamation plan. Initial discussions regarding fish exclusion levees with NMFS had evaluated 10-, 25- and 50- year requirements. We apologize for the confusion.

DFG Comment 11: ***Finally, DFG stated in its May 26, 2005 letter that portions of the area proposed for mining may in fact be State lands because the river channel occupied the project site at the time the river channel was deeded by the Federal government to the State of California. The river has subsequently shifted from its 1850 location. We continue to believe that the project proponent must contact and present evidence from the State Lands Commission that the boundary of the land owned by the State does not encompass or overlap the project site. This issue has not been adequately addressed by the DEIR.***

Comment noted. The project proponent will undertake review of this issue. State Lands Commission did not comment on the project during the CEQA process. A letter of legal opinion on the issue is included as Attachment 4 as reference.

Shasta Ranch aggregates hope that the modifications presented herein and to be included in the amended Mining and Reclamation Plan for the site have responded to comments and concerns of the Department. Please call me as soon as possible if concerns remain unaddressed relative to the issues of salmonid entrapment and wetland buffer areas addressed herein, or if you have any questions on the submittal, at (530) 223-2585.

Sincerely,

VESTRA Resources, Inc.
Environmental Services Division

Wendy Johnston
Project Manager

Cc: Lyle Tullis / Tullis, Inc.
Dori Blackburn / Pacific Municipal Consultants
Bill Walker / Shasta County
Dan Warner / Regional Water Quality Control Board

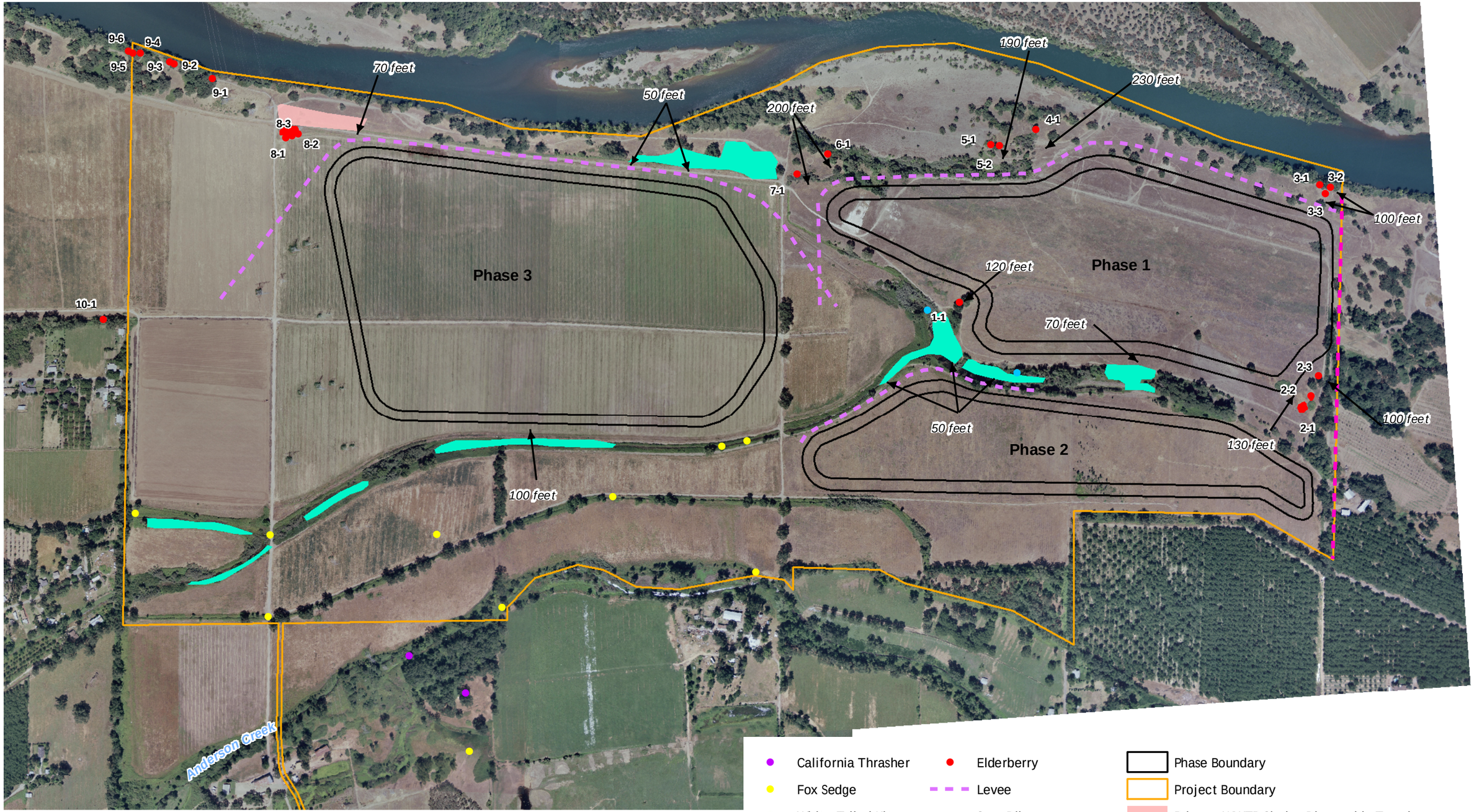
Attachment 1

Reproduced in Final EIR within Attachment 2 **HYDMET REPORT**

Attachment 2

Reproduced in Final EIR within Attachment 2 AMENDED LEVEE FIGURES

Attachment 3
Figure 14A



California Thrasher
Fox Sedge
White-Tailed Kite
Yellow-Breasted Chat
Elderberry
Levee
Spur Dike
Fresh Emergent Wetland
Phase Boundary
Project Boundary
Primary WWTP Sludge Disposed in Trenches

Note: Elderberry locations will be staked in the field prior to development

0 370 740 1,480 Feet

VESTRA

SOURCE: SHARRAH DUNLAP SAWYER 2006; NORTH STATE RESOURCES 2005

P:\GIS\70542\RevisedReclamationBoardPermit\Figure14A_Levees_SensitiveSpecies_Distances.mxd

FIGURE 14A
SENSITIVE SPECIES LOCATIONS
SHASTA RANCH AGGREGATE
ANDERSON, CALIFORNIA

Attachment 4
State Lands Issue

JEFFERY J. SWANSON
ATTORNEY AT LAW

2701 Park Marina Drive
Redding, California 96001-2831

Tel. 530.225.8773/Fax 530.232.2772
e-mail: jswanson@snowcrest.net

November 14, 2006

Mr. Lyle Tullis
Tullis, Inc.
P.O. Box 493416
Redding, CA 96049-3416

Re: Shasta Ranch

Dear Lyle:

This letter responds to an issue raised in the Department of Fish & Game's (DFG) September 26, 2006, letter commenting on the Shasta Ranch project. On page 4 of that letter, DFG states that a portion of Shasta Ranch proposed for mining "may in fact be State lands because the river channel occupied the project site at the time the river channel was deeded by the Federal government to the State of California." DFG maintains the issue has not been adequately addressed by the draft Environmental Impact Report (DEIR).

I have seen the aerial on which DFG relies for its assertion that the river channel occupied the project site at statehood, but have not otherwise verified that claim. However, in my opinion, whether a portion of the Shasta Ranch property is comprised of lands once owned by the State of California is primarily a title question. The status of ownership of the property has no bearing on the type or severity of potential environmental impacts associated with the proposed project, and should not change the CEQA analysis. Having said that, if the State does own the property in question, that fact would necessitate review of the Shasta Ranch project by the State Lands Commission and require you to obtain a lease to use the State's property.

Ultimately, whether the State has an ownership interest in the property is a question of fact. The balance of this letter addresses that issue.

Ownership of Land Beneath Navigable Waterways

When California was admitted to the Union in 1850, it received title to lands underlying navigable waterways. Under the law, property owners bordering on non-tidal navigable waterways, such as much of the Sacramento River, take title to the low water-mark. (Civil Code § 830.) Those beds lying beneath the navigable waterways are owned by California in trust for the people of the State for their use for commerce, navigation, fishing and other purposes. (*State of California v. Superior Court (Lyon)* (1981) 29 Cal.3d 210, 214.)

Generally, the natural movement of rivers over time creates an issue with respect to ownership of property created or lost by that movement. The term "accretion" is used to describe the process by which property is added to an upland area through the gradual movement and action of a river.

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Civil Code section 1014, adopted in 1872, codified the well settled rule that the formation of land by natural accretion inures to the benefit of the upland owner. That section provides:

> Where, from natural causes, land forms by imperceptible degrees upon the bank of a river or stream, navigable or not navigable, either by accumulation of material or by the recession of the stream, such land belongs to the owner of the bank, subject to any existing right of way over the bank.

This rule has been followed in a long line of California judicial decisions and reflects the general approach followed by much of the United States. However, unlike many states, California does distinguish between accretion due to natural causes and accretion caused artificially. The California rule holds that accretion along the bed of a navigable waterway occurring as a result of human interference remains in the possession of the State.

The seminal case on the issue of ownership of State lands altered by accretion is *State of California ex rel. State Lands Commission v. Superior Court* (1995) 11 Cal. 4th 50. In that case, at issue was whether accreted lands along the Sacramento River were created by natural causes, which meant ownership would go to the adjacent upland owner, or whether some artificial action caused the accretion, which meant the land would be owned by the State. The focus of the dispute was on the fact that hydraulic mining far upstream in the Sacramento River watershed many years earlier appeared to be the primary cause of the accretion. The State contended this was an artificial cause and that its interest in the land should be recognized. The plaintiff argued that while the hydraulic mining was not a natural condition, the subsequent accretion occurring far downstream was; thus, plaintiff maintained the land in question should belong to the upland owner even though it was formerly State lands.

In deciding the case, the California Supreme Court acknowledged the fact that, in the strictest sense, much if not all of the Sacramento River is artificial because of man's influence on the river system. However, the Court concluded that condition does not render all accretion along the river State lands. Instead, the Court held that accretion is artificial only if it is directly caused by human activities, such as dredging, wing dams or levees, that occurred in the immediate vicinity of the accreted land. In those instances, the accretion would belong to the State. The Court found that accretion is not considered artificial simply because human activities far away contributed to it. (11 Cal. 4th at 80-81.) Thus, the Court concluded the accreted area belonged to the upland owner and not the State.

<u>Application to Shasta Ranch Property</u>

DFG's comment about State ownership of a portion of the Shasta Ranch lands is based on an aerial photo prepared by the Department of Water Resources as part of its "Upper Sacramento River Spawning Gravel Study" conducted around 1976. A copy of the aerial is attached to this letter. The photo shows the location of the Sacramento River in relation to the Shasta Ranch property. It also depicts the historic location of the river channel as it existed around 1860, shortly after statehood. That historic area is defined by a series of small circles. According to the aerial, land built up along the Shasta Ranch property after 1860 as the western bank of the river shifted east. There appears to have been no significant change to the location along that part of the river since 1938.

Assuming a portion of the Shasta Ranch property was at one time State lands, because it is now dry land the question is whether ownership has shifted to the upland owner. As noted above, this question turns on the reason the accretion occurred. If it was due to natural causes, then the lands would be a part of the Shasta Ranch property. On the other hand, if accretion was directly caused by human activities in the immediate vicinity of the property, then it would belong to the State.

Based on a review of the project area and adjacent properties, as well as of the history in the area, I have found no evidence that the accretion was caused by human activities in the immediate vicinity of the Shasta Ranch property. I have seen no evidence of any dams, levees or dredging in the area. Also, nothing on the DWR aerial suggests the accretion was caused artificially. Instead, the accreted area appears to simply have been within the meander zone of the Sacramento River, and occurred naturally. As a consequence, it is my opinion that any accretion now belongs to the upland owner, based on Civil Code section 1014, and that the State has no ownership interest in the accreted area.

The lack of evidence to support DFG's thesis that the accreted area remains State lands is significant. However, as noted above, the analysis is entirely dependent on the facts. Thus, my conclusion could change if evidence is produced showing accretion to the Shasta Ranch property occurred as a result of human activities in the immediate vicinity of the property.

Conclusion

Under the circumstances, I think Shasta County should respond to DFG's comment by restating the analysis set forth above. The County should explain that there is no evidence to show the accretion was artificially created and, thus, there is no presumption the accretion belongs to the State.

Shasta County also could forward a copy of the draft EIR to the State Lands Commission, along with the A.P. numbers for the parcels, and inquire whether the State claims title to the lands. If the State asserts an interest, then you would have the option of either resolving the matter through a quiet title action or negotiating a lease agreement with the State Lands Commission. Any such lease, if granted, would likely require a royalty to the State for income derived from State lands.

