ATTACHMENT B

Addendum to EIR (SCH #96012034)

Background

CEMEX proposes to amend its existing mining permit (ZF95-093) to allow for dewatering activities at its Solano Concrete mining facility. The proposed dewatering would consist of a pit-to-pit transfer of mine dewatering water from the Phase 5 mining area to the Phase 4 where the water would recharge back into the aquifer. The application for the amendment to its existing mining permit (ZF95-093) is consistent with Section 10-4.412 of the Off-Channel Surface Mining Ordinance. The proposed amendment is subject to the California Environmental Quality Act (CEQA). The CEQA requirements are described below.

CEQA Requirements

This document has been prepared as an Addendum to the Solano Concrete Long-Term Mining Permit Application EIR (SCH#96012034) in accordance with the CEQA Guidelines, Section 15164.

CEQA Guidelines Section 15164 provides that the Lead Agency "shall prepare an Addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred." The conditions in Section 15162 include substantial changes in the project or the circumstances under which the project is undertaken that result in new significant environmental effects, or new significant information showing new significant environmental effects, among others. Pursuant to Section 15164(e) a brief explanation is provided herein documenting the County's decision that preparation of a subsequent EIR is not required.

The Guidelines go on to state that: 1) the addendum need not be circulated, but can be included in or attached to the Final EIR (Section 15164(c)), and 2) the County must consider the addendum with the Final EIR (Section 15164(d)).

Section 15164 was created in response to Public Resources Code Section 21166 which provides that no subsequent or supplemental EIR shall be required unless "substantial changes" in the project or the circumstances under which the project is being undertaken will necessitate "major revisions" of the EIR, or "new information" which was not known and could not have been known at the time the EIR was certified, becomes available.

Proposed Project Evaluation

The "project" that is the focus of this Addendum is an evaluation of CEMEX's proposal to transfer mine water from the Phase 5 area to the Phase 4 area for water to be used for onsite agricultural irrigation or recharge back into the aquifer. The analysis in Table 1 (below) shows the evaluation of the proposed water transfer and demonstrates that the circumstances, impacts, and mitigation requirements identified in the Solano Concrete Long-Term Mining Application EIR remain substantively unchanged by the proposed pit-to-pit transfer of mine water, such that an Addendum is warranted under Section 15164.

Table 1
Review of the Proposed Solano Concrete Dewatering Project
Relative to the Initial Study Environmental Checklist Factors

Environmental Factor	Discussion	Level of Impact
Land Use	No land use change is proposed. Surface mining and aggregate processing would continue to occur at the Solano Concrete Facility and would continue to be subject to the Off-Channel Mining Ordinance and the requirements established in the Solano Concrete Facility EIR. Off-site land uses could be affected if dewatering were to substantially impact the availability of groundwater off-site. However, as discussed under the Hydrology analysis below, OCSMO Sec. 10-4.412 only allows dewatering in cases where it is demonstrated that no hydrogeological impacts would occur. Therefore, dewatering implemented under the proposed amendment would not impact off-site land uses. For these reasons, the proposed amendment would have no impacts related to land use. The proposed dewatering would not change the significance determinations from the project-level EIR.	No Impact.
Aesthetics	The equipment that would be used to dewater the Phase 5 mining area would involve small pipes and pumps relative to the mining equipment so the dewatering process would not be distinctly visible from any roads and views of the Solano Concrete mining facility would not alter the existing character of the area. Furthermore, the Solano Concrete mining operation, including dewatering activities, would continue to be subject to Section 10-4.404 of the Off-Channel Surface Mining Ordinance, which addresses aesthetics requirements, and to the aesthetics measures in the OCMP, OCMP EIR. The project-level EIR for the Solano Concrete project found all potential aesthetic impacts to be less than significant, except one, and that would not change with the inclusion of wet pit dewatering activities. level EIR	No Impact.

	The EIR found that SR-16 would be impacted due to creation of stockpiles standing 40' high. The OCMP includes provisions requiring soil stockpiles to be setback a minimum of 500' from public right-of-way and off- site residences to reduce potential impacts. The proposed dewatering would not change the significance determinations related to aesthetics from the project-level EIR.	
Population and Housing	The proposed amendment would allow dewatering as part of surface mining operations. It would not include construction of new housing or any development that would draw people to the area. Therefore, the proposed amendment would have no impacts related to population and housing.	No Impact.
Cultural and Paleo Resources	The proposed amendment would not increase the amount of excavation relative to what was analyzed under the project level EIR. Furthermore, dewatering does not have the potential to disturb paleontological, archaeological, historic, or other cultural resources because it does not disturb the ground surface. For these reasons, the proposed amendment would have no impacts related to cultural or paleontological resources. The proposed dewatering would not change the significance determinations from the project-level EIR.	No Impact
Transportation and Circulation	Dewatering activities implemented as a result of the proposed amendment would not require additional vehicle or truck trips in and out of mining sites. Therefore, the proposed amendment would have no impacts related to traffic and circulation. The proposed amendment would not increase traffic impacts relative to those evaluated in the 1996 project-level EIR.	No Impact.
Noise	Dewatering activities would not require additional vehicle or truck trips in and out of mining sites, and therefore would not have the potential to increase traffic noise. The equipment used to dewater a wet pit would involve pumps operated at the surface, which would generate noise, but would not be a source of perceptible vibration. The noise generated by pumps would be similar to, or lower than, other equipment found on mining sites (e.g., scrapers, trucks, and processing plants). Furthermore, all mining operations, including dewatering activities, would continue to be subject to Section 10-4.421 of the Off-Channel Surface Mining Ordinance, which requires noise levels at the property boundaries of a mining site to remain below daytime and nighttime standards of 80 dBA Leq and 65 dBA Leq, respectively, and to remain below 60 dBA Leq and 60 dBA CNEL at the nearest noise-sensitive land uses. Dewatering activities would also be subject to all	Less than significant.

	OCMP policies regarding noise; and all applicable mitigation measures related to noise in the OCMP EIR. The project-level EIR for the Solano Concrete facility found potential impacts related to processing plant activities to be less than significant. For these reasons, the proposed amendment would not increase noise impacts relative to those evaluated in the 1996 project-level EIR.	
Air Quality	The proposed amendment would require pump systems used for dewatering to be powered by electricity (i.e., through connection to power lines) or solar power. Pumping of water from the wet pits would be accomplished using similar electric pumps and energy demands that are used to pump groundwater from nearby wells. Because there would be no substantial change in the equipment or energy used for mining operations, the proposed amendment would have no new impacts related to on-site criteria pollutant or toxic air contaminant emissions. The proposed dewatering would not change the significance determinations from the project-level EIR.	Less than significant.
Greenhouse Gas Emissions	The proposed amendment would require pump systems used for dewatering to be powered by electricity (i.e., through connection to power lines) or solar power. Pumping of water from the wet pits would be accomplished using similar electric pumps and energy demands that are used to pump groundwater from nearby wells. Because there would be no substantial change in the equipment or energy used for mining operations, the proposed amendment would have no impacts related to greenhouse gas emissions.	Less than significant.
Wind and Shadow	The equipment used to dewater a wet pit would involve pipelines and pumps. This equipment would not be large enough to block wind or cast a shadow outside of the immediate area of the equipment. Therefore, the proposed amendment would have no impacts related to wind and shadow.	No Impact.
Recreation	Dewatering activities would only occur in active mining areas that do not support any recreational activities available to the public. Therefore, the proposed amendment would have no impacts related to recreation.	No Impact.
Utilities and Service Systems	No new water or wastewater treatment facilities, or stormwater drainage facilities, would be required to support dewatering activities. Pumps would be connected to existing electrical utilities at the mine. Dewatering would not generate solid waste, nor would it require the expansion of water supply entitlements. Therefore, the proposed amendment	No Impact

	would have no impacts related to utilities and service systems.	
Public Services	Dewatering activities would not require the construction of new public service facilities (e.g., fire protection, police protection, school, parks), and would not affect existing public service facilities. Therefore, the proposed amendment would have no impacts related to public services.	No Impact.
Biological Resources	Biological resources could be affected if dewatering were to adversely impact water resources (e.g., creeks and wetlands) in the areas surrounding the wet pit(s) from which dewatering is occurring. This in turn could have an adverse effect on surrounding habitats and the species that rely on them. However, as discussed under the Hydrology analysis below, the proposed amendment only allows dewatering in cases where it is demonstrated that no hydrogeological impacts would occur to water resources. Furthermore, dewatering would take place concurrently with active surface mining operations, and all mining operations, including dewatering activities, would continue to be subject to biological resources protection measures in the Off Channel Surface Mining Ordinance, OCMP, OCMP EIR, and project-level EIR. The protection measures require surface mining operations to support the preservation and enhancement measures in the Yolo County Habitat Conservation Plan/Natural Community Conservation Plan (Yolo HCP/NCCP). For these reasons, the proposed amendment would have no impacts related to biological resources beyond those evaluated in the 1996 project-level EIR.	No Impact.
Geology and Soils	Subsidence of soils could occur if dewatering activities draw down groundwater levels in the areas surrounding the wet pit(s) from which dewatering is occurring. However, as discussed under the Hydrology analysis below, the proposed amendment only allows dewatering in cases where it is demonstrated that no hydrogeological impacts would occur to water resources. Therefore, the proposed amendment would have no impacts related to geology and soils.	No Impact.
Hydrology and Water Quality	The permit modification proposed by CEMEX would allow the operators at the Solano Concrete facility to use dewatering if, as specified in the OCSMO Sec. 10-4.412, site-specific analysis prepared by qualified Professional Engineer or Professional Geologist demonstrates that such dewatering would not result in off-site impacts to groundwater or other water resources (e.g., creeks and wetlands).	No Impact.

	CEMEX retained EMKO Environmental to evaluate whether the pit-to-pit transfer at the Solano Concrete facility may constitute an increased risk to ground water resources. The findings are documented in a March 2023 technical report.[1] The report was reviewed by the Cache Creek Technical Advisory Committee Hydraulic Engineer. The review found that there was adequate information available to allow for the evaluation of potential hydrology, water quality, and water supply consequences related to the pumping of water from on-site wet pits rather than from the on-site supply well, and that there was substantial evidence to support a determination that there were no adverse environmental impacts related to the ongoing extraction of water from the on-site wet pits for use in the aggregate processing plant. In this case, water was being used on-site and did not exceed the amount approved in the project level EIR (consistent with the requirements of the OCSMO Sec. 10-4.412). CEMEX retained a Professional Engineer or Professional Geologist, and demonstrated using historic data and hydrogeologic principles that dewatering would not result in adverse hydrogeological impacts, the proposed amendment would have no new impacts related to hydrology or water quality.	
Hazards/Hazardous Materials	The proposed amendment would require pump systems used for dewatering to be powered by electricity (i.e., through connection to power lines) or solar power. Therefore, the only hazardous materials use associated with the dewatering activities would be the hazardous materials used in pump maintenance activities, such as lubricants. All mining operations, including dewatering activities, would continue to be subject to the hazards and hazardous materials control measures in the Off Channel Surface Mining Ordinance, OCMP, OCMP EIR, and project-level EIR. The measures require spills to be reported and immediately controlled; monitoring programs for wet pits and the surrounding groundwater to be developed and implemented; and maintenance activities to be performed at least 100 feet from open bodies of water. For these reasons, the proposed amendment would have no impacts related to hazards and hazardous materials beyond those previously evaluated.	No Impact.

[1] Kopania, A. "March 23, 2023". *Site-Specific Dewatering Analysis for Phase 5 Mining CEMEX Cache Creek Facility, Yolo County California*

Mineral Resources	The proposed amendment to allow dewatering activities would not change the maximum annual production level for the Solano Concrete operation. Therefore, the proposed amendment would have no impacts related to mineral resources.	No Impact.
Agricultural and Forest Resources	Dewatering would take place only in the existing Phase 5 and Phase 4 wet pits and would not affect agricultural or wooded areas in the area. Therefore, the proposed amendment would have no impacts related to agricultural and forest resources. As discussed in the staff report, the applicant proposes using some of the wet pit water to irrigate the agriculture on previously mined areas that have since been reclaimed.	No Impact.

Determination

It has been demonstrated through hydrogeological analysis that the proposed mining permit amendment to allow pit-to-pit transfer would not result in hydrogeological impacts (or other related impacts) and does not represent a substantive change in the approved 1996 Solano Concrete EIR.

In order to assess whether additional CEQA review is required for the additional operations, an analysis of the applicability of Section 15162 of the CEQA Guidelines has been prepared. Table 2 on the following pages provides verbatim wording from the Guidelines and a corresponding analysis of the applicability of each section to the proposed new operations.