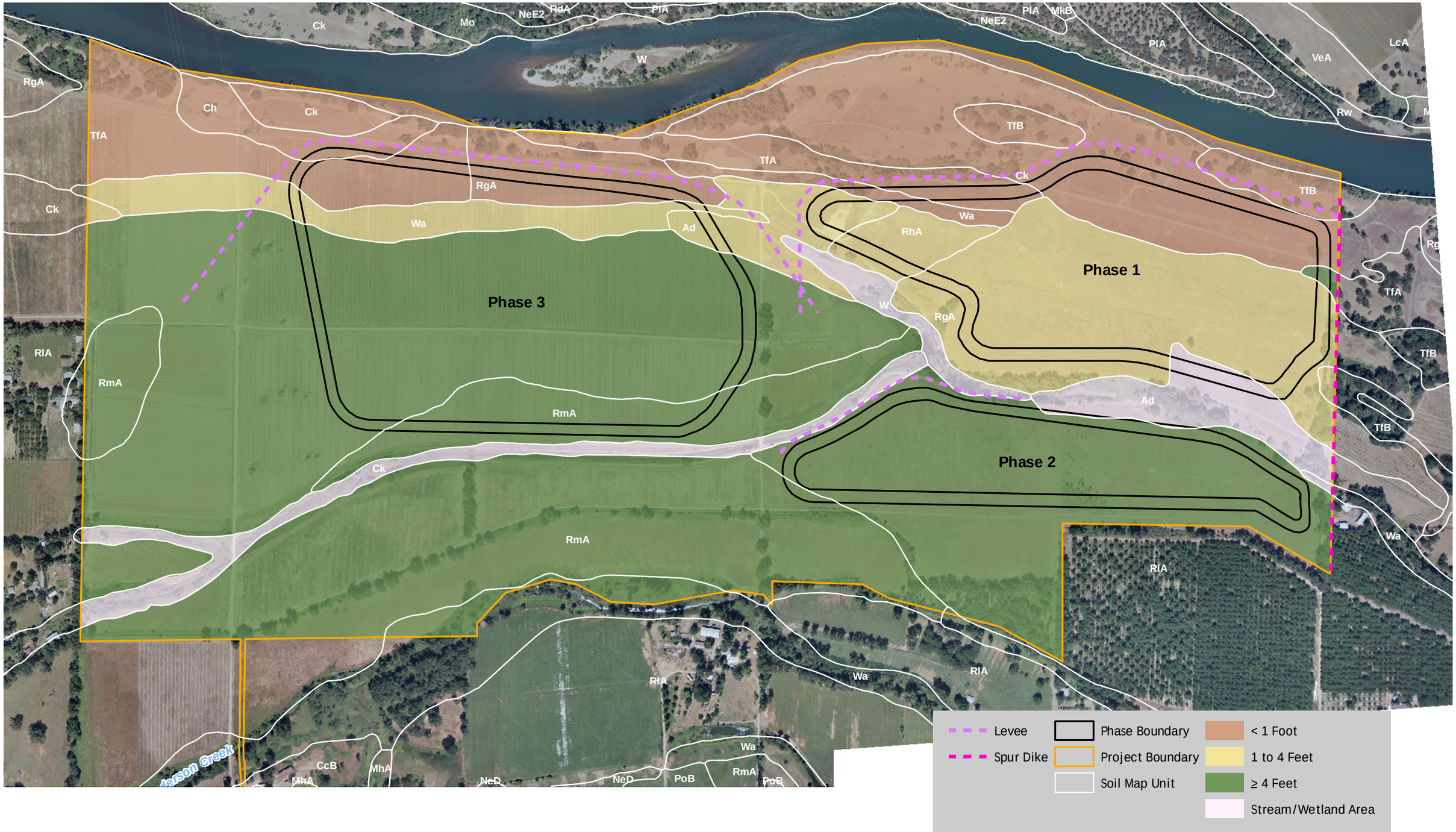
Please let me know if you have further questions concerning this matter.

Very truly yours,

Jeffery A. Swanson

enc.

Attachment 5
FIGURE 20A



VESTRA

SOURCE: USGS 2006

Note: Top soil storage will be determined in the field during operations if necessary

FIGURE 20A
ESTIMATED SOIL DEPTHS
SHASTA RANCH AGGREGATE
ANDERSON, CALIFORNIA

P:\GIS\70542\RevisedReclamationBoardPermit\Figure20A_SoilDepth.mxd

Attachment 4

Letter from Vestra Resources to RWQCB

Report of Waste Discharge

VESTRA Resources, Inc.

962 Maraglia Street
Redding, CA 96002-1012
Telephone: (530) 223-2585

info@vestra.com
www.vestra.com
FAX (530) 223-1145 / 223-6985

December 5, 2006

70542

Mr. Dan Warner
California Regional Water Quality Control Board
Central Valley Region
415 Knollcrest Drive, Ste.100
Redding, CA 96002

Re: Report of Waste Discharge (ROWD)
Shasta Ranch Aggregate

Dear Mr. Warner:

Tullis, Inc., operator for the proposed Shasta Ranch Aggregate project in Shasta County, received the April 19, 2006 letter from the Regional Water Quality Control Board (RWQCB) in which the RWQCB deemed as incomplete the March 27, 2006, ROWD submittal.

The purpose of this letter is to document that all items requested in the April 19, 2006, letter have been completed with the exception of California Environmental Quality Act (CEQA) compliance, and to request the RWQCB to proceed with preparation of Waste Discharge Requirements pending an estimated CEQA Notice of Determination by Shasta County in January 2007.

A summary of each deficiency identified and the response follows:

Comment 1: Storm Water

Quarry operations are normally required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Industrial Activities (Industrial Storm Water Permit). The ROWD had very little discussion about storm water management. The drainage plan section of the ROWD discussed construction of levees, grading during mining, and construction of a spur dike. These measures are designed to redirect existing drainage patterns and redirect all onsite water to the mining pits and ponds.

We assume that you intend to contain all storm water onsite. If this is the case, then you must state that you will submit a Notice of Non-Applicability for the Industrial Storm Water Permit. If you will not be containing all storm water onsite then you must state that you will submit a Notice of Intent to obtain coverage under the Industrial Storm Water Permit. Topographic maps and engineering designs need to be provided.

It is the intention of Shasta Ranch Aggregate to contain all storm water onsite; however, in the event of unplanned storm water discharge, Shasta Ranch Aggregate wishes to ensure compliance with all applicable rules and regulations. In response, a Notice of Intent (NOI) was submitted to the State Water Resources Control Board on April 26, 2006. (A copy of the NOI is included as Attachment 1.) A Storm Water Pollution Prevention Plan (SWPPP) for site activities was submitted to the RWQCB in April 2006. (A copy is included as Attachment 1).

The site has been issued WDID Number 5R45I020225.

Comment 2: Application Fee

Your facility will be assigned a Threat to Water Quality and Complexity rating of 2C. The application fee (and first annual fee) for this rating is $4676.10. Your application will not be considered complete until the fee is paid.

The application fee was submitted to the RWQCB on June 2, 2006. A copy of the check record is included as Attachment 2.

Comment 3: Aboveground Storage Tanks

The ROWD did not address fuel storage for heavy equipment. The project proponent must comply with the Aboveground Petroleum Storage Act should he/she manage single tanks that store greater than 660 gallons of petroleum or several tanks with a cumulative storage capacity of greater than 1,320 gallons of petroleum. The Aboveground Petroleum Storage Act requires owners or operators of aboveground storage tanks to file a storage statement and pay a fee. In addition, a Spill Prevention Control and Countermeasures Plan, certified by a registered engineer, must be prepared and implemented.

A Spill Prevention Control and Countermeasures (SPCC) Plan was submitted to the RWQCB in May 2006, a copy of which is included as Attachment 3.

Comment 4: CEQA

Please note that Waste Discharge Requirements cannot be adopted until environmental review under the California Environmental Quality Act (CEQA) is complete. The ROWD indicated that the CEQA process has not yet been completed.

The CEQA process is nearing completion. The Final EIR is anticipated to be completed in late December 2006.

Because of delays in calendaring RWQCB hearings, Shasta Ranch Aggregate requests that the hearing for adoption of Waste Discharge Requirements be calendared for March or April 2007.

Thank you for your continued attention to this project. Please call me at 223-2585 if you have any questions.

Sincerely,

Wendy L. Johnston
Project Manager

Attachments

cc: Lyle Tullis/Tullis, Inc.
Dori Blackburn/PMC
Bill Walker/Shasta County

Attachment 1

Notice of Intent & Storm Water Pollution Prevention Plan

State of California
State Water Resources Control Board

NOTICE OF INTENT

TO COMPLY WITH THE TERMS OF THE
GENERAL PERMIT TO DISCHARGE STORM WATER
ASSOCIATED WITH **INDUSTRIAL ACTIVITY** (WQ ORDER No. 97-03-DWQ)
(Excluding Construction Activities)

SECTION I. NOI STATUS (please check only one box)

A. [X] New Permittee B. [ ] Change of Information WDID # |_|_|_|_|_|_|_|_|_|_|_|_|

SECTION II. FACILITY OPERATOR INFORMATION (See instructions)

A. NAME: Tullis, Inc.		Phone: 530-241-5570
Mailing Address: 8585 Commercial Street		
City: Redding	State: CA	Zip Code: 96002
Contact Person: Lyle Tullis		
B. OPERATOR TYPE: (check one) 1.[ ] Private Individual 2.[X]Business 3.[ ]Municipal 4.[ ]State 5.[ ]Federal 6.[ ]Other		

SECTION III. FACILITY SITE INFORMATION

A. FACILITY NAME Shasta Ranch Aggregate		Phone: N/A
Facility Location: End of Jensen Road		County: Shasta
City: Anderson	State: CA	Zip Code: 96008
B. MAILING ADDRESS: 8585 Commercial Street		
City: Redding	State: CA	Zip Code: 96002
Contact Person: Lyle Tullis		
C. FACILITY INFORMATION (check one) Total Size of Site: 288 Acres [X] Sq. Ft. [ ]		Percent of Site Impervious (*including rooftops*) <1 %

D. SIC CODE(S) OF REGULATED ACTIVITY:	E. REGULATED ACTIVITY (*describe each SIC code*):
1. 1442	Construction Sand and Gravel
2.	
3.	

FOR STATE USE ONLY:

SECTION IV. ADDRESS FOR CORRESPONDENCE

[X] Facility Operator Mailing Address (Section II) [ ] Facility Mailing Address (Section III, B.) [ ] Both

SECTION V. BILLING ADDRESS INFORMATION

SEND BILL TO: [X] Facility Operator Mailing Address (Section II) [ ] Facility Mailing Address (Section III, B.) [ ] Other (*enter information below*)

Name: Tullis, Inc.

Phone: 530-241-5570

Mailing Address: 8585 Commercial Street

City: Redding

State: CA

Zip Code: 96002

Contact Person: Lyle Tullis

SECTION VI. RECEIVING WATER INFORMATION

Your facility's storm water discharges flow: (*check one*) [ ] Directly OR [X] Indirectly to waters of the United States.

Name of receiving water: Sacramento River
(river, lake, stream, ocean, etc.)

SECTION VII. IMPLEMENTATION OF PERMIT REQUIREMENTS

A. STORM WATER POLLUTION PREVENTION PLAN (SWPPP) (*check one*)
[☑] A SWPPP has been prepared for this facility and is available for review.
[ ] A SWPPP will be prepared and ready for review by (enter date): ____/____/____.

B. MONITORING PROGRAM (check one)
[☑] A Monitoring Program has been prepared for this facility and is available for review.
[ ] A Monitoring Program will be prepared and ready for review by (enter date): ____/____/____.

C. PERMIT COMPLIANCE RESPONSIBILITY
Has a person been assigned responsibility for:

1. Inspecting the facility throughout the year to identify any potential pollution problems? ✓ YES ___ NO
2. Collecting storm water samples and having them analyzed? ✓ YES ___ NO
3. Preparing and submitting an annual report by July 1 of each year? ✓ YES ___ NO
4. Eliminating discharges other than storm water (*such as equipment or vehicle wash-water*) into the storm drain? N/A ___ YES ___ NO

SECTION VIII. SITE MAP

I HAVE ENCLOSED A SITE MAP YES[X] A new NOI submitted without a site map will be rejected.

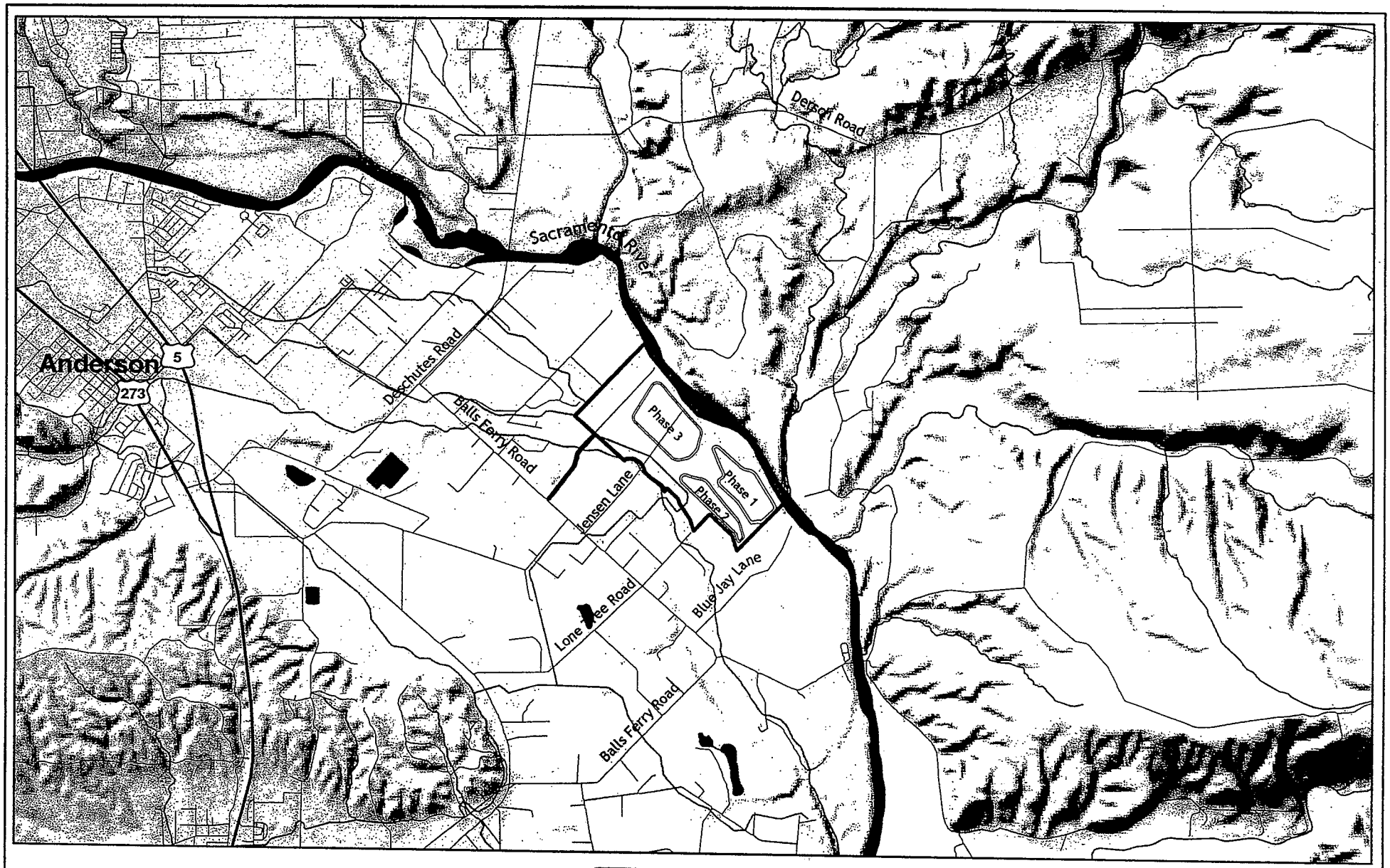
SECTION IX. CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. In addition, I certify that I have read the entire General Permit, including all attachments, and agree to comply with and be bound by all of the provisions, requirements, and prohibitions of the permit, including the development and implementation of a Storm Water Pollution Pervention Plan and a Monitoring Program Plan will be complied with."

Printed Name: Lyle Tullis

Signature: _____ Date April 21, 2006

Title: Owner



Highway
Road
Stream or River
Area Covered Under Application
Mining Phase Boundary
Lake, Pond, or Reservoir

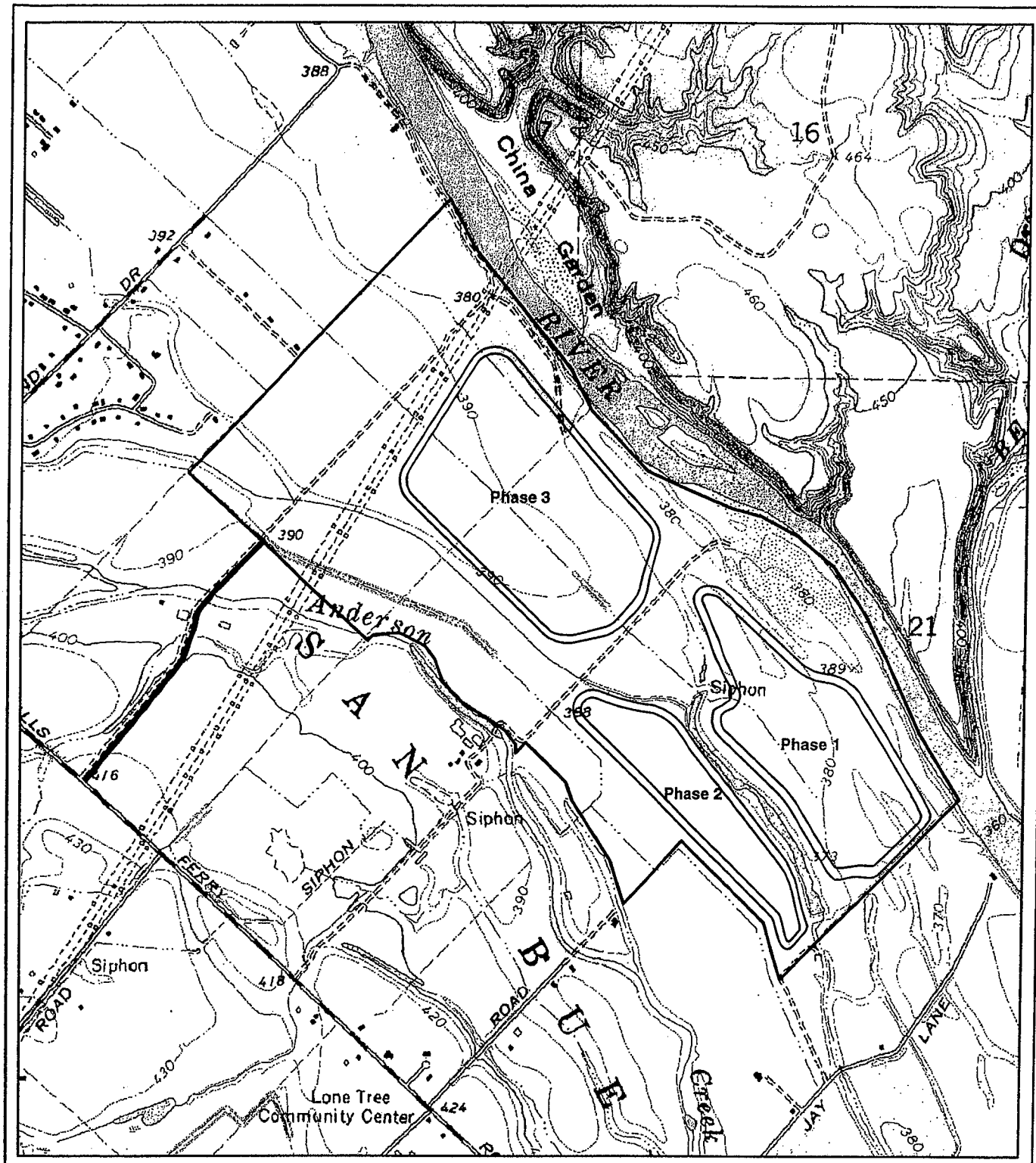
0 0.5 1 2 Miles

N

VESTRA

JOB NUMB[illegible]0542

FIGURE 1
GENERAL SITE LOCATION
SHASTA RANCH AGGREGATE
ANDERSON, CA[illegible]RNIA



Project Boundary

Mining Phase Boundary

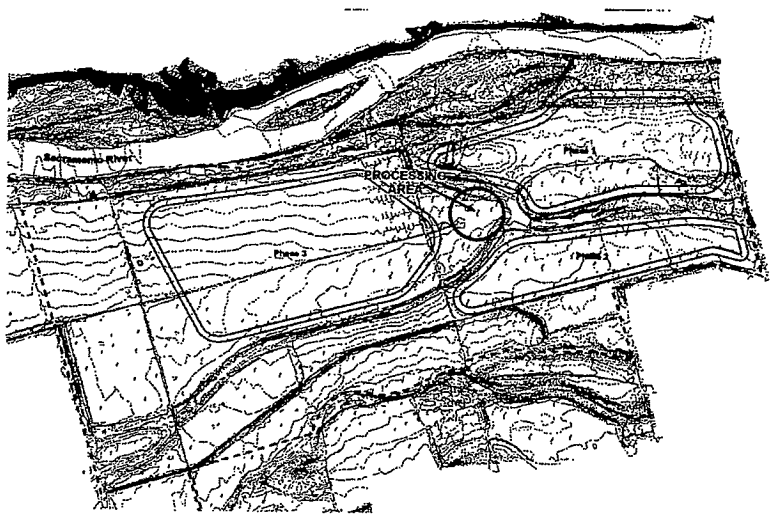
VESTRA

JOB NUMBER 70542

0 750 1,500 3,000 Feet

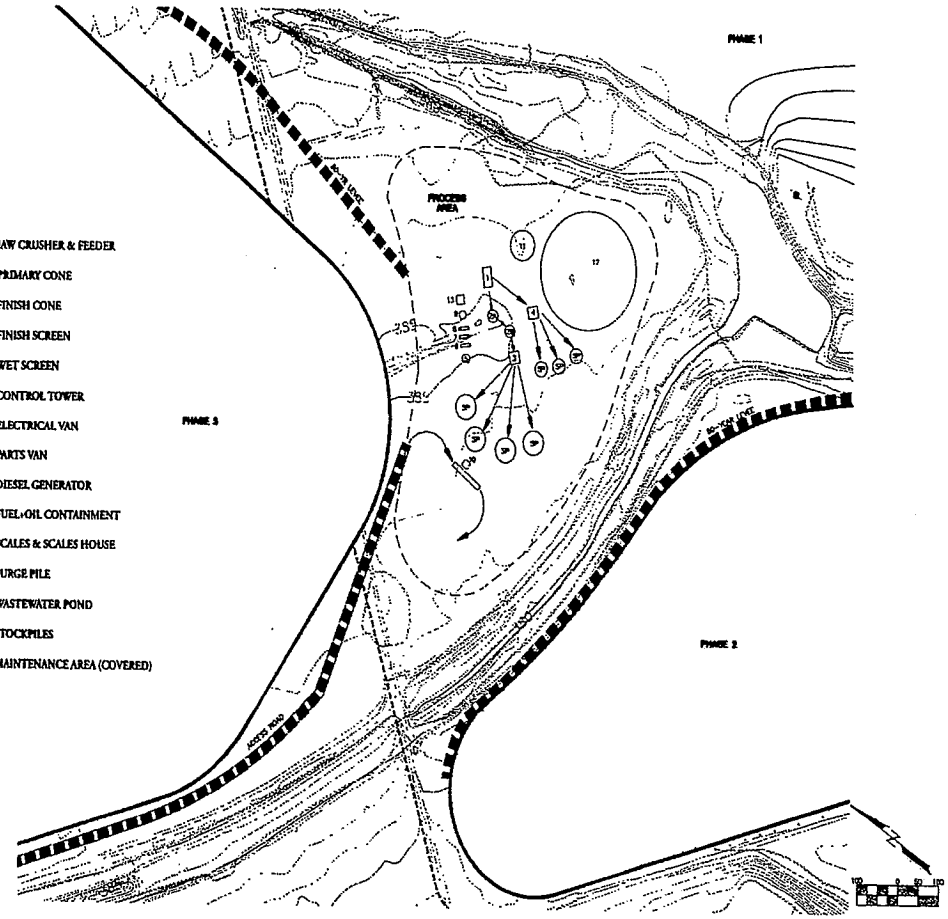
FIGURE 2
GENERAL SITE LAYOUT
SHASTA RANCH AGGREGATE
ANDERSON, CALIFORNIA

SOURCE: USGS 7.5' TOPOGRAPHIC MAP, BALLS FERRY QUADRANGLE



LEGEND

1	JAW CRUSHER & FEEDER
2A	PRIMARY CONE
2B	FINISH CONE
3	FINISH SCREEN
4	WET SCREEN
5	CONTROL TOWER
6	ELECTRICAL VAN
7	PARTS VAN
8	DIESEL GENERATOR
9	FUEL+OIL CONTAINMENT
10	SCALES & SCALES HOUSE
11	SURGE PILE
12	WASTEWATER POND
SP	STOCKPILES
13	MAINTENANCE AREA (COVERED)