Table 2

Comparison of CEQA Requirements and Request

CEQA Requirement (Section 15162)	Relationship to Proposed Project
(a) When an EIR has been certified or negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in light of the whole record, one or more of the following:	The Solano Concrete EIR was certified by the County Board of Supervisors on November 25, 1996. Findings of Fact, a Statement of Overriding Considerations, and a Mitigation Monitoring Plan were also adopted at the same time. The information below summarizes the substantial evidence in support of the County's determination that the preparation of a Subsequent EIR is not required.
(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;	There are no changes in the proposed amendment that would require major revisions of the 1996 Solano Concrete EIR. The amendment would not increase the total annual production of aggregate or increase traffic associated with the facility. It would not result in any new effects on agricultural land. The potential for new impacts to groundwater resources has and will continue to be addressed by the analysis and monitoring requirements of the recently revised OCSMO Sec. 10-4.412. which requires that dewatering only be permitted if (1) site-specific analysis prepared by a qualified Professional Engineer or Professional Geologist demonstrates that such dewatering would not result in off-site impacts to groundwater or other water resources (e.g., creeks and wetlands); (2) monitoring of groundwater levels is conducted prior to and for the duration of dewatering activities; (3) the water from dewatering is put to a beneficial use and is not discharged off-site; and (4) groundwater monitoring measurements and the volumes of groundwater pumped from wet pits are recorded and reported to the County annually. Given that dewatering would only be allowed under circumstances where it is continually demonstrated that the dewatering

	activities do not result in hydrogeological impacts, no new significant environment effects, or substantial increases in the severity of previously identified significant effects, would occur as a result of the proposed amendment. Table 1 presents the impact analysis for each environmental resource topic.
(2) Substantial changes will occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or	The Solano Concrete EIR was approved in November 1996. No substantial changes have occurred with respect to the circumstances under which the off-channel surface mining is or will be undertaken that would warrant major revisions to the previous CEQA review. As described above and analyzed in Table 1 above, the proposed amendment would not create new significant environmental effects or increase previously identified effects. Therefore, the County has concluded that the proposed amendment is not a substantial change in circumstances.
(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:	There has been no new information of substantial importance that has become known since the Solano Concrete EIR was approved in November 1996. The proposed amendment will not cause any new significant effects that were not discussed in the 1996 EIR.
(A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;	The proposed amendment will not have any significant impacts that were not discussed in the previous EIR.
(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;	As noted above and analyzed in Table 1, above, the proposed amendment will not contribute to, or substantially increase the severity of, any previously identified significant impacts.
(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or	There are no relevant mitigation measures or alternatives previously found to be infeasible that would in fact be feasible in mitigating significant effects of the proposed amendment. As analyzed in Table 1, the proposed amendment includes conditions and requirements that would ensure that all potential adverse effects to groundwater and biological resources are avoided.
(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to	No mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR are included in the proposed amendment.

adopt the mitigation measure or alternative.	
(b) If changes to a project or its circumstances occur or new information becomes available after adoption of a negative declaration, the lead agency shall prepare a subsequent EIR if required under subsection (a). Otherwise, the lead agency shall determine whether to prepare a subsequent negative declaration, and addendum, or no further documentation.	A negative declaration was not adopted for the OCMP; therefore, this section does not apply.
(c) If the project was approved prior to the occurrence of the conditions described in Subsection (a), the subsequent EIR or negative declaration shall be prepared by the public agency which grants the next discretionary approval for the project. In this situation no other responsible agency shall grant an approval for the project until the subsequent EIR has been certified or subsequent negative declaration adopted.	A subsequent EIR has been determined not to be required; therefore, this section is not applicable.
(d) A subsequent EIR or subsequent negative declaration shall be given the same notice and public review as required under Section 15087 or Section 15072. A subsequent EIR or negative declaration shall state where the previous document is available and can be reviewed.	A subsequent EIR has been determined not to be required; therefore, this section is not applicable.

RESPONSES TO COMMENTS

ENVIRONMENTAL IMPACT REPORT for

SOLANO LONG-TERM OFF-CHANNEL MINING PERMIT APPLICATION

SCH #96012034

Yolo County

September 16, 1996

County of Yolo

COUNTY ADMINISTRATIVE OFFICE
625 Court Street, Room 202 Woodland, CA 95695 (916) 666-8150 FAX (916) 666-8147

ROY PEDERSON
County Administrative Officer

NOTICE OF AVAILABILITY AND PUBLIC HEARING

RESPONSE TO COMMENTS on DRAFT ENVIRONMENTAL IMPACT REPORT for the SOLANO CONCRETE COMPANY LONG-TERM, OFF CHANNEL MINING PERMIT APPLICATION

TO: Interested Agencies and Individuals

FROM: Heidi Tschudin, Contract Planner
Yolo County Community Development Agency

DATE: September 16, 1996

The County of Yolo is analyzing an application from Solano Concrete Company, Inc. (1601 Cement Hill Road, Fairfield, CA 94533) for a Mining Permit, Reclamation Plan, Floodplain Development Permit, Rezoning, Reclamation Plan amendment for its existing short-term Off-Channel Permit, and Development Agreement to allow an off-channel mining operation on a northern 598-acre portion of eight adjacent parcels, comprising 1,828 acres. The applicant requests an increase in the permitted production rate from 772,400 tons per year mined to 1,445,783 tons per year. Rezoning to attach the Sand and Gravel (S-G) overlay and amendment of OCMP Performance Standards 4.5-2 and 4.5-3 are also necessary as part of this proposal. The site is located in unincorporated Yolo County immediately south of Cache Creek, north of State Highway 16 and immediately east and west of Interstate 505.

Mining and reclamation would generally be conducted concurrently in seven phases over a 30-year period. The aggregate would be extracted outside of the active channel of Cache Creek from "wet pit" mining operations that extend below the seasonal high groundwater level to a depth of up to 70 feet below the existing ground surface. The mining pits would be reclaimed to a combination of uses. Post-reclamation uses within the mining areas include row crop agriculture (223 acres), tree crop production (223 acres), four lakes (161 acres), wildlife habitat (65 acres) and slopes and roads (26 acres).

Reclaimed areas include portions of the adjoining Hutson parcel (100 acres) where mining has been completed under a previous permit approved in 1980, and 35 acres of the Farnham West parcel currently being mined under a three-year permit issued in 1995.

In addition to the proposed mining and reclamation described above, the application proposes restoration of 35 acres of previously mined or unmined land within the project site to oak woodland habitat. This restoration is proposed as a "net gain" to Yolo County. The applicant also proposes continued financial contribution to the Cache Creek Conservancy and dedication of two lakes in the eastern portion of the site to an appropriate public agency for recreational or habitat uses.

This EIR is a project EIR which tiers off the Program EIR for the Off-Channel Mining Plan (OCMP) and incorporates by reference the Cache Creek Resources Management Plan (CCRMP). The EIRs for those two plans were certified on July 30, 1996 (OCMP) and August 20, 1996 (CCRMP); the plans were also approved by the Board of Supervisors at the time of EIR certification.

The County and its consultant, BASELINE Environmental Consulting, have prepared a RESPONSES TO COMMENTS document (Volume 2) for the project-level Draft Environmental Impact Report (DEIR) which provides responses to all comments received during the public review period on the DEIR. The Response to Comments volume, together with the Draft EIR constitute the Final EIR (FEIR) for this project.

This RESPONSE TO COMMENTS document is now available for public review at the public counter of the Community Development Agency, at 292 West Beamer Street, Woodland, California 95695. The document is also available for public review at all Yolo County branch libraries.

A **public hearing** will be held in front of the County Planning Commission on November 13 and 14, 1996 in the Commission Chambers located at 292 West Beamer Street in Woodland, to take action on the project, together with the EIR. A **public hearing** to approve, modify, or deny the project will be held before the Board of Supervisors on November 25, 26, and 27, 1996 (if necessary).

For more information regarding this project, please contact Heidi Tschudin at (916) 447-1809 or David Morrison at (916) 666-8041.

RESPONSES TO COMMENTS

ENVIRONMENTAL IMPACT REPORT for

SOLANO LONG-TERM OFF-CHANNEL MINING PERMIT APPLICATION

SCH #96012034

Yolo County

September 16, 1996

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CHAPTER 1.0 INTRODUCTION

CHAPTER 1.0 INTRODUCTION

This document contains all comments, received during the public review period, on the Draft Environmental Impact Report (EIR) for the Solano Long-Term Off-Channel Mining Permit Application. The project consists of off-channel mining for aggregate adjacent to Cache Creek within an area governed by the policies of the Yolo County Off-Channel Mining Plan (OCMP) and its implementing ordinances, the Off-Channel Surface Mining Ordinance and the Surface Mining Reclamation Ordinance, adopted on July 28, 1996 by the Yolo County Board of Supervisors. A Program EIR was prepared for the OCMP; this project EIR for the Solano Long-Term Off-Channel Mining Permit Application tiers off the Program EIR for the OCMP. The County also prepared and approved (August 20, 1996) a Cache Creek Resources Management Plan (CCRMP) and associated Program EIR for maintenance activities along Cache Creek, which are incorporated by reference, as applicable.

In the course of adoption of the OCMP, the Mitigation Measures of the OCMP EIR were incorporated into the implementing ordinances. Appendix A of this document presents a table which references the location of each OCMP EIR mitigation measure within the OCMP and its implementing ordinances.

The site is located in unincorporated Yolo County immediately south of Cache Creek, north of State Highway 16 and immediately east and west of Interstate 505. Mining and reclamation would generally be conducted concurrently in seven phases over a 30-year period. The aggregate would be extracted outside of the active channel of Cache Creek from "wet pit" mining operations that extend below the seasonal high groundwater level to a depth of up to 70 feet below the existing ground surface. The mining pits would be reclaimed to a combination of uses. Post-reclamation uses within the mining areas include row crop agriculture (223 acres), tree crop production (223 acres), four lakes (161 acres), wildlife habitat (65 acres) and slopes and roads (26 acres).

Reclaimed areas include portions of the adjoining Hutson parcel (100 acres) where mining has been completed under a previous permit approved in 1980, and 35 acres of the Farnham West parcel currently being mined under a three-year permit issued in 1995.

In addition to the proposed mining and reclamation described above, the application proposes restoration of 35 acres of previously mined or unmined land within the project site to oak woodland habitat. This restoration is proposed as a "net gain" to Yolo County. The applicant also proposes continued financial contribution to the Cache Creek Conservancy and dedication of two lakes in the eastern portion of the site to an appropriate public agency for recreational or habitat uses.

The County of Yolo used several methods to solicit input on the Draft EIR. These methods included a public scoping meeting on January 29, 1996; the distribution of a Notice of Preparation; distribution of the Notice of Availability of the Draft EIR; distribution of the Draft EIR; and a public hearing and workshop in front of the County Planning Commission on June 26, 1996.

The Draft EIR was distributed to various public agencies, responsible agencies, and interested individuals. Copies of the document were also made available at the public counter of the Community Development Agency and at all Yolo County branch libraries. The report was made available for public review and comment for a 45-day period. The public review period established by the State Clearinghouse for the Draft EIR commenced on June 3, 1996 and expired on July 18, 1996.

Comments and responses are grouped by letter for written comments and by speaker for oral comments. If the subject matter of one letter overlaps that of another letter, the reader may be referred to more than one group of comments and responses to review all information on a given subject. Where this occurs, cross-references are provided.

This document also includes a Summary of Changes in Chapter 2. The Summary contains clarification, amplification, and corrections that have been identified since publication of the Draft EIR.

This second volume, together with the Draft EIR (Volume 1), constitute the Final EIR for the proposed project.

CHAPTER 2.0 SUMMARY OF CHANGES

CHAPTER 2.0 SUMMARY OF CHANGES

Since publication of the Draft EIR on June 3, 1996, the following changes are hereby considered to have been made to clarify, amplify, and/or provide minor technical correction to the first volume. New text which has been added to the DEIR is highlighted and text which has been deleted is presented in ~~strikeout~~ format.

The following text revisions are shown in the order in which they appear in the DEIR (i.e., by page number), and the "Text Change #s" provided below are referenced in Section 4.0 (Responses to Comments), where appropriate. A revised copy of the Table 2-1: Summary of Impacts and Mitigation Measures is provided in Appendix B.

Text Change # 1:

Page 2-2 -- After the 5th bullet on the page, the following has been added:

- Impacts to groundwater quality from mercury, eutrophication, pathogens transported by water fowl, salts, and boron.
- Effects to municipal water supply wells.

Text Change # 2:

Page 3-5 -- The following revision is made to second sentence of the second full paragraph:

> ... The proposed mining would occur on ~~734~~ 598 acres in the northern portions of seven of the eight adjacent parcels.....

Text Change # 3:

Page 3-6 -- The text on the eighth line has been modified as follows:

The closest town is Madison, located approximately ~~one~~ 0.2 mile southwest of the western boundary of the site, and approximately 0.85 mile from the nearest area proposed to be mined.

Text Change # 4:

Pages 3-6 and 3-15 -- Figures 3-3 (page 3-6) and 3-4 (page 3-15) have been amended to show the location of the Madison sewage ponds and Madison Migrant Center in relationship to the proposed mining and reclamation area. The revised Figures are presented at the end of this section.

Text Change # 5:

Page 3-8 -- The following revision is made to second sentence of the first full paragraph:

...Hydraulic analyses prepared for the proposed project (Cunningham Engineering, 1995) indicate that the hundred-year flood flows would be contained the existing creek banks and levied of the channel of Cache Creek in the area of the project site. Relatively small portions of the project site north of Mining Areas III, V and VI are subject to flooding during 100 year flow events (see Impact 4.3-4). Based on the elevation of the levee in these areas, the frequency of flooding would be more frequent than a 100-year event but less frequent than a 50 year event. The project proposes to raise the levees in all areas of the project site which do not currently provide 100-year flood protection.

Text Change # 6:

Page 3-8 -- The following revision is made to last sentence of the second full paragraph:

...Reports on mining and reclamation activities have been submitted annually by Solano Concrete to Yolo County since ~~1989~~ 1984.

Text Change # 7:

Page 3-20 -- The text of the second bulleted item on the page has been amended as follows:

- ~~Various local encroachment permits~~ Caltrans encroachment permit for lane construction

Text Change # 8:

Page 3-20 -- The text of the third bulleted item on the page has been amended as follows:

- Rezoning of ~~598~~ 558 acres currently zoned A-1 to attach the sand and gravel (S-G) overlay.

Text Change # 9:

Page 3-21 -- The text of the EIR has been amended after the last paragraph:

One of the possible actions for which this EIR would be used is the negotiation of a Development Agreement between Solano Concrete Company, Inc. and Yolo County. A Development Agreement would be a legally binding instrument for financial and other commitments between the County and an applicant, including conditions of approval and mitigation measures of the EIR. The Development Agreement could be finalized only after approval of the processed project.

Text Change # 10:

Page 4.2-4 -- Figure 4.2-1 has been modified. The revised figure is presented at the end of this section.

Text Change # 11:

Page 4.2-23 -- Add the following sentence to the end of the second paragraph under Impact 4.2-8:

. . .The nearest residence to the mining area is located on SR 16 approximately 1,600 feet south of the Phase V mining boundary (Figure 4.2-1). The nearest concentration of residences to the mining area is the Madison Migrant Center, located approximately 0.2 mile southwest of the western boundary of the site, and approximately 0.35 mile from the nearest areas proposed to be mined (the northern portion of the Solano West parcel).