VESTRA

JOB NUMBER 70542

SOURCE: HARRAH DUNLAP SAWYER, 2005

FIGURE 3
PROCESS AND STORAGE AREA SCHEMATIC
SHASTA RANCH
ANDERSON, CALIFORNIA

State Water Resources Control Board

Linda S. Adams
Secretary for Environmental Protection

Division of Water Quality

1001 I Street • Sacramento, California 95814 • (916) 341-5538
Mailing Address:P.O. Box 1977 • Sacramento, California • 95812-1977
FAX (916) 341-5543 • Internet Address: http://www.waterboards.ca.gov/stormwtr/index.html
Email Address: stormwater@waterboards.ca.gov

Arnold Schwarzenegger
Governor

Date Processed: 5/15/2006

Tullis Inc
8585 Commercial St
Redding, CA 96002

RECEIPT OF YOUR NOTICE OF INTENT

The State Water Resources Control Board (State Water Board) has received and processed your NOTICE OF INTENT TO COMPLY WITH THE TERMS OF THE GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY. Accordingly, you are required to comply with the permit requirements.

The WDID identification number: **5R45I020225.** Please use this number in any future communications regarding this permit.

FACILITY DESCRIPTION

OPERATOR: Tullis Inc
FACILITY: Shasta Ranch Aggregate
COUNTY: Shasta
FACILITY LOCATION: End of Jensen Rd
Redding, CA 96008

When the operator changes (i. e. the business was bought or transferred), a new Notice of Intent (NOI), site map, and fee must be submitted by the new operator. As the previous operator, you are required to submit a Notice of Termination (NOT) to the Regional Water Board stating that your facility is not being operated by you and that you no longer need to be covered by the General Permit. Unless notified, you will continue to be invoiced for the annual fee each **April**.

If you have any questions regarding permit requirements, please contact your Regional Water Board at (530) 224-4845. Please visit the storm water web page at www.waterboards.ca.gov/stormwtr/index.html to obtain storm water related information and forms.

Sincerely,

Storm Water Section
Division of Water Quality

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

SHASTA RANCH AGGREGATE MINE
WDID No. R5451020225

Prepared for
Tullis, Inc.
8585 Commercial Way
Redding, CA 96002
(530) 241-5570

Prepared by
VESTRA

VESTRA Resources, Inc.
962 Maraglia Street
Redding, California 96002

MARCH 2006

Attachment 2

Payment Confirmation

TULLIS, INC.
P.O. BOX 493416
REDDING, CA 96049-3416
(530) 241-5105

REDDING BANK OF COMMERCE
1951 CHURN CREEK ROAD
REDDING, CA 96002

90-3928/1211

002643

DATE June 2, 06

PAY Four Thousand Six Hundred Seventy Six DOLLARS $ 4676.10

TO THE ORDER OF

Ca. Regional Water Quality
Control Board

NOT NEGOTIABLE

AUTHORIZED SIGNATURE

⑈002643⑈ ⑆121139287⑆ 03⑈10283⑈10⑈

DATE	DESCRIPTION	INVOICE NO.	AMOUNT	DISCOUNT	DEDUCTIONS	NET AMOUNT
	Ca. Regional Water Quality					

Attachment 3

Spill Prevention Control and Countermeasure (SPCCP) Plan

SPILL PREVENTION CONTROL AND COUNTERMEASURE (SPCC) PLAN

SHASTA RANCH AGGREGATE PROJECT
SHASTA COUNTY, CALIFORNIA

Prepared for

Tullis, Inc.
P.O. Box 493416
Redding, CA 96049-3416

Prepared by

VESTRA
962 Maraglia St.
Redding, California 96002

May 2006

Attachment 5

Letter of Encroachment Permit Application from Department of Water Resources

STATE OF CALIFORNIA – THE RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

RECEIVED
AUG 11 2006

August 9, 2006

Ms. Wendy Johnston
VESTRA Resources, Inc
962 Maraglia Street
Redding, CA 96002-1012

Subject: Encroachment Application No. 18078

Dear Ms. Johnston:

My records indicate that we last communicated on June 28, 2006 regarding the subject encroachment applications. At that time you noted that the CEQA documentation had not yet been completed. I noted to you that issuance of an encroachment permit by the Reclamation Board or its staff is a discretionary action subject to the provisions of the California Environmental Quality Act (CEQA) (Public Resources Code 21000 et seq.). In order for the Reclamation Board to fulfill its requirements under CEQA, a copy of the environmental document prepared pursuant to CEQA needs to be included as part of the application package (CCR Title 23 §8(2)). Additional environmental considerations are placed on the issuance of the encroachment application by Water Code §8608 and the corresponding implementing regulations (California Code of Regulations – CCR Title 23 §§10 and 16).

Any other environmental information available to you will facilitate and expedite the review of your application. These may include, as appropriate, Streambed Alteration notifications and agreements; Clean Water Act Section 404 or Rivers and Harbors Act Section 10 permit applications and if available the US Army Corp of Engineers determinations; Clean Water Act Section 401 Water Quality Certification; and biological opinions. Please be advised that your encroachment permits will be conditioned on obtaining all appropriate permits. In order to expedite the environmental review and the implementation of your projects, it is advisable that you seek the appropriate regulatory agency determination on the need for these permits.

Upon receipt of this information, I will continue the processing of your application. If I do not receive this information or hear from you within 60-days, your application will be cancelled. You may fax this information to me as appropriate at (916) 574-0679 or e-mail at avargas@water.ca.gov or mail it to my attention at the following address:

Department of Water
Division of Flood Management
3310 El Camino Ave, LL60
Sacramento, CA 95821-9000

Each permit is unique and will require different levels of environmental review and

permitting. At a minimum, all encroachment permits will need to comply with CEQA. If I can be of further assistance in completing your application, please call me at (916) 574-1249.

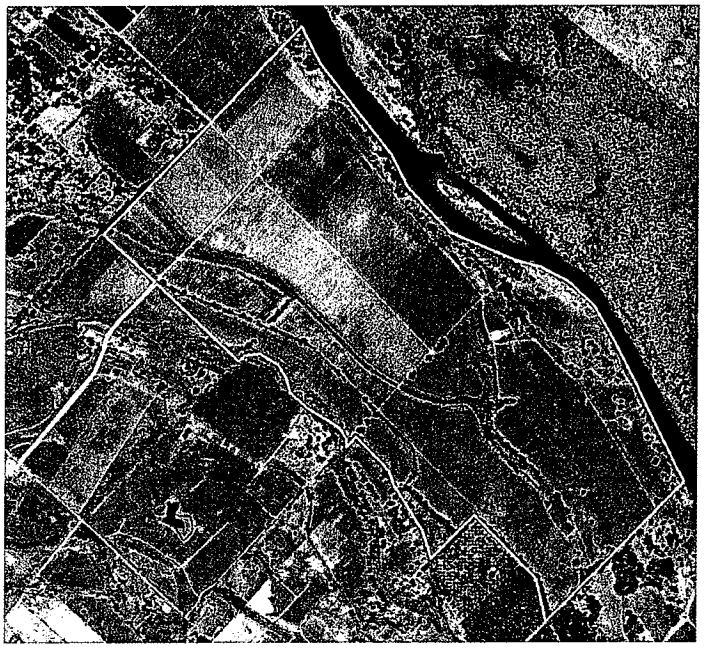
Sincerely,

Al Vargas

Al Vargas
Staff Environmental Scientist

cc: Mike Mirmazaheri, DWR

APPLICATION FOR
RECLAMATION BOARD ENCROACHMENT PERMIT
SHASTA RANCH AGGREGATE PROJECT



Prepared for

The Reclamation Board
Department of Water Resources
Attn: Floodway Protection Section
3310 El Camino Avenue, LL40
Sacramento, CA 95821

Prepared by

VESTRA
962 Maraglia Street
Redding, California 96002

December 2005

VESTRA Resources, Inc.

962 Maraglia Street
Redding, California 96002

mapmaker@vestra.com
http://www.vestra.com

530/223/2585

FAX 530/223/1145

December 5, 2005

70542

The Reclamation Board
Department of Water Resources
Attn: Floodway Protection Section
3310 El Camino Avenue, LL40
Sacramento, CA 95821

Re: Application for Reclamation Board Encroachment Permit
Shasta Ranch Aggregate Project
Shasta County, California

The Shasta Ranch Aggregate Project will be adjacent to the Sacramento River and approximately 16 miles south of the City of Redding in Shasta County. The general site location is shown on Figure 1. The project will consist of a staged aggregate mining operation lasting 25 to 30 years. Approximately 268 acres of the 860-acre site will be mined. Following mining, a portion of the disturbed area will be restored to agricultural uses, while riparian and wetland habitats will be enhanced in the remaining disturbed areas.

It is unclear weather a Reclamation Permit is required for this project due to close proximity of a floodway boundary. This application package has been submitted to determine Reclamation Board jurisdiction.

The project site, fish protection levees, mine phases and floodway boundary are shown on Figure 2. An Alternative Figure 2, moving the mine boundary, is also included for discussion purposes.

The following attachments are included in this package:

1) Reclamation Board Permit Application
2) Reclamation Board Environmental Assessment Questionnaire
3) Expanded Project Summary
4) Initial Study
5) Mining and Reclamation Plan
6) Site photos
7) Project Design Drawings
8) ACOE Notification and Studies

Although an endorsement from a reclamation, levee, or flood control district is required by the application, no such district exists for the vicinity. Communications with Mr. Brandon, from your Sacramento office, confirmed that this requirement is not applicable for this project.

This permit package was prepared by VESTRA Resources, Inc. under contract to Tullis, Inc. and is being submitted on their behalf. Please call me at (530) 223-2585 if you have any questions or need additional information.

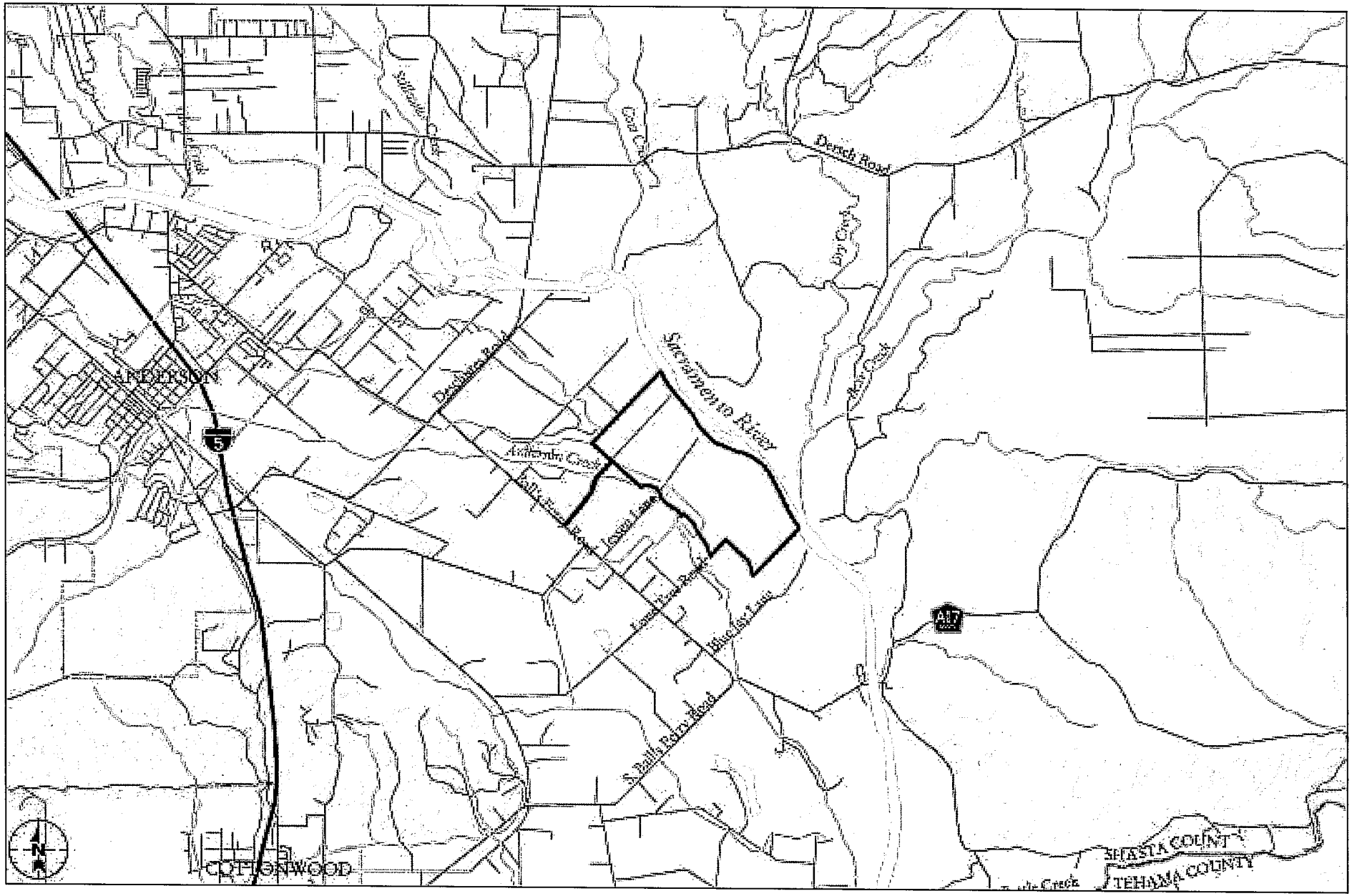
Sincerely,

VESTRA Resources, Inc.
Environmental Services Division

Wendy Johnston
Project Manager

cc: Tullis, Inc.

Attachments



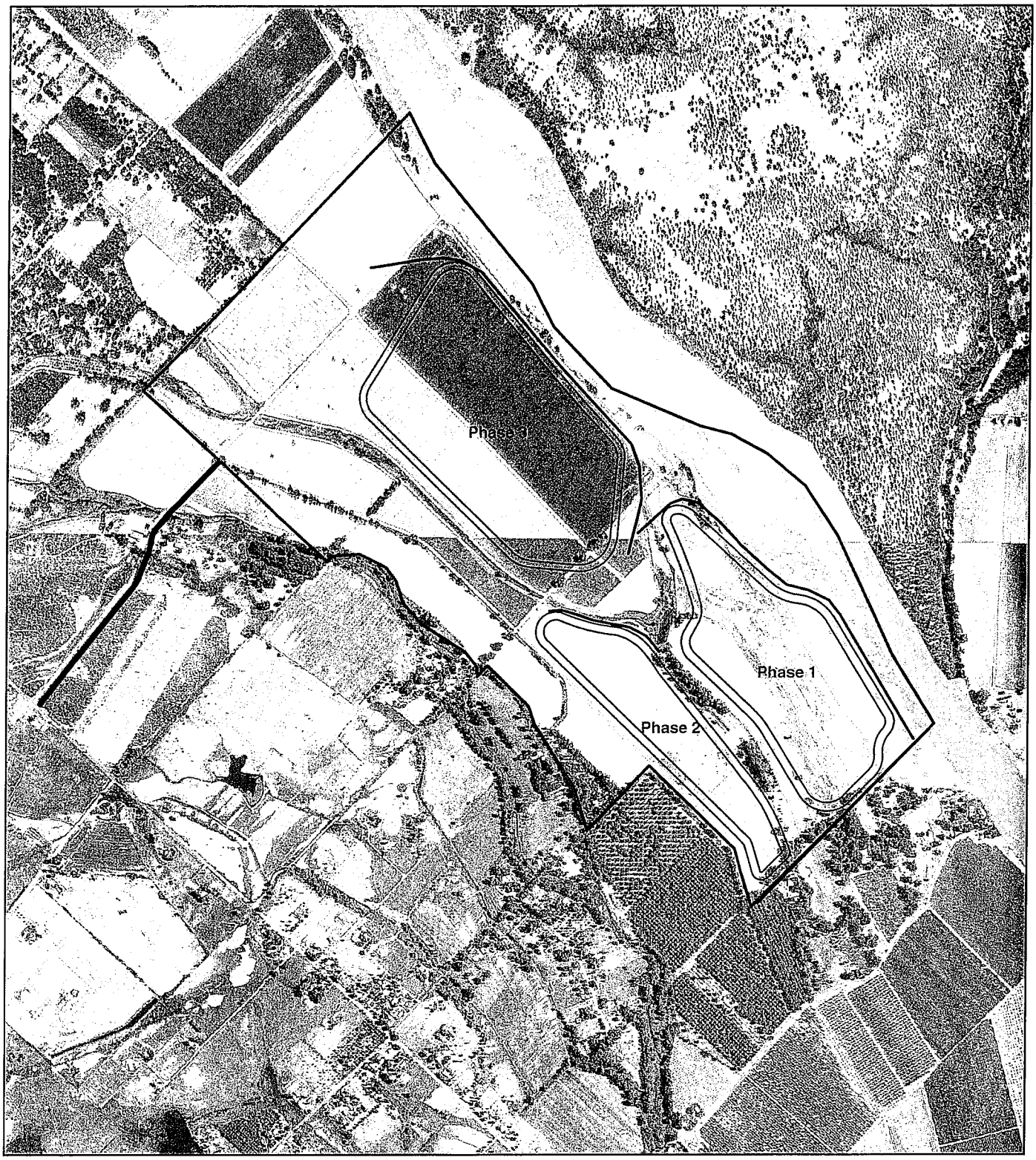
VESTRA

JOB NUMBER 70542

FIGURE 1
GENERAL SITE LOCATION
SHASTA RANCH
ANDERSON, CALIFORNIA

SOURCE: EIP ASSOCIATES, 2005

DECEMBER 2005



Levee (Proposed)

Project Boundary

Phase Boundary

Encroachment Boundary

N

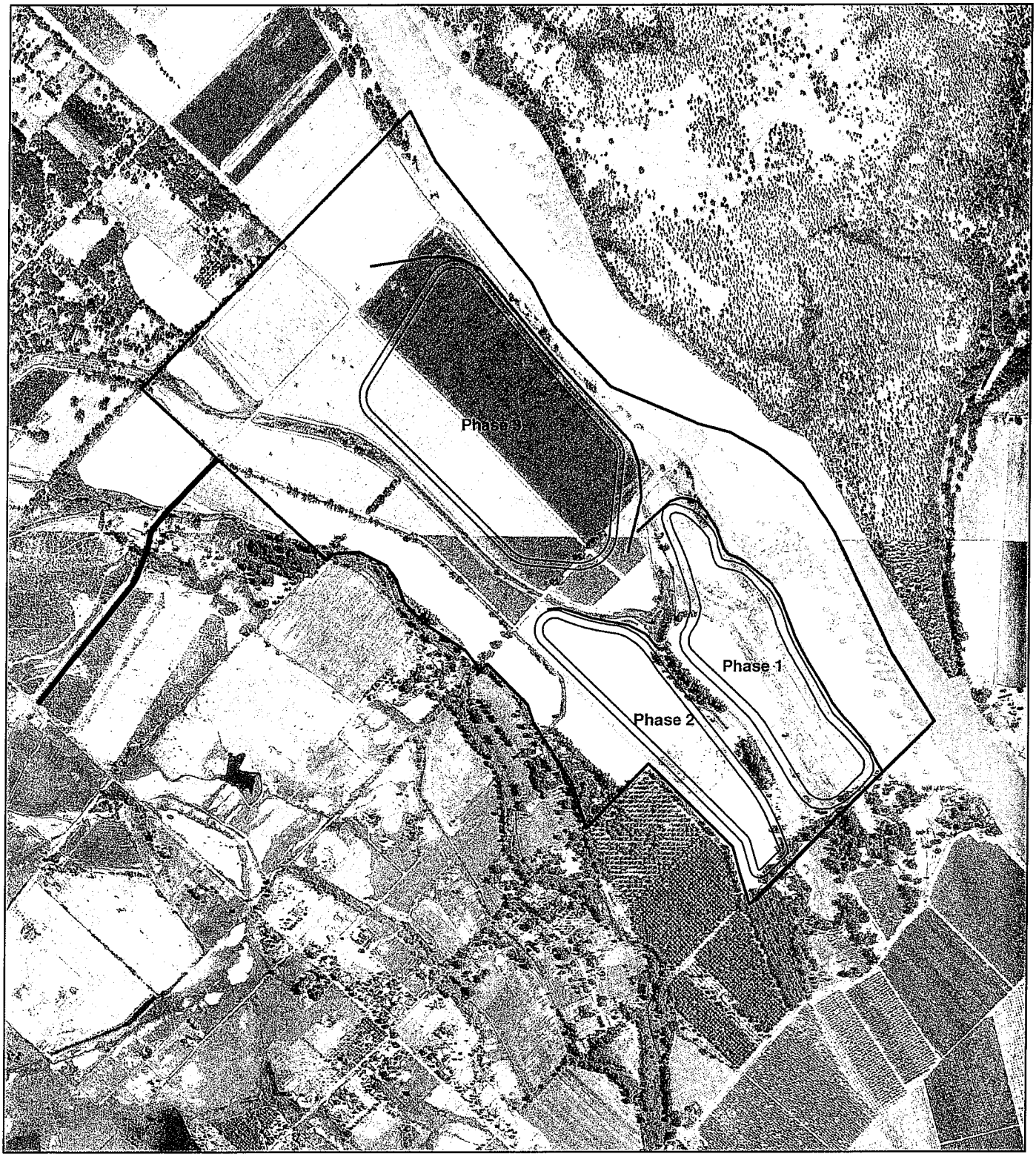
0 750 1,500 3,000 Feet

VESTRA

JOB NUMBER 70542

FIGURE 2
FLOODWAY BOUNDARY
SHASTA RANCH
ANDERSON, CALIFORNIA

DECEMBER 2005



N

Levee (Proposed)

Project Boundary

Encroachment Boundary

Phase Boundary

0 750 1,500 3,000 Feet

VESTRA

JOB NUMBER 70542

ALTERNATIVE FIGURE 2
FLOODWAY BOUNDARY
SHASTA RANCH
ANDERSON, CALIFORNIA

APPLICATION FOR
RECLAMATION BOARD ENCROACHMENT PERMIT
SHASTA RANCH AGGREGATE PROJECT

Prepared for

The Reclamation Board
Department of Water Resources
Attn: Floodway Protection Section
3310 El Camino Avenue, LL40
Sacramento, CA 95821

Prepared by

VESTRA
962 Maraglia Street
Redding, California 96002

December 2005

1. RECLAMATION BOARD PERMIT APPLICATION

APPLICATION FOR A RECLAMATION BOARD ENCROACHMENT PERMIT

Application No. _____
(For Office Use Only)

1. Description of proposed work:
The project consists of aggregate mining approximately 268 acres of a 860-acre site approximately 16 miles sourth of the City of Redding and adjacent to the Sacramento River. The mining would occur in three (3) phases over an estimated 25 to 30 year timeframe. Reclamation activities following mining include: backfilling one mined pit to restore it to active agricultural use and modifying and revegetating two other mined pits with riparian and other native plant communities. The proposed project would preserve onsite emergent marsh wetlands and protect areas with existing riparian vegetation (see attached Reclamation Plan).

2. Location: Shasta (Buenaventura Land Grant) County, in Section surrounded by: ,

Township: 30N. (N) (S), Range 03W. (W), M. D. B. & M.

3. Tullis, Inc. (Name of Applicant) of 8585 Commercial (Address)

Redding	CA	96002	(530) 241-5570
City	State	Zip Code	Telephone Number

Fax Number

4. Endorsement: (of Reclamation District)
We, the Trustees of Not applicable (No local maintaining agency)
Name and District Number

approve this plan, subject to the following conditions:

☐ Conditions listed on back of this form ☐ Conditions Attached ☐ No Conditions

Trustee Date Trustee Date

5. Names and addresses of adjacent property owners sharing a common boundary with the land upon which the contents of this application apply. If add ional space is required, list names and addresses on back of the application form or an attached sheet.