Text Change # 12:

Page 4.3-36 -- The second paragraph under Mitigation Measure 4.3-4c is hereby amended as follows:

Alternatively, the portions of the levee in these areas could be raised to provide 100-year flood protection for these areas ~~with a minimum of three feet of freeboard~~. Prior to raising the levee, if that is the selected alternative, a hydraulic analysis prepared and signed by a licensed engineer, demonstrating that off-site flooding impacts would not be created, must be submitted to the County for review. This mitigation measure would be consistent with the proposed project and the requirements of the OCMP. Any levee work performed shall be completed prior to commencement of mining within the affected phases.

Text Change # 13:

Page 4.3-37 -- Mitigation Measure 4.3-4f has been modified as follows:

Mitigation Measure 4.3-4f

The proposed project design shall be revised to provide a biotechnical design to replace the proposed placement of rip rap on that section of the south bank of Cache Creek extending 1,500 downstream from the I-505 bridge. The proposed biotechnical bank protection shall be submitted to the Yolo County Development

Agency and Caltrans for approval prior to the commencement of mining in Mining Area VII.

Text Change # 14:

Page 4.3-37 -- The following text amendment is made to Mitigation Measures 4.3-4f, 4.3-4g, and 4.3-4h:

Mitigation Measure 4.3-4f

The proposed project design shall be revised to provide a biotechnical bank protection design to replace the proposed placement of rip rap on that section of the south bank of Cache Creek extending 1,500 feet downstream from the I-505 bridge unless engineering evaluations demonstrate that riprap must be used to control erosion. The proposed ~~biotechnical~~ bank protection shall be submitted to the Yolo County Community Development Agency for approval prior to the commencement of mining in Mining Area VII.

Mitigation Measure 4.3-4g

Mining within Mining Area VII shall not be conducted within 700 feet of the existing stream bank until stream bank stabilization is provided for that portion of the south bank of Cache Creek upstream from the I-505 bridge. The bank protection shall be performed in accordance with the guidelines presented in the Cache Creek Resource Management Plan and Cache Creek Improvements Program. The proposed ~~biotechnical~~ bank protection design shall be submitted to the Yolo County Community Development Agency for approval prior to the commencement of mining in Mining Area VII.

Mitigation Measure 4.3-4h

Recommendations of the geotechnical report (Kleinfelder, 1995) for stabilization of the south bank of Cache Creek shall be implemented within one year after the commencement of mining. Prior to the construction of the improvements, detailed plans identifying the type of stream bank protection shall be submitted to the County for review and approval. The bank protection plans shall incorporate biotechnical methods of bank stabilization when appropriate for erosion control.

Text Change # 15:

Page 4.3-37 -- The last sentence of Mitigation Measure 4.3-4i has been amended as follows:

Mitigation Measure 4.3-4i

... Participation shall include, but not be limited to, contribution of equipment and labor for channel widening projects and channel maintenance ~~mining~~ activities recommended by the County ~~and modification at the Esparto bridge~~.

Text Change # 16:

Page 4.4-4 -- The first full sentence of the page is amended as follows:

The results of the analysis indicated that the 100-year design flow is contained within the channel banks throughout this reach of Cache Creek~~, although portions of the levee do not have three feet of freeboard, as required of a levee designed to provide 100-year flood protection~~.

Text Change # 17:

Page 4.4-4 -- The second sentence of the second paragraph is hereby modified as follows:

According to the hydraulic study (Cunningham Engineering, 1995), implementation of the CCRMP would result in approximately five feet of channel aggradation ~~adjacent to the site~~ at the I-505 bridge; aggradation would decrease downstream toward the project site.

Text Change # 18:

Page 4.4-7 -- Figure 4.4-3 has been modified to include the location of the "Hayes 1" water supply well and is presented at the end of this section.

Text Change # 19:

Page 4.4-12 -- The first full sentence at the top of the page is amended as follows:

. . . and improvement of management practices to reduce discharges that exceed water quality ~~standards~~ objectives.

Text Change # 20:

Page 4.4-16 -- The first full paragraph of the page is amended as follows:

The proposed mining areas will be protected from 100-year storm events through the use of levees and berms. ~~Furthermore, three feet of freeboard will be provided, creating additional flood protection.~~ . . .

Text Change # 21:

Page 4.4-21 -- The first full paragraph has been amended as follows:

The OCMP EIR requires that proposed mining areas are protected from inundation during the 100-year flood (OCMP EIR Impact 4.4-1). ~~The levee protecting the project site does not have three feet of freeboard above the 100-year flood inundation level and is therefore inconsistent with the OCMP EIR.~~ . . .

Text Change # 22:

Page 4.4-22 -- The discussion under Impact 4.4-1 is hereby amended as follows:

~~Under existing conditions, the project site would not be inundated by events equal to or less than the 100-year storm event. However, portions of the existing levees do not have three feet of freeboard. Therefore, the project is not consistent with flood protection requirements of the OCMP.~~

~~**Mitigation Measure 4.4-1a**~~

~~Prior to initiation of mining proposed in this application, the applicant shall increase levee heights to provide three feet of freeboard above the 100-year flood elevations in the vicinity of the project site, except as discussed in Mitigation Measure 4.3-4c.~~

Mitigation Measure 4.4-1~~b~~a

The applicant must apply for, and receive, a floodplain development permit from Yolo County prior to mining activities within U.S. Department of Housing and Urban Development designated 100-year floodplains, as required by the County General Plan and Flood Ordinance.

Implementation of ~~these~~ this mitigation measure~~s~~ would reduce this impact to a less-than-significant level.

Text Change # 23:

Page 4.6-30 -- The fourth sentence of the page is amended as follows:

... Grassland cover ~~and hedgerow plantings dominated by valley oak trees and elderberry shrubs~~ would be established on the transitional slopes between the finished grade of reclaimed agriculture fields and the surrounding unmined areas. Hedgerow plantings dominated by valley oak trees and elderberry shrubs would be planted around the Hutson parcel and possibly in other locations if required as part a Section 2081 agreement to mitigate potential impacts on Swainson's hawk. Cross-sections from the HRP...

Text Change # 24:

Page 4.6-36 -- Mitigation Measure 4.6-2a is amended as follows:

Figure 8 of the HRP shall be revised to indicate the location of hedgerow plantings, proposed by the applicant~~, on any side slopes around the perimeter of areas identified as "Integrated Agriculture" (tree crops) and "Reclaimed Agriculture."~~ around the Hutson parcel or as specified as part of habitat enhancement in a Section 2081

permit if required by the CDFG or to mitigate at a 1:1 ratio the actual loss of fence row habitat.

Text Change # 25:

Page 4.6-36 -- The following text is added to Mitigation Measure 4.6-2d:

... The proposed project shall be revised to provide a biotechnical bank protection design to replace the proposed placement of riprap on that section of the south bank of Cache Creek extending 1,500 feet downstream from the I-505 bridge unless engineering evaluations demonstrate that riprap must be used at certain locations to control severe erosion.

Text Change # 26:

Page 4.6-38 -- The second sentence of the page is amended as follows:

...them along the shorelines. Creating a ~~few~~ vegetated natural islands would provide permanent, secure nesting habitat for a variety of species...

Text Change # 27:

Page 4.6-38 -- Mitigation Measure 4.6-3a is amended as follows:

At least one permanent island shall be created on ~~each~~ one of the proposed lakes to improve their wildlife habitat value. ~~The permanent islands would replace the proposed artificial islands.~~ The artificial islands and submerged peninsulas proposed in the HRP should be retained on all lakes. Characteristics of the permanent island shall include the following:

- The elevation of the islands shall extend a minimum of five feet above the average high groundwater level (approximately 125-foot elevation) to prevent complete inundation during the winter months. Slopes of the island shall not exceed 3:1 above the average low groundwater level.

- The channel of water separating the island from the mainland shall have a minimum distance of 20 feet and a depth reaching at least 5 feet during the average summer low groundwater level to prevent predators from wading to the island during the summer months. A temporary levee to permit vehicle access and maintenance of restoration plantings on the island shall be included in the design, but the levee shall be removed following completion of the minimum five year monitoring program for the restoration effort.

- ~~Each~~ The island shall be revegetated according to the HRP, with perennial marsh at the lowest elevations and low terrace riparian species up to the average

high groundwater level, with a cover of grassland and scattered shrubs provided over the top of the island.

Text Change # 28:

Page 4.6-40 -- The text of Mitigation Measure 4.6-4a is amended as follows:

~~As required by Action 6.4-4 of the OCMP, a~~ A CDFG Code Section 2081 authorization, or the posting of a reclamation bond or letter of credit naming CDFG as the beneficiary, or other alternative mechanism acceptable to CDFG shall be executed prior to ~~project approval~~ commencement of mining.

Text Change # 29:

Page 4.6-43 -- The following modification is made to the last sentence of the text of Mitigation Measure 4.6-6a:

. . . grading or other modifications. ~~Consistent with Action 4.4-1 of the CCRMP, u~~ Use of biotechnical protection design methods. . .

Text Change # 30:

Page 4.7-2 -- The text of the fifth paragraph, line two has been changed as follows:

The project site is located in the relatively flat lands of Hungry Hollow and is surrounded by the Dunnigan Hills to the northeast, the ~~Capay~~ Rumsey Hills to the northwest~~, and the Rumsey Hills to the southwest.~~....

Text Change # 31:

Page 4.11-10 -- The last bullet on the page has been amended as follows:

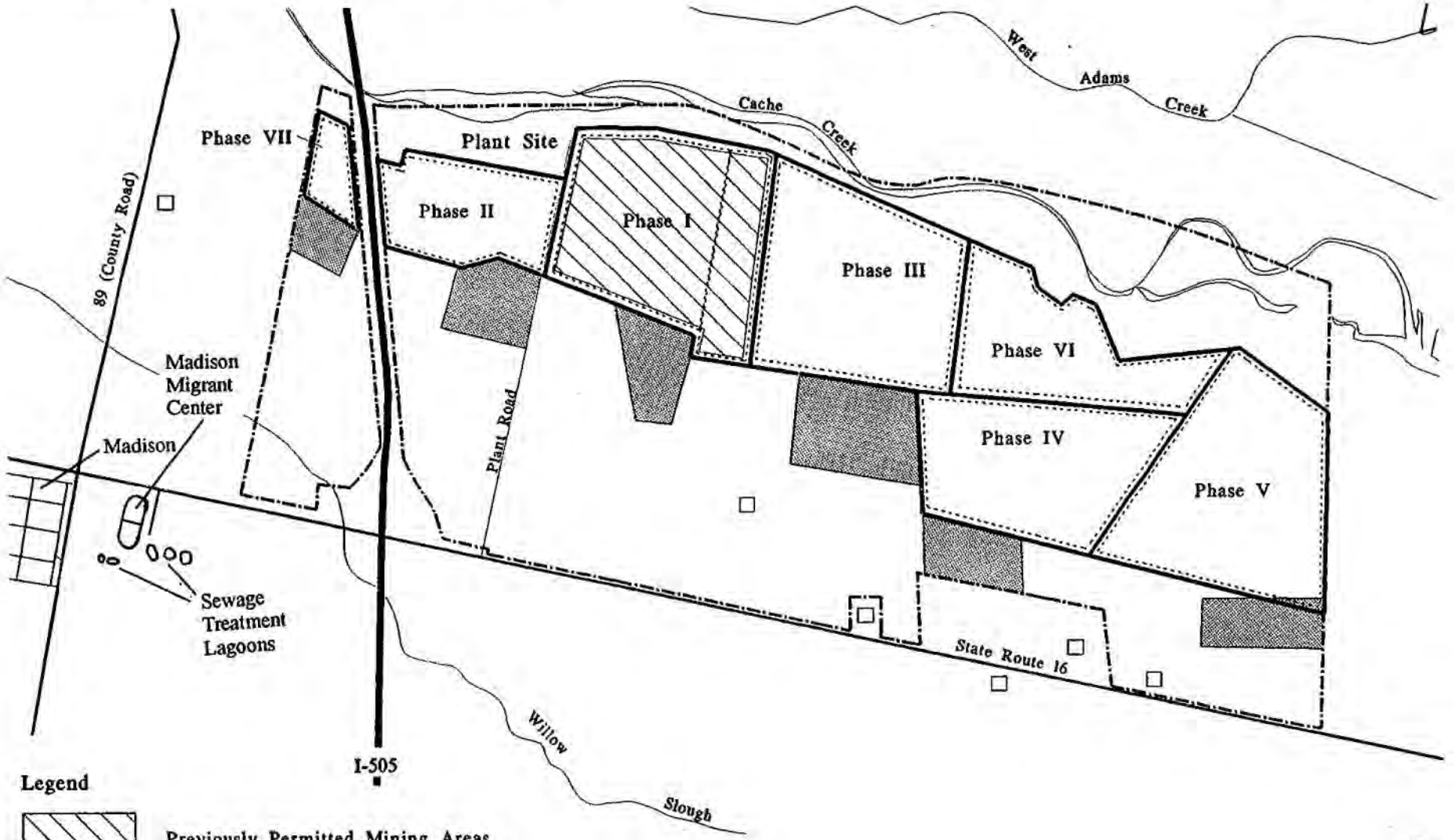
- ~~After mapping~~ Before mining begins on Yol-69, an archaeologist shall be contracted...

The text of the first bullet on page 4.11-11 has been amended as follows:

- If it is determined that the site contains significant cultural resources, an appropriate mitigation program shall be developed, before mining begins on Yol-69, based on the information obtained during the site evaluation.