See attached list

Name	Address	Zip Code

6. Has an environmental determination been made of the proposed work under the California Environmental Quality Act of 1970? ☐ Yes ☐ No ☒ Pending

If yes or pending, give the name and address of the lead agency and State Clearinghouse Number:

The lead agency is Shasta County Department of Resource Management and the EIR is currently being completed by Pacific Municipal Consulting.

SCH No. 2005-1021 34

7. When is the project scheduled for construction? 2006

8. Please check exhibits accompanying this application.

A. ☒ Map showing the location of the proposed work.

B. ☒ Drawings showing plan and elevation views of the proposed work, scale, materials of construction, etc.

C. ☒ Drawings showing the cross section dimensions and elevations of levees, berms, stream banks, flood plain, low flow, etc.

D. ☒ Drawings showing the profile elevations of levees, berms, flood plain, low flow, etc.

E. ☒ Photograph depicting the project site.

9. Is the applicant acting for the owner of the proposed works? ☒ Yes ☐ No

If yes, the name, address and telephone number of the owner is

Shasta Ranch, LLC; P.O. Box 493416; Redding, CA 96049-3416

Signature of Applicant [redacted] Date

For additional information:

ADJACENT PROPERTY OWNERS

The project's adjacent property owners include the following:

APN 091-130-013
Sapp Family Trust
4407 Snaffle Bit Court
Antelope, CA 95843

APN 091-130-0011
Sally J. Sapp
4407 Snaffle Bit Court
Antelope, CA 95843

APN 091-130-004
Howard W. Ball
4711 Shade Tree Lane
Santa Rosa, CA 95405-7840

APN 091-080-003
J. Vincent and JoAnne M. Hagus
22742 Blue Jay Lane
Anderson, CA 96007

APN 091-080-007
County of Shasta

APN 091-050-003 and
APN 091-070-014
Benny Lee Newland Trust
22478 Lone Tree Lane
Anderson, CA 96007

APN 091-070-025
Laurie and Glen Dennis
22456 Lone Tree Road
Anderson, CA 96007

APN 091-070-024
Tim and Stacy Frase
2911 Anita Street
Redding, CA 96001

APN 091-050-011
Dean C. and Mary A. Hammond
22356 Jessen Lane
Anderson, CA 96007

APN 091-040-002
Shasta Acquisition Inc.
P.O. Box 637
Anderson, CA 96007

APN 052-330-017
John and Pamela Schmoyer
22088 Reading Drive
Anderson, CA 96007

APN 052-330-018
Ira and Doris Chumley
22077 Reading Drive
Anderson, CA 96007

2. RECLAMATION BOARD ENVIRONMENTAL ASSESSMENT QUESTIONNAIRE

ENVIRONMENTAL ASSESSMENT QUESTIONNAIRE FOR APPLICATIONS FOR RECLAMATION BOARD ENCROACHMENT PERMITS

This environmental assessment questionnaire must be completed for all Reclamation Board applications. Please provide an explanation where requested. Incomplete answers may result in delays in processing permit applications. Failure to complete the questionnaire may result in rejection of the application.

1. Has an environmental assessment or initial study been made or is one being made by a local or State permitting agency in accordance with the California Environmental Quality Act?

   ☒ Yes ☐ No If yes, identify the Lead Agency, type of document prepared or which will be prepared, and the State Clearinghouse Number:

   The lead agency, Shasta County Department of Resource Management, has completed an Initial Study (August 2005). It is included in the application package. The lead agency has determined that an EIR is required for the project. An EIR is ongoing with State Clearinghouse Number 2005-102134.

2. Will the project require certification, authorization or issuance of a permit by any local, State or federal environmental control agency?

   ☒ Yes ☐ No List all other governmental permits or approvals necessary for this project or use, including U.S. Army Corps of Engineer' 404and Section 10 permits, State Water Quality Certification, Department of Fish and Game 1600 agreement, etc. Attach copies of all applicable permits.

   Required Permits for this project include:

   1) Regional Water Quality Control Board Waste Discharge Requirements
   2) State Water Quality Control Board Industrial Stormwater NPDES Permit
   3) Reclamation Board Encroachment Permit
   4) US ARMY Corps of Engineers 404 Permit
   5) Possible Section 7 Consultation USFWS
   6) Fugitive Dust Permit Shasta County Air Quality Mangement Distirct

3. Give the name and address of the owner of the property on which the project or use is located. Please submit a copy of your current Title Report (Grant Deed), if your proposed project includes a private residence.

   The site is owned by:

   Shasta Ranch, LLC

   P.O. Box 493416

   Redding, CA 96049-3416

4. Will the project or use require issuance of a variance or conditional use permit by a city or county?

   ☒ Yes ☐ No Explain:

   Shasta County will issue a Use Permit for the project.

   The Shasta County General Plan Land Use Element designates the project area as AG (Agriculture). The properties that make up the project site are zoned EA (Exclusive Agriculture) and EA-MR (Exclusive Agriculture-Mineral Resource). The Zoning Ordinance allows for surface mining and site reclamation in the EA zone through the issuance of a Use Permit.

5. Is the project or use currently operating under an existing use permit issued by a local agency?

☐ Yes ☒ No Explain:

6. Describe all types of vegetation growing on the project site, including trees, brush, grass, etc.

The vegetation growing on the site includes: 1)Valley oak woodlands, characterized by valley oak extending over annual herbaceous vegetation; 2) Valley Foothill-Riparian habitats, characterized by Fremont cottonwood and various willow shrub species, near the Sacramento River; 3) Fresh Emergent Marsh habitats, consisting of a variety of perennial marsh species, that exists in floodplain areas and along agricultural areas; and 4) Annual grasslands, which consists of mostly introduced grass and forb species, which comprises the largest portion of the project site and occurs within fallow fields and under a powerline easement.

7. Describe what type of wildlife or fish may use the project site or adjoining areas for habitat, food source, nesting sites, source of water, etc.

A large variety of wildlife species use the project area and adjacent Sacramento River. Species typical of valley oak (e.g., acorn woodpecker and yellow-billed magpie), foothill-riparian (e.g., a variety of warblers, great blue and green heron), emergent marsh (e.g., pond turtle and bull frogs), and annual grass habitats (e.g., western meadowlark and grasshopper sparrow) exist in the area. In addition, a special-status plant (fox sedge) and nine special-status wildlife species were noted (pond turtle, osprey, white-tailed kite, Nuttall's woodpecker, oak titmouse, California thrasher, yellow-breasted chat, chinook salmon and steelhead).

8. Has the Department of Fish and Game, U.S. Fish and Wildlife Service, or National Marine Fisheries Service been consulted relative to the existence of, or impacts to, threatened or endangered species on or near the project site?

☒ Yes ☐ No Explain:

NMFS has been consulted throughout project development and design. The fish protection levees to be constructed around the active mining areas were requested by NMFS to minimize the likelyhood that juvenile or adult salmonids would be stranded in mining depressions during possible 50-year flood inundation events. NMFS requested that the levees be retained after reclamation of Phase 2 and Phase 3 to continue to prohibit stranding of salmonids in proposed wetland reclamation features, as well as to limit transfer of warm water predator species from the wetland features to the river.

9. Will the project or use significantly change present uses of the project area?

☒ Yes ☐ No Explain:

Currently the project area consists of farmland, fallow fields, oak woodlands, emergent marshes, and riparian habitats. Oak woodland, emergent marshes, and riparian habitats will not be affected by mining activities. Current agricultural land will be removed during Phase 1, but reclaimed as agricultural land following compeletion of mining with overburden from Phase 2 areas. Agricultural land lost in Phase 2 and Phase 3 will be converted to wetland features (pond and marsh).

10. Will the project result in changes to scenic views or existing recreational opportunities?

☐ Yes ☒ No Explain:

The existing visual character of the site is open agricultural fields with a bisecting power line. Riparian buffers along the Sacramento River and Anderson Creek limit views of the site from the river. The project will not be visible from Balls Ferry Road and should not be visible from surrounding residences due to retention of riparian forest buffers. The project will be visible from the bluffs east of the Sacramento River. This project will not affect any existing recreational opportunities.

11. Will the project result in the discharge of silt or other materials into a body of water?

☐ Yes ☒ No Explain:

The project's design will strictly retain all discharge onsite. The attached Shasta Ranch Project Mining and Reclamation Plan, Section 4.3, describes process operations.

12. Will the project involve the application, use, or disposal of hazardous materials?

☒ Yes ☐ No If yes, list the types of materials, proposed use, and disposal plan. Provide copies of all applicable hazardous material handling plans.

The project includes only the mining crushing and washing of aggregate. No Asphalt or concrete plants will be constructed at the project site. The only hazardous material to be stored onsite will be two above ground storage tanks containing diesel fuel for onsite, off-highway trucks and machinery. The AGT will include secondary containment and cover.

13. Will construction activities or the completed project generate significant amounts of noise?

☐ Yes ☒ No Explain:

The potential of noise impacts will be addressed in the project's Environmental Impact Report. However noise is limited to the crushing and moving of aggregate. Power will be supplied by local utility. The earthmoving and processing plant equipment will operate in accordance with the Shasta County Noise Ordinance (see Section 4.3.i. of the attached Shasta Ranch Mining and Reclamation Plan).

14. Will construction activities or the completed project generate significant amounts of dust, ash, smoke, fumes, or odors?

☐ Yes ☒ No Explain:

Ash, smoke, fumes or odors will not be generated from site operations. Fugitive dust from roads and crusher will be controlled by application of water during mining and crushing operations. An Authority to Construct is required from the Shasta County Air Quality Management District and will include conditions for operation.

15. Will the project activities or uses involve the burning of brush, trees, or construction materials, etc?

☐ Yes ☒ No Explain, and identify safety and air pollution control measures:

If during land clearing, prior to aggregate mining, any organic material is generated, it will be disposed of offsite.

16. Will the project affect existing agricultural uses or result in the loss of existing agricultural lands?

☒ Yes ☐ No Explain:

The project site is considered Prime Farmland by the Department of Conservation. In addition, most of the site consists of topsoil that was classifed by the Natural Resources Conservation Service as either "farmland of statewide importance" or "prime farmland if irrigated." Project site exploration has suggested that the soil in some of this project site may have been incorrectly mapped, having very shallow and rocky soil. Regardless, the project will affect agricultural land and will result in a loss of existing agricultural land.

17. Have any other projects similar to the proposed project been planned or completed in the same general area as the proposed project?

☐ Yes ☒ No Explain and identify any other similar projects:

18. Will the project have the potential to encourage, facilitate, or allow additional or new growth or development?

☐ Yes ☒ No Explain:

19. Will materials be excavated from the floodplain?

☒ Yes ☐ No If yes, please answer the remaining questions.

THE REMAINING QUESTIONS MUST ONLY BE ANSWERED IF THE ANSWER TO QUESTION NO. 19 WAS "YES". IF THE ANSWER TO QUESTION NO. 19 WAS "NO", YOU DO NOT NEED TO COMPLETE THE REMAINING QUESTIONS.

A. What is the volume of material to be excavated?

Annually 400,000 tons Total 12,000,000 tons

B. What types of materials will be excavated?

Aggregate, ranging from # 16 sand to 6-inch and larger cobbles (see attached Mining and Reclamation Plan).

C. Will the project site include processing and stockpiling of material on site?

☒ Yes ☐ No Explain:

Mining will begin with removal of the topsoil and overburden material, which will be used for construction of levees or for reclamation of previously mined areas. Aggregate will be processed at the site, including stockpiling, loading of raw aggregate into conveyor chutes, washing the aggregate, sorting, crushing the aggregate to market specifications, and delivery into stockpiles or into hauling trucks for delivery. (See Section 4.3 of the attached Mining and Reclamation Plan.)

D. What method and equipment will be used to excavate material?

The equipment to be used for the mining and excavation of materials will generally be diesel-powered, hydraulically operated wheel and track-mounted machines. Equipment would likely include: front-end loaders, hydraulic excavator, off-highway trucks, self-loading scrapers, and track dozers (see Section 4.3 of the attached Mining and Reclamation Plan).

E. What is the water source for the project?

The project will use approximately 50,000 gallons per day for washing the aggregate and for dust suppression. This water will be pumped from the small pond on the project's north side (Phase 1). Water will also be recycled from the washwater settling pond and used for either dust suppression or washwater. Sediment will be excavated from the settling ponds for use as fill and reclamation activities. The settling basin will be appoximately one acre in size and ten feet deep. The basin will collect used washwater from the processing plant and allowed it to settle. An adjustable standpipe will collect clarified surface water for reuse.

F. How will waste materials wash water, debris, and sediment be disposed of?

Wastewater will be collected in a settling pond and re-used for either dust suppression or washwater. Sediment will be excavated from the settling ponds for use as fill and in reclamation activities onsite. The settling basin will be appoximately 1 acre in size and 10 feet deep. The basin will collect used washwater from the processing plant and allowed it to settle. An adjustable standpipe will collect clarified surface water for reuse (see Section 4.3 of the attached Mining and Reclamation Plan).

G. What is the proposed end land use for the project site?

As mining progresses through the phases, disturbed areas will be reclaimed. A portion of the mined area will be restored to agricultural use, and the rest will be planted and managed as riparian and wetland habitats (see attached Mining and Reclamation Plan, Section 5).

H. Has a reclamation plan been prepared for this site in accordance with the Surface Mining and Reclamation Act of 1975?

☒ Yes ☐ No If yes, pleas attach a copy.

3. EXPANDED PROJECT SUMMARY

SHASTA RANCH AGGREGATE PROJECT
SHASTA COUNTY, CALIFORNIA

PROJECT SUMMARY

PROJECT LOCATION AND SITE DESCRIPTION

The Shasta Ranch Aggregate Project is located along the southwestern bank of the Sacramento River, approximately 24 miles southeast of Shasta Dam, 16 miles south of the City of Redding, and three miles east of the City of Anderson in Shasta County (see Figures 1 and 2 of the attached *Shasta Ranch Mining and Reclamation Plan*). The project is located within the early-day San Buenaventura Mexican Land Grant, and therefore does not have Township, Range, or Section designations. The project site is surrounded by Township 30 North, Range 3 West, M.D.B.M.

The proposed project covers approximately 860 acres adjacent to the Sacramento River (see Figures 1 and 2 of the attached *Shasta Ranch Mining and Reclamation Plan*). The project area's existing vegetation consists of the following categories:

- Cropland (including fallow fields)—367.4 acres (55.7%)
- Annual grasslands—146.0 acres (22.1%)
- Riparian vegetation—77.5 acres (11.7%)
- Valley oak woodlands—59.3 acres (9.0%)
- Wetlands and riverine—9.0 acres (1.4%)
- Roads and urban development—2.2 acres (0.3%)

Additional descriptions of the project area's vegetation and wildlife resources are contained in the *Shasta Ranch Mining and Reclamation Plan* Section 5.4.b.

The project site is located in an alluvial floodplain that was once the original channel for the Sacramento River. Due to historic hydraulic mining in the vicinity, the river was redirected further to the east. A depression left from the ancient riverbed transects the southwestern portion of the project site, running north to south (see Figure 5 of the attached *Shasta Ranch Mining and Reclamation Plan*). The topography is relatively flat with some gentle sloping areas along the banks of the Sacramento River.

The Shasta County General Plan Land Use Element designates the project area as AG (Agriculture). The properties that make up the project site are zoned EA (Exclusive Agriculture) and EA-MR (Exclusive Agriculture-Mineral Resource). The Zoning Ordinance allows for surface mining and site reclamation through the issuance of a Use Permit. Further information regarding General Plan and Mineral Resource Zone Classification can be found in the attached *Shasta Ranch Mining and Reclamation Plan*, Sections 3.1.b. through 3.1.d.

Portions of the project site are located within 5-, 10-, 25-, 50-, and 100-year flood zones (see Figure 11 of the attached *Shasta Ranch Mining and Reclamation Plan*). Levees will be

constructed to prevent the Sacramento River from encroaching into the proposed mining area during floods. (See Project Description for a review of these levees.) The proposed levees will be constructed according to the schedule shown in the attached *Shasta Ranch Mining and Reclamation Plan*, Sections 4.1 through 4.3.b. and their locations are shown in Figure 11 of the same document.

PROJECT OWNERSHIP/APPLICANT

The surface land for the Shasta Ranch Aggregate project is owned by:

Shasta Ranch, LLC
P.O. Box 493416
Redding, CA 96049-3416

The operator and Reclamation Board Encroachment Permit applicant is:

Tullis, Inc.
8585 Commercial
Redding, CA 96002
(530) 241-5570

This Reclamation Board Encroachment Permit was prepared by:

VESTRA Resources, Inc.
962 Maraglia St.
Redding, CA 96002
(530) 223-2585

VESTRA Resources, Inc. is acting as agent for Tullis, Inc. regarding this permit.

PROJECT DESCRIPTION

The project applicant proposes to mine aggregate from approximately 268 of the site's 680 acres in several phases over the next 25 to 30 years. This area is projected to yield approximately 12 million tons of material, not including from four to five millions tons of top soil (overburden) material that would be excavated and used in site reclamation. The precise rate of mining can only be estimated, as the market demands and effects of local competition will govern it (see attached *Shasta Ranch Mining and Reclamation Plan* Sections 4.1 through 4.3.b.).

Three distinct mining phases will occur, each one taking approximately 8-10 years to complete. Large machinery will be used to transport overburden to a storage pile (locations shown on Figure 4 of the attached *Shasta Ranch Mining and Reclamation Plan*). The underlying aggregate will then be mined and hauled to the processing plant. The processing plant will be centrally located in relation to the mining phases, to minimize the transportation distances.

The mined aggregate will be processed by crushing, screening, and washing to produce material of different sizes. After total excavation, the Phase 1 mining pit would be refilled with stockpiled topsoil and reclaimed as farmland. The Phase 2 and Phase 3 mining pits will be reclaimed as ponds (see Figure 16 of the attached *Shasta Ranch Mining and Reclamation Plan*). During mining operations, the existing land management, including agriculture and grazing, will continue for the portion of the project area not being mined.

Levee construction will occur during each phase of mining. Each levee will be constructed from the overburden material removed from the mining areas. The levees will be designed to have 3:1 slopes and vary in height (see levee typicals on Figures 12, 13, and 14 of the attached *Shasta Ranch Mining and Reclamation Plan*). The levee for Phase 1 would be designed to prevent waters from a 25-year flood from entering the mining pit. When backfill of the Phase 1 pit is complete, the levee material will be used for final grading of the Phase 1 area to allow restoration of farming activities. Phase 2 and 3 mining areas will have permanent levees constructed from overburden to prevent flood waters from entering the pits and ponds from a 50-year flood event. The levee design will prevent entrainment of fish from the Sacramento River in the project's mining pits during high flows (refer to Section 4.3 of the *Shasta Ranch Mining and Reclamation Plan* for a more thorough discussion of this process and its timing).

The overall configuration and grading plan for the site should prevent the discharge of stormwater from the site to any waterways. The stockpiles of overburden and aggregate material will be placed in locations and configurations so that runoff can be collected and contained onsite (see Figures 15 and 16 of the attached *Shasta Ranch Mining and Reclamation Plan*).

The only potential source of pollution on the site could be from the fuels and oils used for equipment. A maximum of 10,000 gallons of fuel will be kept onsite in an above-ground storage tank in addition to approximately five 55-gallon drums of lubricants and transmission oil. Storage of fuels and oils will comply with the State Water Quality Control Board guidelines for pollution prevention near water bodies. The vehicles and equipment used in the operation of the project would be maintained to prevent possible leaks. Routine maintenance will be conducted under a maintenance canopy. Major equipment repairs, other than emergency repairs, will be conducted at an offsite facility. Because onsite drainage will be designed to stay onsite, offsite drainage of potential leaks from operations will not occur.

Reclamation processes for the mined areas will consist of re-contouring some of mined areas and re-covering with stockpiled topsoil, so that the fields can again be used for agriculture, or reestablishing native vegetation in upland, wetland, and riparian habitats. The specific reclamation steps and procedures are described in detail in the attached *Shasta Ranch Mining and Reclamation Plan*, Section 5.

ENDORSEMENT OF FLOOD CONTROL DISTRICT

Per communications with Mr. Sam Brandon of the State Reclamation Board on October 25, 2005, there is no local maintaining agency for the designated floodways in this area; consequently, endorsement by a Flood Control District is not applicable.

ADJACENT PROPERTY OWNERS

The project's adjacent property owners include the following:

APN 091-130-013
Sapp Family Trust
4407 Snaffle Bit Court
Antelope, CA 95843

APN 091-130-0011
Sally J. Sapp
4407 Snaffle Bit Court
Antelope, CA 95843

APN 091-130-004
Howard W. Ball
4711 Shade Tree Lane
Santa Rosa, CA 95405-7840

APN 091-080-003
J. Vincent and JoAnne M. Hagus
22742 Blue Jay Lane
Anderson, CA 96007

APN 091-080-007
County of Shasta

APN 091-050-003 and
APN 091-070-014
Benny Lee Newland Trust
22478 Lone Tree Lane
Anderson, CA 96007

APN 091-070-025
Laurie and Glen Dennis
22456 Lone Tree Road
Anderson, CA 96007

APN 091-070-024
Tim and Stacy Frase
2911 Anita Street
Redding, CA 96001

APN 091-050-011
Dean C. and Mary A. Hammond
22356 Jessen Lane
Anderson, CA 96007

APN 091-040-002
Shasta Acquisition Inc.
P.O. Box 637
Anderson, CA 96007

APN 052-330-017
John and Pamela Schmoyer
22088 Reading Drive
Anderson, CA 96007

APN 052-330-018
Ira and Doris Chumley
22077 Reading Drive
Anderson, CA 96007

LEAD AGENCY INFORMATION

An Initial Study was completed by Shasta County Department of Resource Management, the lead agency for the project. During completion of the Initial Study, comments were received from the following agencies:

- Shasta County Air Quality Management District—regarding Air Quality
- California Department of Fish and Game and Office of Mine Reclamation—regarding Biological Resources
- Office of Mine Reclamation—regarding Geology and Soils
- Office of Mine Reclamation, Regional Water Quality Control Board, and Shasta County Air Quality Management District—regarding Hazards and Hazardous Materials
- Regional Water Quality Control Board, Office of Mine Reclamation, and Shasta County Environmental Health Division—regarding Hydrology and Water Quality

The lead agency determined that an EIR was required for the project. Preparation of the EIR is ongoing.

Attachment 6

List of Surface Mining Operators in Shasta County, December 2005

Shasta County Surface Mining Operations
December 16, 2005

RP 2-77	UP 69-73	CMIN 14	Shea Sand and Gravel	J F Shea Company	Alluvial sand and gravel	Redding - Churn Creek Bottom	No expiration	Active
RP 3-77	UP 73-73	CMIN 23	Bear Gulch Limestone Quarry	Stimpel Wiebelhaus	Rock quarry (limestone)	Round Mountain - Hwy 299 East 2 miles east of Oak Run Road	No expiration	Idle
RP 1-78	UP 185-78	CMIN 18	Dicalite	Dicalite	Diatomaceous earth	Lake Britton- Summit Lake Road	No expiration	Active
RP 4-78	UP 288-77	CMIN 16	Hinds Pit	J F Shea Company	Alluvial sand and gravel	Redding - Clear Creek Road	No expiration	Active
RP 5-78	UP 253-79	CMIN 15	Shaw Pit	J F Shea Company	Alluvial sand and gravel	Redding - Clear Creek Road	No expiration	Active
RP 1-85	UP 105-85	CMIN 05	Jack Rabbit Pit	Fruit Growers Supply Company	Rock quarry (basalt)	Burney - Tamarack Road	No expiration	Idle
RP 4-87	UP 9-93	CMIN 25	B & S II	Westside Aggregates	Alluvial sand and gravel	Redding - Clear Creek Road	2018	Active
RP 2-88	UP 85-73	CMIN 01	SWA Mountain Gate Quarry	Stimpel Wiebelhaus	Rock quarry (limestone)	Mountain Gate - Fawndale Road	2023	Active
RP 3-88	UP 64-88	CMIN 10	Burney Diatomaceous Earth Mine	Lehigh Southwest Cement Company	Diatomaceous earth	Lake Britton - east of Highway 89	2013	Active
RP 5-88	Vested	CMIN 04	Anderson-Cottonwood Concrete Products	J F Shea Company	Alluvial sand and gravel	Cottonwood - east of Front Street	2026	Active
RP 6-88	Vested	CMIN 06	Brush Mountain Quarry (Packway)	Packway Materials	Volcanic Cinders	Burney - southeast of intersection of Hwy 89 and Hwy 299 East	2060	Active
RP 7-88	Vested	CMIN 07	Wilcox Processing Plant	Packway Materials	Alluvial gravel	Hat Creek - east end of Wilcox Road	2015	Active
RP 1-90	UP 24-90	CMIN 21	Crystal Creek Aggregate	Crystal Creek Aggregate	Rock quarry (trondhjemite)	Keswick - Iron Mountain Road	2010	Active
RP 2-91	UP 52-91	CMIN 17	Fawndale Rock Quarry	J F Shea Company	Rock quarry (andesite) and asphalt plant	Mountain Gate - Fawndale Road	No expiration	Active
RP 1-92	UP 5-92	CMIN 47	Black Lane 2	Northstate Asphalt	Alluvial sand and gravel	Cottonwood - Black Lane	2010	Active
RP 2-92	UP 39-92	CMIN 40	Eagle Crest Pit	Chuck Wolf	Alluvial sand and gravel	Redding Airport - west end of Devere Lane	2005	Being reclaimed
RP 4-92	Vested	CMIN 24	Braden Sand Pit	Hat Creek Construction	Alluvial sand	Lake Britton area- north of Hwy 299 East	No expiration	Active
RP 2-93	Vested	CMIN 28	Black Butte Cinders	Bill and Lori Hackler	Volcanic cinders	Black Butte Road at Shingletown Ridge Road	2023	Active