GENERALIZED MINING PLAN

Figure 3-3

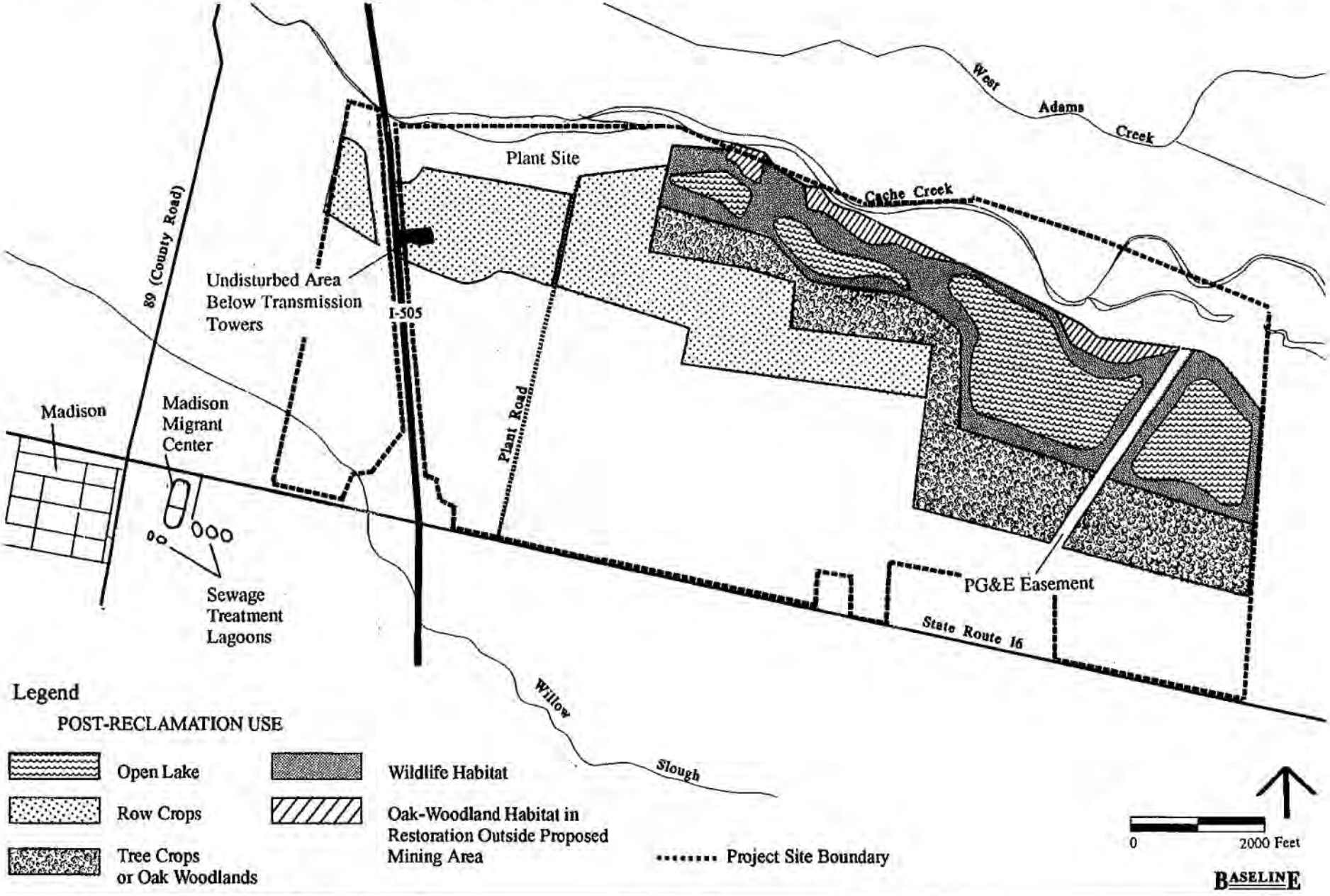


BASELINE

95263-00.03 3/19/96, Cadd File N(2), 263GMP Solano Long-Term

GENERALIZED RECLAMATION PLAN

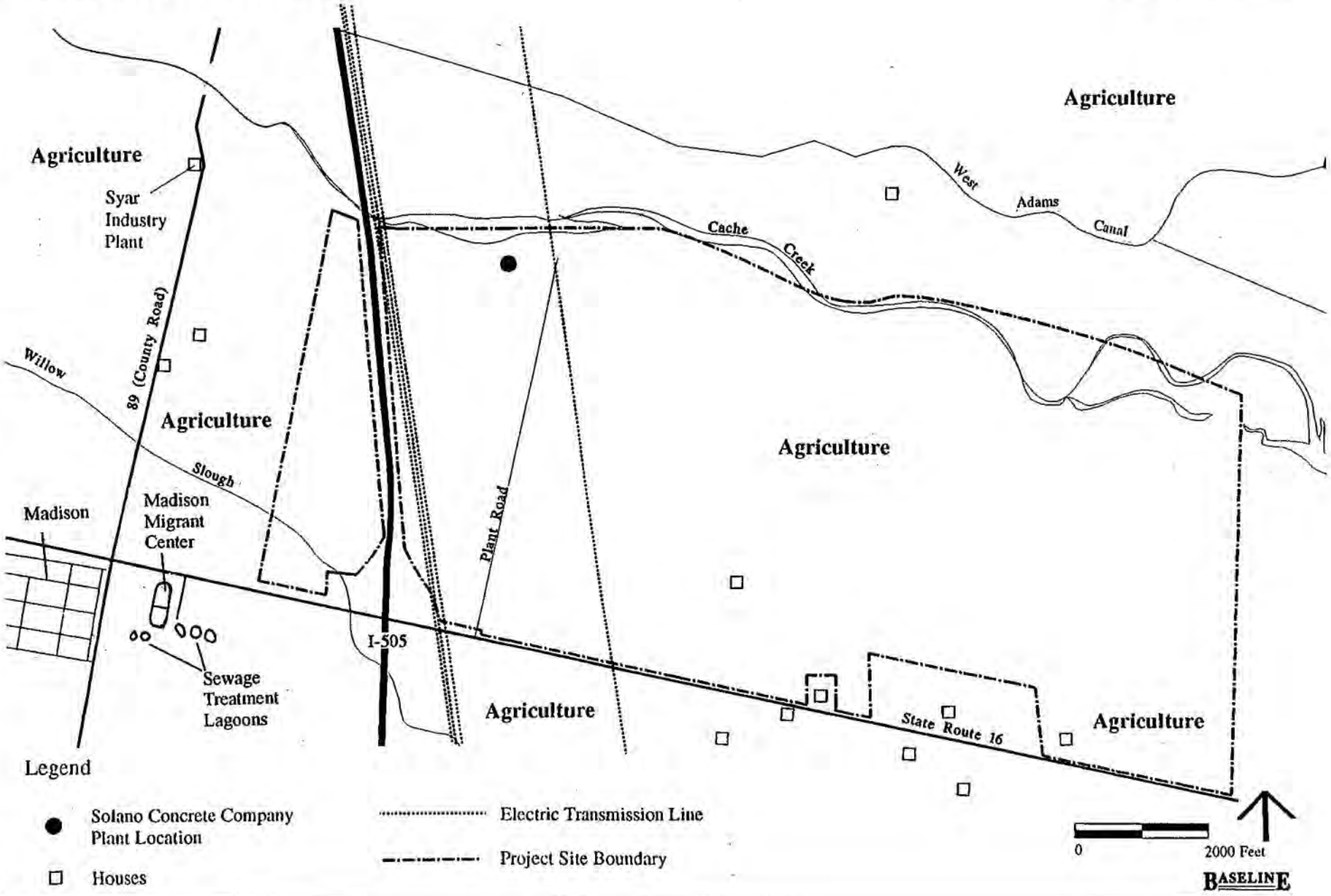
Figure 3-4



95263-00.02 2/1/96, Cadd File N(2), 5263GRP Solano Long-Term

EXISTING LAND USES

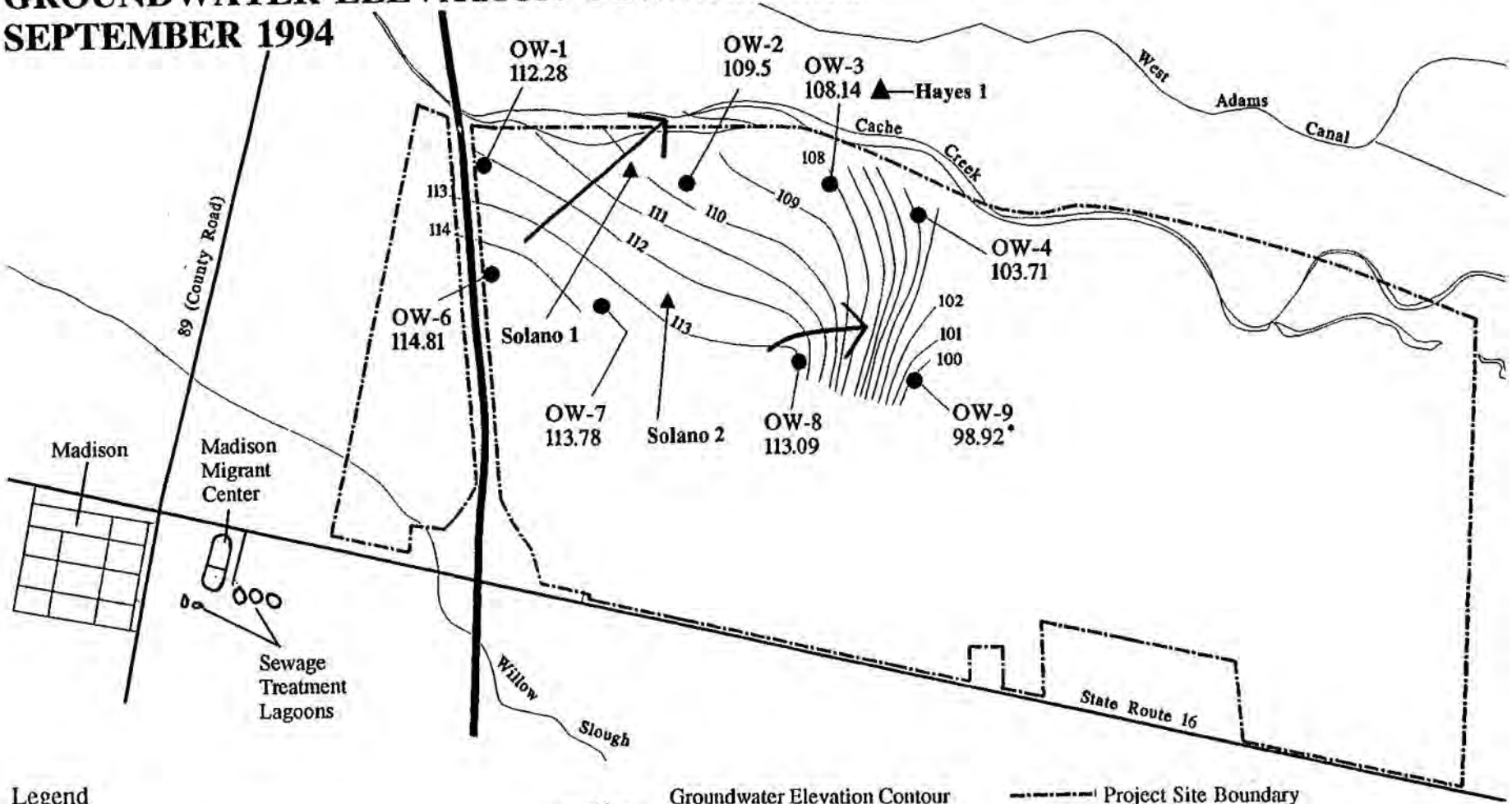
Figure 4.2-1



95263-00.03 5/28/96 Solano Long-Term

WELL LOCATIONS AND GROUNDWATER ELEVATION CONTOUR MAP SEPTEMBER 1994

Figure 4.4-3



Legend

Solano 1	▲	Supply Well
OW-1	●	Monitoring Well
112.28		Groundwater Elevation in Feet Above msl (September 1994)
— 120 —		Groundwater Elevation Contour (Contour Interval = 1 Foot)
	→	Groundwater Flow Direction
*		Nearby Pump in Operation during Water Level Measurement
	---·---	Project Site Boundary

0 2000 Feet

Note: Data provided by Solano Concrete; contouring completed by BASELINE.

BASELINE

95263-00.03 3/19/96, Cadd File N(2), 953GSEPT Solano Long-Term

CHAPTER 3.0 LIST OF COMMENTORS

CHAPTER 3.0 LIST OF COMMENTORS

List of Commentors		
Commentor	Date Postmarked	Letter #
Summary of Minutes from Public Hearing	6/26/96	1
Northwest Information Center, Sonoma State	6/13/96	2
Solano Concrete Co., Inc.	7/16/96	3
Environmental Issues Committee, Western Yolo Grange #423; Cache Creek Coalition; Natural Resources Committee, League of Women Voters, Woodland; and Friends of Cache Creek	7/18/96	4
The League of Women Voters of Woodland	7/18/96	5
Cache Creek Basin Resource Coalition	7/18/96	6
Environmental Issues Committee, Western Yolo Grange #423; Cache Creek Coalition; Natural Resources Committee, League of Women Voters, Woodland; and Friends of Cache Creek	7/18/96	7
California Department of Transportation	7/18/96	8
California Governor's Office of Planning and Research	7/18/96	9

CHAPTER 4.0 RESPONSES TO COMMENTS

LETTER #1

SUMMARY MINUTES FROM PUBLIC HEARING ON DRAFT EIR FOR THE SOLANO CONCRETE COMPANY LONG-TERM OFF-CHANNEL MINING PERMIT APPLICATION ENVIRONMENTAL IMPACT REPORT (EIR) HELD JUNE 26, 1996

The item was introduced by Chair Jim Gray. Commissioner Gray explained the purpose was to receive oral comments from the public regarding the adequacy of the Draft EIRs prepared for each of the five long-term off-channel mining permit applications. The audience was informed that they could speak on any or all permit applications should they choose. The Commission would not be trying to organize the meeting so that comments on a particular application could only be made at a certain time.

The audience was informed that summary minutes would be prepared. Those wanting their comments verbatim in the record were informed to submit them in writing by the following comment closure dates:

Teichert Woodland	July 19 or postmarked July 20, 1996
Solano	July 18, 1996
Teichert Esparto	July 19 or Postmarked July 20, 1996
Syar	July 18, 1996
Cache Creek Aggregates	July 25, 1996

1-1

Heidi Tschudin and David Morrison presented the staff report, gave an overview of each project, and summarized the main conclusions of each Draft EIR.

Commissioner Barbara Webster asked why only two sites had archeological remains. Staff responded that cultural remains weren't discovered during surveys of the other three sites. Mitigation measures have been included to address the potential for buried cultural impacts. 1-2

The hearing was opened to comments from the audience.

Lois Linford, League of Women Voters of Woodland: These plans and their schedule came out in September and have been compressed into 13 months. They have not been out since 1975. 1-3

The net gain strikes her as small. The idea came from Sandy McClellan. It should be a substantial item. 1-4

The League wants to protest the order of processing. The OCMP has not yet been approved. But applications are before the Planning Commission asking for the maximum amount of mining. 1-5

Many exceptions are requested. Teichert Woodland wants a 50 foot setback. The setback was to avoid pit capture. Why are they asking for this? 1-6

1-7

How much land in the "rezone-only" areas is in Williamson Act. Was the mining boundary adjusted in the OCMP for Woodland's concerns? What is a development agreement and how is it different that a use permit? 1-8 1-9

After general discussion about development agreements, the Planning Commission asked the staff to find examples where a development agreement has been used on a mining project. 1-9

The speaker listed all the significant impacts for the Teichert Woodland project and asked whether the Commission feels in good conscience that the plans can be good plans. 1-10

Chairman Jim Gray pointed out that Chapter Two of each document provides a summary of all impacts and mitigation measures.

Johnny Storz: He lives along Cache Creek. He asked if anyone from the media was here to record this? He then read a statement. He was going to drop out after being treated so rudely "downtown". We can rectify the impacts to water quality if we work together. He has positive ideas. 1-11

As a pilot he has flown over the destruction from past mining. After almost 150 years, there are miles of gravel in Yuba County there that was mined from the gold rush. This already mined gravel should be used by firms that want to mine along Cache Creek. They could cooperate with the railroad to transport the gravel. Many along Cache Creek have already had to dig deeper wells. The aggregate industry could fill in existing pits and fix levees to prevent flooding, as well as build release dams, fishing holes, marinas for fishing, and allow for the development of restaurants. 1-12

He read a quote regarding fur bearing mammals and ducks along the creek. Leave the gravel, water supply, and environment alone. 1-13

Bob Spiers, Capay Valley Landowner: He doubts anyone has read all the manuals. He supports what Lois said. He has looked over some of the documents and has hundreds of questions. 1-14

In the Solano document something is missing. Why isn't migrant farmworker housing shown? There are more than 100 people and children there. It is the closest area to any of these pits. Have federal and state agencies that fund the migrant housing been notified? Is this a coverup? 1-15

What about the sewage ponds in Esparto, right next to the migrant worker camp? Raw sewage lagoons. The system works okay, not a good job but not a bad job. These open, raw sewage lagoons are just a couple of minutes flight from the pits. Despite what you hear, these ducks carry a lot of disease. Some ducks are diving ducks and will transmit organisms from the sewage ponds to the pits. This needs to be mitigated. 1-16

There is a controversy concerning slopes. The speaker passed out a diagram of slopes. There has been no safety engineer brought in. Migrant children will use these pits as swimming holes. If you post a sign, how many of these kids read English? There should be a safety engineer looking at this. There are no public pools in Madison and Esparto. You have to assume the worst. 1-17

There is a tendency to take a single sample and say this represents the entire 24.5 mile stretch. Every place along the Creek differs from others. 1-18

A lot of the references listed in the EIR are telephone calls. In one case the consultant has misrepresented himself as the County. There is no written record of the conversation. We are asked to believe that is what the person said. The bias of the person doing the questioning will come out. You can't help it. These are not facts, this is hearsay. Persons mentioned were not given an opportunity to verify their statements or that they knew the facts. 1-19

The pile of documents is too big. This would tie the County up in a contract for 30 to 50 years. Please take the time to look at everything. 1-20

Chairman Grey indicated that he does not share the opinion that you have to look only at the worst case, or that the documents are biased or unscientific. He urged the speaker to point out errors in the writing. The Chairman and the commentor discussed the issue. The speaker indicated he is not concerned with the mining industry, he is concerned with the groundwater. 1-21

Mitzi Spears, Brooks: She shares concerns about issues that have already been raised. Is there a written copy of the proposed agreement available for the public? The staff replied that the draft ordinance will be available in the OCMP staff report. It was reiterated that no agreements are before the County at this time nor have any been drafted. 1-22

Johnny Storz asked when a copy of the Development Agreement Ordinance will be available for review. Staff gave an exact date for both the Ordinance and the individual agreements. Staff also indicated that without an Ordinance, there can be no negotiation on individual agreements. Mr. Storz also reiterated that the lack of reclamation is atrocious. He urged people to go up with a pilot to see the effects of mining. 1-23

Chairman Grey indicated that development agreements are usually used as a bilateral contract (beneficial to both the County and the applicant). 1-24

Lois Linford stated that in the Solano application they are also asking for an exemption to 40 feet. She asked how much of Williamson Act property is to be rezoned to SG overlay. She indicated that the State does not require compatibility on Williamson Act land, the County does this. 1-25 1-26

Kevin Wolf, Davis: He has not had a chance to review the application. He is concerned about how long the insurance policy will run on the pits. Who pays to have algae scraped from the sides of the pits to ensure permeability. When does the liability run out. Who pays? He wants insurance for 50 or 100 years on all applications. 1-27

How long do you monitor? The pits would block the flow of water from Cache Creek throughout the County. What if the entire Creek is blocked by a wall of pits? Fifty percent of Woodland's water supply comes from Cache Creek. 1-28

All these issues should be addressed in the development agreements. The University should have a fund from the gravel industry to monitor forever. 1-29 1-30

On the Russian River there is a serious issue of pit capture. How strong are the proposed levees? You are making a permanent change in the geology here. If the river captures a pit, it is impossible to put it back. 1-31

The City of Sacramento want 500 year flood control. There should be greater than 100 year flood control. Levees have to be able to withstand that. 1-32

The wider the Creek the better. The Floodplain Alternative in the CCRMP goes into these benefits. 1-33

Frank Sieferman, Jr., Millwright and County Resident: He is concerned regarding water quality and environmental concerns. He doesn't want to leave the pits for his kids and future generations. He has a lot of questions about the development agreements. The development agreement is a vehicle to speed the process along. He does not want to stop anyone's livelihood. He uses cement in his business a lot. But as stewards of the soil and keepers of the public trust, the County has a responsibility. There are no references to anything but deep pits. What about no mining (which he does not support) or shallow mining. 1-34 1-35

Take the reasonable course. The court system has already been involved. They stopped the hydraulic mining of the gold rush. Whether you affect properties downstream or upstream you are just as liable. 1-36

Chairman Grey stated that in each project document and in the two program documents, alternatives are presented including no mining, reduced mining, shallow mining, etc. These will all be considered. 1-37

Walter Storz, CR 94B on the Creek: He has lived on the Creek all his life. What has happened to the Creek is sad. It is not what it used to be and never will be again. The research that has been done has been on the 1979 thalweg. Cache Creek watershed has more than the 1979 thalweg though. There is the upper aquifer. This has not been addressed. Woodland wants water. We need a dam to raise the water table and fill the upper aquifer. 1-38

We need to put a rubber dam at the old Lone Star pit so that Woodland would benefit. The upper aquifer needs to be a reserve for dry years. There should be a study made of the upper aquifer. If the dam is built, will the mining pits fill with water. This has not been taken into consideration. 1-39

The public hearing was closed at 10:05am and the Commission took a ten minute break.

Members of the Commission were asked if they had any comments.

Commissioner Henry Rodegerts indicated that a conflict of interest prevents him from participating. The details were given at the April meeting. 1-40

Commissioner Kent Lang asked about the deep pond off of I-5 in the City limits. What monitoring of that pit does the City do? 1-41

Commissioner Barbara Webster indicated it was not difficult to go through the reports, but is was time-consuming. The reports are all organized very consistently. That makes then relatively easy to go through. But it is difficult to keep in mind the salient points. The summary sheets are very helpful. As a Planning Commissioner this is more than she bargained for. She does not live along the creek. She is kind of overwhelmed by the amount of information to assimilate. 1-42

Why did each applicant ask for so much more gravel? Staff speculated because it was a long-term process made very difficult by the County's process, but suggested the question be posed to the operators. 1-43

Commissioner Harry Walker asked how much of the mined acreage would go back to agriculture? Staff responded of 2,200± acres, about half. A net loss of 400 acres. 1-44

The City has three wells near the eastern end of the planning area, what about their proximity? Staff responded that the proposed final boundary is over two miles from Woodland. He will have more questions later on about infiltration rates. 1-45

Commissioner Bob Heringer indicated he tries to look at the big picture. Everyone is concerned with the details. The gravel industry did not abuse the creek to the extent people think. Mother nature did. He is very concerned about groundwater. The pits will store "new" water not "old" water. If we can generate more water, it would be great for both the farmers and the City. 1-46

Chairman Grey indicated that, like Barbara, he is interested in the levels of increase, and amount and extent of the proposed tonnage. Staff responded that information to answer these questions will be included in the staff report. 1-47

Why are some pits deeper than others? Staff responded that the gravel layer varies in depth. 1-48

People think the water issues are not thoroughly addressed. Section 4.4 of every document addressed that issue -- sometimes 30 to 40 pages. There is a lot of information comprehensively presented. 1-49

In the Teichert Esparto document, page 6-3, Section 3 -- is overburden adequately described? Staff indicated that it is the geologic strata between the topsoil, and the sand and gravel. Staff was asked to include a brief glossary. 1-50

Again in the Teichert Esparto document, regarding the permitting of the plant, how is aggregate recycled? Staff responded and indicated that the EIR cumulative analysis assumes a 4 percent recycle rate. 1-51

The Chairman complemented the staff team in their efforts and preparation to date. There is a lot of information to absorb, but it is not impossible. 1-52

Commissioner Lang indicated that it bothers him that the industry has requested so much volume. Is there a market for the increase. What is the reason for the additional request? Everyone is getting greedy. 1-53

The Commissioners discussed the projects further. The need to maintain the setbacks to avoid pit capture was mentioned. It was stated that recycled materials have an advantage over raw materials in terms of cohesion. Less oil is needed with recycled asphalt. The 1994 EPS report was mentioned and the Commission was urged by Commissioner Walker to read it. 1-54 1-55

The hearing was ended at 10:50am.

C:\WP51\HEIDI\YOLO PROJDEIR.MIN

LETTER 1: SUMMARY MINUTES FROM PLANNING COMMISSION PUBLIC HEARING COMMENTS, 26 JUNE 1996

Response to Comment 1-1:

This comment provides instruction to the audience regarding the purpose of the public hearing held on 26 June 1996 and schedule for the receipt of written comments. No response is necessary.

Response to Comment 1-2:

The staff response was correct. Each of the applications for long-term off-channel mining projects presented a cultural resources report. Significant archaeological resources have only been identified at the Solano Concrete and Syar Industries project sites.

Response to Comment 1-3:

The schedule includes all legally mandated review periods, while allowing the County to act in a responsive and timely manner. The purpose of the schedule was to consolidate the evaluation of impacts associated with aggregate mining in a concise and efficient manner. The comment alludes to the long process of aggregate impact analysis that has been undertaken by the County over the last 20 years. The process, initiated last year, incorporated the environmental analysis and policy recommendations conducted over that period into the development of the OCMP and CCRMP as guiding plans for aggregate production and mined land reclamation.

Response to Comment 1-4:

Staff does not agree with the commentor's position that the "net gain" component of the proposed mining and reclamation plan(s) is somehow reduced relative to the initial intention of this benefit to the County. The Planning Commission staff report on the OCMP (July 10, 1996), which has been provided to the commentor and widely circulated, contains a detailed analysis of the original intention behind "net gain." Staff has worked diligently with the individual aggregate producers to develop significant and reasonable "net gains" for each proposed project. Staff notes that the concept of "net gain" has always been subjective, since it is a means for ensuring that the County could receive additional benefits beyond the implementation of aggregate production projects which would minimally comply with State and County requirements. The circumstances and abilities of each operator varies, so that the nature and scope of proposed net gains vary as well. The CEQA process does not mandate the "net gains" proposed by the projects. However, the EIR for each project has considered the potential environmental impacts associated with the "net gain" components of the each project.

Response to Comment 1-5:

The commentor's concern regarding the phasing of the preparation of EIRs for the OCMP and individual projects is noted by staff. The individual projects cannot be approved until the OCMP itself is approved, and even then, each must be entirely consistent. Each application was prepared on the basis of the goals, policies, objectives, and performance standards presented in the First Draft of the OCMP. Following preparation of the EIR on the OCMP, the EIR prepared for the each project included an evaluation of the consistency of the projects with the modified goals, policies, objectives, and performance standards contained in the OCMP EIR. Under this approach, the environmental analysis for each project is dynamically linked to the OCMP. The EIR for the OCMP was certified on 30 July 1996, and the EIR for the CCRMP was certified on 20 August 1996.

Response to Comment 1-6:

The comment regarding the Teichert Aggregate-Woodland application is noted for the record. The comment does not relate directly to the project under analysis in this DEIR. However, the subject Solano project also requests an exception to the requirements of the Surface Mining Ordinance. This is discussed and analyzed on pages 4.3-29 through 4.3-38 of the DEIR.

Response to Comment 1-7:

The comment regarding the Teichert Aggregate-Esparto and Syar Industries applications is noted for the record. The proposed project does not propose "rezone-only" lands. Therefore, the comment does not relate to this project.