RP 3-93	UP 64-93	CMIN 46	Happy Valley Sand and Gravel	Marvin Hyatt	Alluvial sand and gravel	Happy Valley - south end of Dale Lane	2007	Active
RP 4-93	Vested	CMIN 29	Oak Run Quarry	John and Bonnie Smith	Rock quarry (shale)	Oak Run - Fender Mountain Road	2013	Active
RP 5-93	USFS Permit	CMIN 31	Six Mile Hill Cinder Pit	U. S. Forest Service, Lassen National Forest	Volcanic cinders	Fall River Mills - Fall River - Cassel Road	No expiration	Idle
RP 1-94	Vested and BLM permit	CMIN 26	Washington Mine	Bullion River Gold Corp	Underground mine (lode gold)	French Gulch - north side of French Gulch Road 2.5 miles east of Trinity Mtn Road	No expiration	Idle
RP 3-94	UP 39-94	CMIN 36	B & S Cinder Pit	Westside Aggregate	Volcanic cinders	Shingletown - west of Black Butte Road at Wildcat Road	2024	Active
RP 4-94	BLM permit	CMIN 20	Brush Mountain Cinder Pit (BLM)	Packway Materials	Volcanic cinders	Burney - southeast of intersection of Hwy 89 and Hwy 299 East	No expiration	Active
RP 5-94	BLM permit	CMIN 22	Blue Sand Pit	Packway Materials	Sand	Fall River Mills west side of Fall River - Cassel Road	2022	Active
RP 1-95	UP 13-95	CMIN 43	Moore Pit	J F Shea Company	Alluvial sand and gravel	Cottonwood - east of Front Street	2010	Active
RP 2-95	UP 22-95	CMIN 45	Brush Mountain Pit (Fruit Growers)	Hat Creek Construction	Volcanic cinders	Burney -southeast of intersection of Hwy 89 and Hwy 299 East	2025	Active
RP 3-95	BLM permit	CMIN 30	Pocket Hill Mine	Crystal Creek Aggregate	Underground mine (lode gold)	Keswick - west of Iron Mountain Road	2007	Idle
RP 97-1	UP 97-28	CMIN 49	Hidden Valley Aggregate	Packway Materials	Rock quarry (basalt)	Cassel - west side of Cassel Road	2012	Active
RP 99-01	UP 99-17	CMIN 52	Eastside Aggregates	Hat Creek Construction	Rock quarry (basalt)	Lake Britton - east of Hwy 89 at Clark Creek Road	2030	Active
RP 00-02	UP 0020	CMIN	Goat Ranch Quarry	Jaxon Enterprises	Rock quarry	City of Shasta Lake - south of Shasta Dam Blvd and west of Lake Blvd		Not yet approved
RP 00-03	UP 63	CMIN 12	Gray Rocks Quarry	Lehigh Southwest Cement Company	Rock quarry (limestone)	Mountain Gate - north of Fawndale Road	No expiration	Active
RP 01-001	UP 01-016	CMIN 53	Bales Mountain Quarry	Frank and Gudrun Vopat	Rock quarry (shale)	Big Bend - east of Big Bend Road	2013	Active
RP 01-002	BIA permit	CMIN 42	Ben Bridge Trust Allotment Red 514	Volcano Rock Company	Rock quarry (Basalt and cinders)	Dana - east of Spring Creek Road	No expiration	Active
RP 02-001	UP 02-017	CMIN 55	Rich Ranch	Bill and Robin Rich	Alluvial sand and gravel	Cottonwood - Gas Point Road at Foster Road	2013	Active
RP 02-002	UP 02-025	CMIN 56	RR Sand and Gravel	Ricks Construction	Alluvial sand and Gravel	Cottonwood - Gas Point Road north end of Squiss Road	2025	Approved not yet started

RP 03-001	UP 63	CMIN 13	Falkenbury Quarry	Lehigh Southwest Cement Company	Rock quarry (shale)	Mountain Gate - east of Wonderland Blvd	No expiration	Active
RP 03-002	UP 03-030	CMIN 54	Redding Wakeboard and Ski Park	Westside Aggregate	Alluvial sand and gravel	Redding - south of Latona Road	2012	Active
RP 03-003	UP 03-038	CMIN	Dry Creek Sand and Gravel	Hank Wilms	Alluvial sand and gravel	Happy Valley - south end of Dale Lane		Not yet approved
RP 05-001	UP 05-010	CMIN	Shasta Ranch Mining	Tullis Inc	Alluvial sand and gravel	Anderson - east of Kimberley at Balls Ferry Road		Not yet approved
RP 05-004	UP 05-039	CMIN	Twin Mine	Chuck Wolf	Alluvial sand and gravel	Millville - Millville Plains Road north of Dersch Road		Not yet approved

November 29, 2007

70542

Russ Mull, Director
Rick Simon, Assistant Director
Department of Resource Management
County of Shasta
1855 Placer Street
Redding, CA 96001

Re: EIR Addendum Language Draft
Shasta Ranch Aggregate Project

Gentlemen:

Attached is proposed draft language for the addendum to the Environmental Impact Report (EIR) associated with construction during the winter season. This is provided in Microsoft Word format for your modification.

Please call me if you have questions at (530) 223-2585.

Sincerely,

VESTRA Resources, Inc.

Wendy L. Johnston
Project Manager

Attachment

cc: Lyle Tullis/Shasta Ranch Aggregate

INTRODUCTION

This document constitutes an Addendum to the 2007 Environmental Impact Report (EIR) for the Shasta Ranch Mining and Reclamation Plan, SCH NO. 2005102134. The EIR was prepared by the County of Shasta pursuant to the California Environmental Quality Act (CEQA), Public Resources Code 21000 *et seq*., circulated for public review and comment, and adopted by the Shasta County Board of Supervisors on July 24, 2007.

The County of Shasta Department of Resource Management is proposing to amend the EIR to clarify responsibilities for the regulation of erosion control mechanisms and to provide consistency with the County Grading Ordinance. The proposal does not constitute a change to the project, which would necessitate a subsequent environmental document under CEQA, and aside from the addition of text to provide the clarification noted, no other changes are being proposed.

The County has determined that an Addendum is the appropriate subsequent CEQA document to address RWQCB comments because there are no project changes or changes to the EIR that would trigger any conditions identified in CEQA Guidelines §15162, as explained in more detail below. Pursuant to CEQA Guidelines §15164(c), an Addendum need not be circulated for public review, but can be included in or attached to the adopted EIR.

CALIFORNIA ENVIRONMENTAL QUALITY ACT:
Use of an Addendum to Address Proposed Changes

CEQA Guidelines (§15164(a)) allow a lead agency to prepare an Addendum to an EIR if all of the following conditions pursuant to §15162 are met:

- Changes to the project do not require major revisions to the previously prepared EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
- Changes with respect to the circumstances under which the project is undertaken do not require major revisions to the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
- No new information becomes available which shows new significant effects, or significant effects substantially more severe than previously discussed;
- Only minor technical changes or additions are necessary to make the EIR under consideration adequate under CEQA; and,
- The changes to the EIR made by the Addendum do not raise important new issues about the significant effects on the environment.

AMENDMENT

Mitigation Measure MM 4.8.3(c) states:

> *"Soil disturbance, grading, and other site preparation (levee construction, road improvements, and construction of the processing area), including vegetative clearance shall occur between May 1 and October 15 of any project construction year to avoid the rainy season and reduce soil erosion and potential runoff."*

This mitigation measure was included to reduce the potential for soil erosion and runoff from the site. In Shasta County, the Department of Resource Management, Division of Environmental Health, is responsible for the regulation of erosion through the issuance of grading permits. The grading permit is the mechanism by which the Division controls erosion mitigation practices. Work is allowed to be completed during the wet weather season if a Wet Weather Operating and Erosion Control Plan has been submitted to, and approved by, the Division of Resource Management. Specifically, Section 12.12.070 (D) of the Shasta County Ordinance states that:

> *"If the permit allows work to be done during the wet weather season, the permit shall contain a condition requiring a wet weather operating and erosion control plan, which plan shall be approved prior to the commencement of any work. The wet weather plan shall be prepared and certified by a professional listed in subsection B of this section. That plan shall include all necessary temporary and permanent erosion control measures, including those to be followed should the work stop at any time during the wet weather season. The permit shall contain a timetable for installation of the erosion control measures."*

The Department of Resource Management has determined that the mechanisms currently in place in the County provide equivalent, or better, protection of the environment and proposes to amend the mitigation measure above to be consistent with the requirements of Shasta County Ordinance Section 12.12.070(D).

> As follows: *"Soil disturbance, grading, and other site preparation (levee construction, road improvements, and construction of the processing area), including vegetative clearance shall occur between May 1 and October 15 of any project construction year to avoid the rainy season and reduce soil erosion and potential runoff, <u>unless conducted under a grading permit issued by the county pursuant to SC Ordinance Section 12.12.070(D).</u>*

AMENDMENT TO THE ENVIRONMENTAL CHECKLIST

No changes to the environmental checklist, or levels of environmental significance, were identified to be associated with the revised mitigation measure.

DISCUSSION

An Addendum to the adopted EIR is thus considered the appropriate CEQA document for the proposed inclusion of text to Mitigation Measure MM 4.8.3(c) for the following reasons:

1. Changes to the project do not require major revisions to the previously prepared and adopted EIR or substantially increase the severity of previously identified significant effects. The change is mistrial in allowing the construction activities to be completed IF operating under existing County ordinance.
2. Only minor technical and clarifying changes have been made by the Addendum. Erosion and runoff are controlled via existing grading ordinance and the additional mitigation is redundant and inconsistent. The grading ordinance requires planning and mitigation to avoid erosion and runoff in a construction setting and will have equivalent protection to the mitigation originally proposed.
3. No substantial changes will occur with respect to the circumstances under which the project was undertaken which will require major revisions, such as new areas of significance or increases in severity of previously identified effects. No changes to the project have been proposed. The addendum addresses a modification to a mitigation measure, wherein the activities were already covered by existing County ordinance, providing equivalent or better mitigation.
4. The changes to the EIR made by the Addendum do not raise important new issues about the significant effects on the environment; no new information was introduced. The grading ordinance was in effect at the time of the adoption of the EIR, the project has not changed, and the mitigation measure is feasible, but no longer required, as equivalent protection to the mitigation measure is provided through existing County Ordinance; the mitigation measures are not different than previously proposed.

CONCLUSIONS

As a result of the additional analysis, the County, as lead agency, has made a determination that the proposed revisions would not result in:

1. Any new significant effect on the environment, or
2. A substantial increase in the severity of previously identified effects, or
3. One or more significant effects not discussed in the previous EIR, or
4. Significant effects previously examined being substantially more severe than shown in the previous EIR.

An Addendum is the appropriate CEQA document for the proposed modification to the adopted EIR pursuant to CEQA Guidelines §15164(b) because only minor technical changes or additions to the existing project are necessary, and there are no project changes or changes to the adopted EIR that would trigger any conditions identified in CEQA Guidelines §15162. Consequently, a subsequent EIR or supplement to the EIR is required.

The proposed amendment will not alter the conclusions regarding adverse environmental impacts contained in the adopted EIR, nor will the amendment result in any new significant adverse impacts. This addendum has appropriately disclosed the potential impacts from the proposed modifications and will be included as part of the CEQA record for the existing project.