Response to Comment 1-8:

The comment relates to the OCMP boundary in an area that would not be affected by the proposed project.

Response to Comment 1-9:

A development agreement is a legal contract signed between a developer (or owner of property) and a city or county. The contents of a development agreement are set forth in State law (California Government Code Section 65864 et seq). The purpose of a development agreement is to specify the details of a developer's commitment to provide certain improvements and to "lock in" the terms of the development project approval with the rules and regulations that are in force at the time the agreement is signed. A development agreement is different than a use permit. A use permit is a discretionary permit that is issued by a city or county to allow a development project to be built. Often, the terms or conditions of approval of a use permit, or other discretionary permits such as rezonings, are included in a development agreement.

Response to Comment 1-10:

Although the comment related directly to the Teichert Woodland long-term application project, staff considers the intent of the comment to be generally applicable to each of long-term projects. The comment identifies project impacts but does not present information on the degree of significance or the extent to which mitigation measures are recommended. As pointed out by Chairman Gray, the impacts identified for the project and associated mitigation measures are summarized in Table 2-1 of the DEIR. Revisions to the summary table are presented in Appendix B of this document. The Commission will make its decision on this project during subsequent public hearings scheduled for November 13 and 14, 1996.

Response to Comment 1-11:

Staff agrees with the commentor's suggestion that working together in a positive way should be the goal in evaluating the issues related to off-channel mining. Staff is uncertain as to the circumstances of the commentor's negative experience but the staff is committed to working closely and fairly with all members of the public.

Response to Comment 1-12:

The comment presents several concepts regarding aggregate production in Cache Creek and northern California. Staff points out that the environmental destruction described by the commentor related to rivers along rivers draining the Sierra Nevada was caused by hydraulic mining of gold. The gravel and cobble deposits along these rivers are extensive and could be used for aggregate products. However, the large sizes of these materials would likely require additional processing (crushing) to provide the full range of grain sizes for products produced from Cache Creek aggregate. Additional transportation costs and transportation impacts would also be caused by distribution of aggregate products to the market areas served by the Cache Creek producers.

Four companies have requested permits to mine specific properties within the County, that they own or control, that contain aggregate deposits. The commentor's point about mining gravel in Yuba County is well taken, and such a scenario was examined in the program-level environmental analysis done for the OCMP. However, the fact remains that the Board of Supervisors has adopted the OCMP which allows carefully controlled, responsible mining within limited acreage adjacent to Cache Creek.

The lowering of groundwater levels related to incision of Cache Creek and the influence of in-stream gravel mining on creek incision were evaluated in the Technical Studies for the CCRMP. Previous in-channel mining was found to be only partially responsible for the many influences on the Creek over the last 100 years. Nevertheless, the County has taken steps to preclude any further commercial mining in the Creek with the OCMP and CCRMP. Off-channel mining would not influence changes in the creek bed elevation. Potential impacts of wet-pit mining on groundwater levels was evaluated in the Technical Studies and the EIR on the OCMP and all impacts were found to be fully mitigable with conditions

required by the Surface Mining Ordinance and Reclamation Ordinance. In addition, the impact of off-channel mining on groundwater resources was evaluated in the DEIR for each proposed long-term mining permit application, such as this one and found to be fully mitigable at the project-level as well.

The proposed project does not propose filling of any existing mining pits, within or outside the Cache Creek channel. The commentor's opinion that release dams, fishing holes, marinas, and restaurants should be developed is noted for the record. However, the proposed project does not propose these post-reclamation uses nor are they envisioned in the County's long-term plans for the area.

Response to Comment 1-13:

The commentor's suggestions for leaving gravel in-place and avoiding impacts to the environment are noted for the record.

Response to Comment 1-14:

The commentor's doubt that anyone has read all the environmental documents prepared for the OCMP, CCRMP, and long-term projects and his familiarity with some of these documents is noted for the record. This observation is not consistent with the staff's observations, through their work with the decision makers and many other interested public members. Staff has organized and presented each document in a similar format to provide a better framework for review of these documents. The commentor's questions are always welcome.

Response to Comment 1-15:

Staff does not consider the DEIR to have excluded the impact to the Madison Migrant Center. The workers housed in this housing facility are considered to be a part of the population of the town of Madison. Environmental impact analysis in the DEIR for this project took into account all nearby residents and communities. The commentor is referred to the Response to Comment 4-39.

Response to Comment 1-16:

The preparers of the DEIR do not agree with the commentor's opinion that the potential water quality impact from diseased birds transporting effluent from the existing sewage ponds of the project site is significant and requires mitigation. The sewage treatment ponds at Esparto and Madison are closer to homes and water supply wells than the proposed project, and present a similar or increased potential for human exposure to pathogens potentially contained in the sewage ponds and related collection system. The commentor is referred to the Response to Comment 4-90.

Response to Comment 1-17:

The issues regarding the safety of slopes are more completely developed in written comments prepared for the project by the commentor (Letter 4). The commentor is referred to the Response to Comment 4-19 for a full discussion of this issue.

Response to Comment 1-18:

The impact analysis was not based on "single sample" data sets as implied by the commentor. The commentor is not specific in identifying the data to which he is referring. Staff agrees that conditions within the Cache Creek basin are variable. The DEIR for the proposed project therefore has relied on reasonable and representative data.

Response to Comment 1-19:

This comment is unspecific and unsubstantiated. The commentor has not revealed the information on which he bases the accusation that any consultant to the County has misrepresented themselves. The referencing of personal communications is made very clear in each of the EIRs prepared for the County. The purpose of this referencing is to provide the public with an understanding of where an opinion or unpublished data have been used in the development of an impact discussion in the DEIR. The commentor is also referred to the Response to Comment 4-113.

Response to Comment 1-20:

The "size" of the environmental documentation relates to the complexity of the issues and legal requirements for adequate analysis. The County has made every reasonable effort to ensure extensive public involvement and appropriate analysis. The process of environmental review was designed to specifically allow for easy comparison and evaluation of the documentation for different project EIRs. The format was developed to include summary tables for easy referencing of impacts, mitigation measures, and alternatives analysis. Staff support the commentor's advice that decision makers "take the time to look at everything."

Response to Comment 1-21:

No response to this dialogue between the commentor and Chair of the Planning Commission is required.

Response to Comment 1-22:

A response to the comment was provided at the hearing. No further response is necessary.

Response to Comment 1-23:

A response to the comment was provided at the hearing. No further response is necessary.

Response to Comment 1-24:

The development agreements prepared for individual projects would constitute a contract between individual aggregate producers to clarify the responsibilities of the applicants for implementation of mitigation measures and "net gain" components of each approved application.

Response to Comment 1-25:

The DEIR for the Solano Concrete project identifies (page 3-20) that the application would require exceptions to the 200-feet setback requirement of the OCMP for separation of proposed mining areas from the Cache Creek Resource Management Plan Boundary. The impacts related to the proposed exceptions to the setback are discussed in Impact 4.3-4c. The mitigation for the exceptions are presented in Mitigation Measures 4.3-4b and 4.3-4c of the DEIR.

Response to Comment 1-26:

A total of 558 acres is proposed to be rezoned with the S-G overlay. All of this acreage is currently under Williamson Act contract. Contrary to the comment, the State does require that mining be compatible with the Williamson Act.

Response to Comment 1-27:

Neither the proposed project nor the DEIR for the project propose an "insurance policy" for the mining or reclamation activities. Under SMARA, the applicant would be required to present financial assurances for completion of reclamation activities. The OCMP also requires that the applicant would be assessed a surcharge of two cents per ton for aggregate mined under the proposed project that would be contributed to a post-reclamation maintenance and monitoring fund administered by the County. The DEIR determined that reduction of mining pit wall permeability (caused by algae) was a less-than-significant impact. The commentor is referred to the Response to Comment 4-28 for discussion of this issue.

Response to Comment 1-28:

The EIRs for the OCMP and each individual project evaluate the potential for impacts on the flow of groundwater potentially caused by reduced permeability at the proposed project sites. The commentor is referred to the discussion of Impact 4.4-5 in the subject DEIR for Solano. Quarterly monitoring of and evaluation of groundwater elevations at the project site is required by the OCMP (Mitigation Measure 4.4-2a) during both mining and

reclamation. Although the changes in permeability caused by the project may result in localized changes in groundwater flow adjacent to the pits, it is considered unlikely that water supply to Woodland municipal wells would be affected by permeability changes caused by the proposed project. No attempt was made to substantiate the commentor's claim regarding the source of Woodland's water.

Response to Comment 1-29:

Development agreements prepared for all approved aggregate mining projects would address implementation of all mitigation measures for impacts related to the project, including impacts to water resources. The development agreements would also result in a binding document for all contributions by aggregate operators, including surcharges on aggregate products, roadway improvements, and the Cache Creek Improvement Program.

Response to Comment 1-30:

Implementation of specific mitigation measures could be performed by qualified scientists from the University of California at Davis. However, staff does not consider it appropriate to restrict other qualified professionals from performing the monitoring and data evaluation required by the mitigation measures.

Response to Comment 1-31:

Staff notes the commentor's opinion of "pit capture" impacts on the Russian River. The DEIR has addressed the potential for "pit capture" in Impact 4.3-4. The DEIR finds that implementation of Mitigation Measures 4.3-4a through 4.3-4j would reduce the impact to a less-than-significant level. It should be pointed out, however, that the "pit capture" has not been found by Sonoma County to be an unmitigable impact. The commentor's statement that the occurrence of "pit capture" could not be corrected if it occurs is not supported. Breaching of a separator between the creek and a mining area could be repaired through conventional earth-moving activities.

Response to Comment 1-32:

In general, the level of protection provided for the urbanized area of the City of Sacramento is from the 100-year flood event. Yolo County has established 100-year flood protection for proposed mining areas. This level of protection is considered by staff and the preparers of the DEIR and the Technical Studies for the CCRMP, if not conservative, to be appropriate for the level of hazard presented by low frequency flooding events.

Response to Comment 1-33:

The commentor's preference for the Floodplain Alternative presented in the CCRMP is noted for the record. Staff notes that the Floodplain Alternative of the CCRMP was not identified as the environmentally superior alternative for the CCRMP.

Response to Comment 1-34:

Staff agrees that responsible stewardship is the goal of the County in development of the OCMP and review of the individual long-term mining permit applications. Staff and the preparers of the DEIR have endeavored to provide thorough analysis of environmental impacts associated with proposed mining and develop reasonable and effective mitigation measures for all significant impacts. There is no connection between the use of development agreements and the "speed of the process." Please see Responses to Comments 1-9 and 1-29.

Response to Comment 1-35:

Staff points out to the commentor that the range of alternatives evaluated in each of the project-level EIRs for individual long-term mining permit applications included a No Mining Alternative (Alternative 1) and two Shallow Mining Alternatives (Alternatives 2a and 2b). The potential impacts of each of the alternatives was thoroughly evaluated in Section 5.3 of each EIR. This is in addition to the eight alternatives examined in the OCMP EIR, from which the Solano document tiers.

Response to Comment 1-36:

The potential for upstream and downstream impacts of off-channel aggregate mining activities along Cache Creek were specifically addressed in the EIRs for each proposed long-term mining application.

Response to Comment 1-37:

No further response is necessary. See also Response to Comment 1-35.

Response to Comment 1-38:

A very detailed discussion of the history of the condition of Cache Creek is presented in the Technical Studies which provided the basis for the OCMP. The hydraulic evaluations performed for the individual mining applications were based on the most currently available data on the topography of the Cache Creek channel in the vicinity of each project site. The analyses were not based on the 1979 thalweg elevations. By virtue of their action taken 20 August 1996 to approve the CCRMP, the County no longer allows commercial mining in the creek and the thalweg concept has been replaced with the reach-oriented Cache Creek Improvement Program.

Response to Comment 1-39:

The commentor's opinion that a dam be constructed within Cache Creek is noted for the record. The impacts of the proposed project on groundwater resources was evaluated in Section 4.4 of the DEIR. The loss of water due to evaporation (Impact 4.4-2) and the influence of mining and reclaimed areas on groundwater flow (Impact 4.4-5) were found

by the DEIR to be less-than-significant impacts. The commentor appropriately refers to the unconfined aquifer within the OCMP planning area as the upper aquifer; it is the uppermost water-bearing zone. As described in Section 4.4 of the DEIR, the upper aquifer is underlain by a clay layer which separates the upper aquifer from deeper aquifers. Contrary to the comment, the upper aquifer was considered in the evaluation of potential hydrological impacts associated with the project.

Response to Comment 1-40:

No response is necessary.

Response to Comment 1-41:

According to Mr. Gary Wegener, Director of the City of Woodland Department of Public Works, the water quality at the referenced property is not monitored. The referenced former mining pit is located one-quarter mile west of East Street. It is approximately 22 acres in size with 100-acre foot capacity. The property is owned by the City of Woodland to be used as a stormwater detention basin. The extent of hydraulic connectivity is not known by the City at this time.

Response to Comment 1-42:

In addition to the various summaries, the staff reports provide a very condensed overview of each document.

Response to Comment 1-43:

The 10 July 1996 Planning Commission Staff Report regarding the OCMP provided an expanded discussion of the issue of tonnage. The OCMP allows a maximum of 5.97 million tons/year (sold) allocation for the combined long-term mining project applications including the existing operations of Granite and Schwarzgruber which together account for 0.47 million tons per year. This would leave a maximum of 5.5 million tons/year to be allocated all or partially among the five individual long-term mining applications. This allocation represents a doubling of historic high production and a 40 percent increase over the previous allocation. The increase in allocation is generally consistent with the projected market demand (5.8 million tons/year) based on estimates by the California Division of Mines and Geology for the Sacramento-Fairfield Production-Consumption Region served by the applicant. The OCMP maximum allocation is also consistent with the allocation volumes supported by the citizen "consensus group" meetings held in 1994. The OCMP is a thirty-year plan that was designed to anticipate future conditions, as well as existing conditions.

Response to Comment 1-44:

A response to the comment was provided at the hearing. No further response is necessary.

Response to Comment 1-45:

A response to the comment was provided at the hearing. No further response is necessary.

Response to Comment 1-46:

By creating storage capacity where gravels were previously located, the reclaimed lakes allow for more water to be retained in the area, whether that be by precipitation, or by a managed system implemented by the Flood Control District.

Response to Comment 1-47:

A recommendation specific to the Solano project will be included in the staff report. Please refer to Response to Comment 1-43.

Response to Comment 1-48:

A response to the comment was provided at the hearing. No further response is necessary.

Response to Comment 1-49:

Extensive evaluation of water resource impacts is presented in Section 4.4 of the DEIRs for each of the proposed projects.

Response to Comment 1-50:

The definition of overburden is presented in a footnote on page 4.3-2 of the DEIR. This definition is generally consistent with the definition presented by staff during the 23 July 1996 Planning Commission meeting. A brief glossary was provided to the Commission in the July 10 staff report on the OCMP.

Response to Comment 1-51:

A response to the comment was provided at the hearing. Aggregate recycling generally starts with concrete rubble that contains little or no steel or other foreign materials. The concrete rubble is fed into a crusher, which breaks it down into smaller fragments. These fragments can then be used as lesser grade sand and gravel. Asphalt is heated and liquified so that it can be reapplied.

Response to Comment 1-52:

Staff acknowledges and appreciates the commissioner's comment which are noted for the record.

Response to Comment 1-53:

Comment noted. No response is necessary. This issue is not a CEQA issue but will be discussed at the project hearing. Please see also Response to Comment 1-43.

Response to Comment 1-54:

Comment noted, no response is necessary.

Response to Comment 1-55:

Numerous recycled aggregate products can be manufactured. Typically, roadway concrete is crushed and used as road base aggregate. The high cementiceous content of these materials promote binding of the aggregate fill. Recycled roadway asphaltic concrete can be used for shoulder "backing" along the margins of roadways. The recycled asphaltic concrete can also be remanufactured into new asphaltic concrete. A minor reduction (typically less than 0.1 percent) in the amount of liquid asphalt can be a benefit of using the recycled asphaltic concrete as aggregate for new asphaltic concrete. However, use of a disproportionate amount of recycled concrete in this process can affect the durability of the remanufactured product.

The referenced 1994 EPS study is based on assumptions that are no longer applicable. The July 10 staff report to the Planning Commission on the OCMP summarized this report and indicates how each issue has been addressed since publication in 1994. A subsequent analysis by EPS within the last few months comparing mining and agriculture is more relevant for review by the Commission. This report was also summarized in the same July 10 staff report.

LETTER #2

13 June 1996 File No.: 96-YO-62E

re: Solano Long-Term Off-Channel Mining Permit Application
SCH #96012034

Dear Staff:

Our office has no additional comment on the above referenced document. However, thank you for your continued concern for protecting historical resources. 2-1

Sincerely,

Leigh Jordan
Coordinator, NWIC

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JUN 19 1996

NORTHWEST INFORMATION CENTER
OF THE HISTORICAL RESOURCES
INFORMATION SYSTEM
Sonoma State University
1801 East Cotati Avenue, Bldg. 300
Rohnert Park, CA 94928-3609

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0.20

Heidi Tchudin, PLanner
Yolo County Community Development
292 West Beamer Street
Woodland, CA 95695

RECEIVED
JUN 1 8

LETTER 2: SONOMA STATE UNIVERSITY

Response to Comment 2-1:

Thank you for your communication. The comment is noted for the record.

LETTER #3

Solano
Concrete Co., Inc.
IT COSTS NO MORE FOR THE BEST
CONTRACTOR'S LICENSE
NUMBER 201665

MAIN OFFICE
1601 CEMENT HILL RD.
FAIRFIELD, CA 94533
707-422-2520
FAX 707-422-0402
DISPATCH 422-9983

ROCK PLANT AT
MADISON, CALIF.
916-666-2137
707-448-7121

July 15, 1996

JUL 16 1996

Ms. Heidi Tschudin
Tschudin Consulting Group
710 21st Street
Sacramento, California 95814

Re: Preliminary Draft of EIR for Solano Concrete Long Term, Off-Channel Mining Permit Application

Dear Ms. Tschudin:

The following are Solano Concrete's comments to the Preliminary Draft of the Long Term Off-Channel Mining Permit Application EIR. These comments will be augmented with responses from Solano Concrete's consultants as to some of the issues raised by the EIR.

INTRODUCTION.

Although the EIR demonstrates that all but a very few of the impacts from the project can be mitigated to acceptable levels, it tends to overstate the unmitigated impacts of the project. Solano Concrete has been operating its off-channel facility on Cache Creek for sixteen years. In that period, monitoring has shown the operation does not adversely affect water quantity or quality. During this period there have been no threats to the stability of the creek channel or levees from the operation, despite there having been serious flocding in the area during that period. Reclamation of previously mined areas had yielded agricultural production levels equal to or greater than those occurring on surrounding unmined land. In addition, the project is distant from residential areas and has very short and direct hauls to Highways 16 and I-505. 3-1

In some instances, Solano Concrete does not so much disagree with implementing proposed mitigation measures in the form of permit conditions as with the contention that all of the proposed measures are all necessary to mitigate significant impacts to less than significant levels.

SPECIFIC COMMENTS

Alternative 2a (Page 2-5):

This alternative incorrectly assumes that there are adequate reserves South of the various mining areas to offset the loss of material that would be lost by limiting excavation to within ten feet of the water table. In any event, the proportion of overburden in relation to aggregate in these new areas would increase enormously, so even if some amount of material existed south of the mining areas, whether its excavation would be economically feasible is, at best, entirely speculative. 3-2

Project Location (Page 3-5):

Second line of the second paragraph of this section contains the typo: "734 acres". It should be changed to read "598 acres." 3-3

Project Objectives (Page 3-8):

The last line of the second paragraph on page 3.8 incorrectly states that reports have been submitted biannually by Solano Concrete to Yolo County since 1989. Solano Concrete has been submitting annual reports on the Hutson Parcel to Yolo County since 1984. 3-4

Permit Requirements (Page 3-20):

The third bullet incorrectly states that rezoning is required on 598 acres. Rezoning would be required only on 558 acres. 3-5

The entire section refers to a number of permits which may be required. It is not clear that all of them will be required. With respect to a 2081 permit from the Department of Fish and Game for disturbance of foraging habitat for Swainson's Hawks, it should be noted that there is some question about how the 2081 permit process will be proceeding. The Attorney General has issued an opinion suggesting that the mere conversion of forging habitat is not a "take" which should give rise to the need of a 2081 permit. 3-6

However, the applicant has made it clear to the Department of Fish and Game that it will fully cooperate with the Department of Fish and Game in crafting a 2081 permit, if one is required

It should also be noted that the County does have an alternative which allows

the payment of fees pursuant to its Habitat Management Plan in lieu of a project specific mitigation plan. 3-6

Mitigation Measure 4.2-2a (Page 4.2-19):

Phase two mining will occur on the Kaupke parcel where one hundred percent of the mined areas will be reclaimed to row crops, so it is in compliance with Williamson Act standards. In addition to the Farnham East Parcel, the Williamson Act Contract for which does not expire until 2006, Phase Three also includes the Orrick parcel (APN 049-070-and 06, and a portion of the Snyder West Parcel (APN 049-070-09). The Williamson Act contracts for these parcels will expire in the year 2002. The following condition would therefore be adequate: "Prior to the year 2006, only that portion of the Farnham East Parcel that will be reclaimed to row crops or tree crops may be mined." 3-7

Impact 4.2-7 (Page 4.2-22):

The Yolo County Resource Conservation District, although it may be allowed under state Law to "implement conservation plans and programs." does not enact "regional plans" within the meaning of Section 15125 of the Guidelines. That section is meant to require a finding of significance when a project is inconsistent with plans or policies which a lead agency or responsible agency is required by law to follow, or with the plans and policies of an agency with actual jurisdiction over the project or its operation. These factors do not apply to the policies of the RCD, the policies of which are not binding on either the county, the project or any other agency which has jurisdiction over the project. The examples given in the discussion found in the CEQA Guidelines relate to Air Boards, Regional Water Quality Control Boards and other bodies whose plans have the force of law. 3-8

According to the EIR, a mandatory finding of significance is required because the project is inconsistent with RCD policy 5a, which states that "Any change in land use or designation of land use which results in the permanent conversion of agricultural land to a non agricultural land use will be discouraged."

If a violation of that policy, anywhere in the county, requires a significant finding of significance under section 15125, then the granting of any discretionary permit or implementation of any discretionary project anywhere in the county, where that project could use any open space, could not be carried out with a negative declaration or a mitigated negative declaration. 3-9

Impact 4.2-8 (Page 4.2-23):

The text states that "the nearest residence to the mining area is located on SR 16 approximately 1,600 feet South of the phase V mining boundary ...". The land on which that residence is located is under contract to be purchased by the applicant. Under that contract, the applicant will be the owner of the residence before mining starts in the Phase V mining area. The applicant believes that it owns or has under contract all residences that are less than two thousand feet from any of its mining areas. 3-9

Mitigation measure 4.2-8a. (Page 4.2-25):

This mitigation measure is unnecessarily indefinite. We propose the following language be used instead:

"The irrevocable offer of dedication of the reclaimed lake area in phases four and six will include an offer of dedication of a 40 foot right of way connecting the lake area and Highway 16 at the eastern property boundary of the project. The purpose of the right of way will be to allow the option for public access from Highway 16 to the lake area. The offer of dedication shall be worded so that the county, at its option, may accept the offer of dedication of the lake area, but not accept the offer of dedication of the right of way. The offer of dedication may contain appropriate language defining the scope of both the offer and the included easement as is appropriate to protect adjacent agricultural and other allowed land use." 3-10

Description of Local Environment (Page 4.3-2):

The second full paragraph contains the following language:

"The thickness of the fined-grained overbank deposits reportedly increases to the south, away from the creek, to more than twenty feet within the southern portion of the project site." 3-11

It is assumed that this reference to the "project site" is to land owned or controlled by the applicant, rather than to only the mining areas.

Cache Creek Morphology and Processes (Page 4.3-5, 6):

At the end of page 4.3-5 and beginning of 4.3-6 there is the following language:

"The elevation of these lower areas indicate that they were portions of the active channel prior to the construction of the levees or were mined to the elevation of the 3-12

stream bed. The elevation of the levee road in these areas is not, in all places, above the hundred year flood elevations: flooding of the lowered areas is, therefore, possible in low frequency flooding events."

However, the following section on "Channel Stability " contains the following language:

"Hydraulic analyses prepared for the proposed project (Cunningham Engineering, 1995) indicate that the hundred-year flood flows would be contained within the existing creek banks and levied portions of the channel of Cache Creek in the area of the project site." 3-12

It should be made clear that these "low frequency events" are only slightly more frequent than hundred year events. It should also be noted that the application provides that any levees within the project area not already at the hundred year flood elevation will be built up to that elevation.

With respect to the second paragraph of the Channel Stability Analysis section on Page 4.3-7, it should be noted that the channel was not only incised, but was also lowered due to mining activities which have occurred in the vicinity of the project site since 1972.

Mitigation measure 4.3-2a (Page 4.3-26):

It should be noted that the OCMP requirement for a "survey" is only for a check of changes in field elevations, rather than for parcel boundaries. 3-13

Mining area 2 (Page 4.3-30i):

The hundred year flood hazard line is the line from which the two hundred foot setback should be determined. This is a line which can be surveyed and calculated. The Test 3 boundary and the CCRMP channel boundaries are, by comparison, not as well defined. 3-14

Mining area 3 (Page 4.3-30):

The supposed inconsistency here is based on the OCMP EIR's exclusion of previously mined land from the two hundred foot set back. This exclusion is based on the supposition that the previously mined land is too unstable to make a two hundred foot set back appropriate. However, the Slope Stability Analysis submitted by the applicant for this area, which was based on site specific studies, tests and analyses, 3-15

demonstrates that the required safety margin can be obtained when including this previously mined area within the 200 foot setback. 3-15

The levee in this area is to be raised to the hundred year flood elevation prior to mining. The DEIR should acknowledge that the physical distance from the raised levee road is over 200 feet from the mining area boundary, not 40 feet.

Mining Area 5 and Mining Area 6 (Pages 4.3-33 through 4.3-35):

Again, the two hundred foot line set back should be measured from the hundred year flood elevation, which will be established on the levee, which, in turn, will be raised to the hundred year flood elevation pursuant to the application. This, in combination with the margin of safety shown to exist by the engineering calculations contained in the Slope Stability Analysis which is part of the applicant's mining plan, will far more than offset any possible effect of having portions of previously mined areas located between the new mining areas and the levee. Again, the EIR should acknowledge that the mining area boundary is over 200 feet from the raised levee, not 40 feet. 3-16

Mitigation measure 4.3-4h(Page 4.3-37):

Request that this mitigation measure be clarified by amending the first sentence to read as follows:

"Recommendations of the geotechnical report (Kleinfelder, 1995) for stabilization of the south bank of Cache Creek in the vicinity of each phase shall be implemented within one year after the commencement of mining in that phase in accordance with the specific mitigation measures specified in section 4.3 of this EIR." 3-17

It should be noted that under the anticipated terms and conditions of in-channel mining, this work will be done under the direction of the County, who would be the permit holder.

Mitigation measure 4.3-4i (Page 4.3-37):

This mitigation measure is open ended, unnecessary and lacks any connection to the impacts of the project. The lack of nexus is highlighted by the first full paragraph of section 4.3-7 of the EIR, which states: 3-18

"The incision has resulted in increased cross-sectional area of the stream and a corresponding increase in flood water storage. Collins and Dunne (1990) have

suggested that the potential for overbank flooding has been eliminated due to the increased flood conveyance capacity. Hydraulic analyses prepared for the proposed project (Cunningham Engineering, 1995) indicate that the hundred year flood flows would be contained within the existing creek banks and levied portions of the channel of Cache Creek in the area of the project site."

In addition, this project is much too far from the Esparto Bridge to have had any influence on it. Finally, the ability to get the permission of owners of land and mineral rights in the creek bed for channel widening or improvement projects is, as yet, unknown.

Any contribution to these channel improvement programs by the applicant should be part of a "net gain" program, should be done in a manner which creates certainty as to the amount of the liability being assumed, the timing of payments and scheduling and cost of work. In addition, the burden should, at the very least, be proportional to any past or future influence by the applicant on the areas of the channel being improved. Both the HEC-2 study prepared by Cunningham Engineering in connection with the application and the Stream Study found that the problems in the stream channel in the vicinity of Solano Concrete's historical in-channel operation are primarily caused by the narrowing of the channel at the site of the I-505 bridge and not as a result of mining. **3-18**

It should be emphasized that any contribution to channel improvements, restoration of previously mined areas located outside of the mining areas, or other contributions to "net gain" programs must be proportional to the level of mining allowed under the proposed permit. Any significant variation from the methods of mining, areas mined, or amounts of mining from those requested in the application would necessarily impact the applicant's net gain programs.

Mitigation Measure 4.3-4j (Page 4.3-38):

This mitigation measure should be clarified to show that it is sufficient to request a determination from DSD on the alluvial separators. Suggest that this mitigation measure be changed to read as follow:

At least sixty days prior to the commencement of mining below the ground water level in any new mining areas, the applicant shall file a written request with the California Division of Safety of Damns (DSD) for determination on whether the alluvial separators created by the project fall under DSD jurisdiction." **3-19**

It should be noted that mining has been occurring below the water table on the

Hutson Parcel since 1980. 3-19

Flooding (Page 4.4-4):

The first full paragraph on this page impliedly overstates Cunningham Engineering's findings with respect to aggradation. Cunningham found that in the vicinity of the project site there would be significant channel aggradation mostly near the I-505 bridge and within seven hundred feet down stream from the bridge. 3-20

Impact 4.4-1 (page 4.4-22):

The requirement for three feet of freeboard above the hundred year flood plain is inappropriate for two reasons. First, if there is overtopping along the levee in a hundred year storm, overtopping will occur on a regional basis. Second, the mining pits, themselves, have a second level of protection in the form of berms and contouring which makes their boundaries higher than surrounding lands. Third, in a very infrequent event (such as a 500 year storm), the cumulative effect of three feet of freeboard along the whole project site, together with the project sites of other mining operations, might be to cause flooding downstream. This would cause a violation of the OCMP. It is strongly urged that freeboard only be required in areas where it is needed for an extra measure of slope stability. 3-21

Impact 4.6-2 (Page 4.6-35):

The EIR overstates the loss of mature Oak trees resulting from the project. The entire project will result in the removal of only five mature Oaks. The EIR for the applicant's short term permit considered it adequate to replace lost Oaks with new plantings at a ratio of five to one. In addition, under the short term permit EIR, hedgerow plantings were required only along the northern and western boundaries of the mining areas to mitigate lost hedgerow habitat. Hedgerow habitat was present at all in the Farnham West Parcel because of past differences farming practices on the Farnham West and Hutson Parcels. Hedgerows will not be present in most areas in this project. Mitigation measure 4.6-2a therefore goes much too far in requiring hedgerow planting around the entire perimeter of each of the mining areas. Hedgerow habitat should only be required to be installed to the extent required under any Fish and Game 2081 permit, or to mitigate the actual loss of any hedgerow habitat. 3-22

Mitigation measure 4.6-3a (Page 4.6-38):

As noted in a separate communication, the requirement for the creation of a permanent island on each lake, as described in this mitigation measure, is not feasible 3-23

because of the water level conditions which occur naturally in the area of the lakes. As noted in the hydrology information submitted, there is a 14 foot fluctuation between the mean high and mean low water tables. In order to construct islands with the required slopes and heights above high water there would be an average of 5000 square feet of material left in place for every linear foot of island length. An island 200 feet long with no top width would require 33,000 cubic yards of material left in place. The habitat value of that small an island is not significant compared to the value of the aggregate needed for its construction and the cost of the labor and engineering measures that would be necessary to insure proper construction. Because of the 14 foot water table fluctuation, changing the construction standards for the islands to allow steeper slopes would not significantly improve their feasibility. 3-23

It should be noted that this application is for a gravel mining site. The creation of habitat is a result of reclamation. Given the restrictive requirements on setbacks, slopes and other grading issues in the proposed Reclamation Plan, including the creation of beaches and peninsular scallops in the lake areas, significant amounts of aggregate will be lost to these features. Creation of permanent islands is an unnecessary burden, considering the habitat value which will be created by the aforementioned features already included in the application.

We believe that the "floating islands", as proposed, are a viable and economically feasible means of increasing habitat value in the lakes, and are a superior alternative to the permanent islands proposed by the DEIR. Floating islands have proven successful in severe climates in the Eastern United States and in Europe.

Impact 4.6-4 and Mitigation Measure 4.6-4a (Pages 4.6-38-40):

A section 2081 permit should only be required to the extent required by DFG pursuant to applicable law. The payment of the established per acre fee as to all of any part of the project area pursuant to the County's approved Habitat Management Plan should be identified as an alternative to a project specific 2081 permit. 3-24

It should be noted that the Department of Fish and Game takes the position that loss of riparian habitat is one of the reasons for the Swainsons Hawk's decline. Since the project does not impact riparian habitat, and, in fact, results in the creation of sixty five additional acres of wildlife habitat, together with the restoration of another thirty five acres, the project should have a positive benefit to the local Swainsons Hawk population.

Mitigation measures 4.6-5a (page 4.6): 3-25

All of the Elderberries large enough to provide habitat for the Elderberry Long Horn Beetle are already marked in the HRP, and as a result of ongoing farming operations in the project areas, no new Elderberries are growing to the size required for preservation by the DFG. 3-25

As a result, no ongoing surveys, beyond those required under the HRP to monitor the success of mitigation and restoration plantings, should be required.

Mitigation measure 4.6-5c (Page 4.6-42):

It is inappropriate to require the building of new slopes for Bank Swallow habitat, since the slopes required for Bank Swallows are too steep to maintain necessary bank stability.

This Mitigation measure should require the preservation of suitable vertical or near-vertical slopes in previously mined ares, where those slopes are not necessary to maintain required slope stability. These are located primarily to the north of the Snyder East Parcel. 3-26

Mitigation measure 4.6-5d (Page 4.6-42):

Only a total of five mature Oak trees will be removed in the mining process and another five which are located on the project site will be preserved. There is therefore no need for an annual raptor survey. Any tree removals will occur after August 15 and before March 1. In addition , over fifty feet of separation from mining activities will be maintained between the large Oak trees which are remaining on the property and mining operations. 3-27

Air Quality Impacts and Mitigation. (Pages 4.7-1through 4.7-17).

The inappropriate description of impacts of the project as being significant pervades the air quality section of the EIR. Solano Concrete's operation is extremely isolated, with no off-project dwelling units located less than half a mile from the various mining areas. The company conducts wet pit mining, which limits PM-10 emissions, compared to some other extraction technologies. The company has recently completed the installation of extensive air quality improvements in its processing plant, and uses very will maintained equipment. The company continuously implements dust control on its haul roads in accordance with all of its permits. 3-28

As a result, the effect on the overall air quality of the applicant's operation are probably not measurable any significant distance from the project's boundaries.

Because the basin in which the Yolo-Solano Air Quality Management District is located is considered non-attainment for some of the pollutants generated by the operation, it could be argued that it is appropriate to consider the project as having a cumulatively significant impact. Nonetheless compared to the no project alternative, the project improves air quality rather than harms it, and even under CEQA it is therefore a stretch to call this a significant impact.

The DEIR assumes that material not mined as a result of the project will not be mined any place else within the air basin. As noted below this is an erroneous assumption. Simply stated: more aggregate production sites result in shorter hauls and relative reduction in haul related pollution.

In the same regard, the EIR fails to take note of the significance of the fact that the applicant's processing plant already utilizes best available control technology (BACT) in much of its operation. This means that the increased mining in other locations required to make up for Solano Concrete's product under the no-project alternative would generate more pollution per ton of material processed than the applicant's plant. 3-28

The cumulative effect of these errors is to overstate the impact of the project on air quality.

In determining whether Solano Concrete's operation has a significant impact on air quality, the EIR assumes that if there were no operation the material not mined by Solano Concrete would be entirely lost to the stream of commerce, but if Solano Concrete does not mine material near Madison, there will be only a minuscule impact on the total material being mined and hauled within the air basin. The per ton pollution from the mining activities from the substitute sources would be about the same or greater. However, pollution resulting from hauling would increase because of the longer haul routes being used by the remaining producers to supply Solano Concrete's former customers. In their report on the market elasticity of the gravel industry in Yolo County,[1] Professors Bittlingmayer and Smiley, of the U.C. Davis School of Management, made this point clear: because the substitute sources of gravel are within the same air basin as the Solano Concrete operation, even if the Cache Creek gravel industry shuts down entirely, there would be only a tiny decrease in total gravel production resulting form the higher cost of replacement gravel incurred by customers now served by the Cache Creek area, but the gravel to those customers would be supplied via much longer haul routes from the plants providing the substitute materials.

[1]Dr. George Bittlingmayer and Dr. Robert H. Smiley; Market Effects of Costs and Fees Imposed on Cache Creek Aggregate Producers; June 1, 1994.

Over ninety percent of Solano Concrete's output is sold to locations within Yolo and Solano Counties. Under the no-project alternative, within the proposed thirty year term of the requested permit, the huge majority of lost output would be made up by other producers outside the Cache Creek area but in the same Air Basin and with longer hauls to bring substitute material to Solano Concrete's former customers. This approach to the no project alternative analysis is particularly important in light of the fact that Solano Concrete's asphalt plant would probably continue to operate at a hundred percent of capacity, even if it had to import gravel from other sources. The longer hauls to the plant would add to already greater NOX and ROG emissions resulting form the cessation of aggregate production by Solano Concrete. The same is true to a great extent with PM-10 emissions, especially in connection with the actual excavation of aggregate and the use of longer private haul roads at alternative mining sites under the no project alternative.

3-28

Mitigation measure 4.11-2a (Page 4.11-10):

The first three bullets of the mitigation measure have already been accomplished.

With respect to the fourth bullet, request that the words "before mining begins on Yol-69...," be substituted for "after mapping" at the beginning of the paragraph. With respect to the fifth bullet on page 4.11-11, request that the first sentence be amended to read as follows:

3-29

"If it is determined that the site contains significant cultural resources, before mining begins on Yol-69, an appropriate mitigation program shall be developed based on the information obtained during the site evaluation."

Thank you very much for your consideration of these comments.

Very truly yours,

Solano Construction Co. Inc.,

by: Anthony Russo

longterm/tschudin.5

VERNE H. SCOTT
WATER RESOURCES CONSULTANT
437 F STREET
DAVIS, CALIFORNIA 95616
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FAX: (916) 756-9141

June 26, 1996

To: Anthony Russo

Fm: Verne Scott

Re: Solano Project EIR, Dated June 3, 1996/Review

In response to your request of June 18, I have reviewed Section 4.4 Hydrology and Water Quality and Section 4.5 Agriculture and have the following comments.

In general:

- The Hydrology and Water Quality section reflects some of the comments that were submitted on the draft EIR in my memo of May 31, 1995. **3-30**

- The section's descriptions, analysis, interpretations and recommendations are consistent with sound hydrologic principles and practices. **3-31**

- The Agriculture section is satisfactory and does not have any major hydrologic impacts. **3-32**

Some specific comments and questions are included in the attached statement.

RECEIVED
JUN 28 1996
SOLANO CONCRETE CO., INC.

Enc.

SPECIFIC COMMENTS AND QUESTIONS
On
Section 4.4 Hydrology and Water Quality
Solano Project EIR, June 3, 1996

pg. 4.4-1, par 2: It would be accurate and complete to acknowledge that some of the "unconfined" ground water is perched above discontinuous layers of low permeability clays and sands. **3-33**

pg. 4.4-4, par 4: It would be more accurate to define the depth of the "uppermost clay" occurring at a depth of "20 feet" rather than "40 feet". **3-34**

pg. 4.4-12, end of par. at top of page: Reference is made to "water quality standards" It should be "water quality objectives" as per Table 4.4-4? **3-35**

pg. 4.4-13, par. 5: Would it be more accurate to indicate the "filling...with finer-grained sediment..." will be in portions or part of the "mined areas"?

Since only a portion or part of the "backfilled pits" will be backfilled with "overburden materials", is there data to show that the "flow through the aquifer" "would (be) reduced on a regional basis"? **3-36**

pg. 4.4-25, 3rd bullet: What "groundwater monitoring requirements" will not be met by the program proposed? **3-27**

pg. 4.4-26, par. 2: I support the statement by Macler pertaining to "potential biological quality impacts". **3-38**

pg. 4.4-27, par. 5: It is not clear if the "topsoil, formerly in agricultural production" is in-situ soil or soil transported to the project site as part of the "reclamation plantings" If in-situ soil is used, the problem should be no different than for all the agricultural soil on and surrounding the project site. If it is soil transported into the site, it could be specified that it not contain "persistent pesticides and/or herbicides". The impact of either process should be a less-than-significant. **3-39**

pg. 4.4-30, par 2: It should be noted that when "these surfaces (are) inundated by high groudwater conditions," the hydrology of the region is such that inundation will be for short periods of time, i.e. days, not the entire planting or growing season. **3-40**

V. H. Scott: June 26, 1996

Solano Concrete Co.

Long-term EIR

Response to Biological Resources Comments

Prepared by:
Zentner and Zentner

The Biological Resources portion of the EIR is generally a well-written and thorough document. Our specific comments primarily concern the impacts and mitigation measures as these are often not well-supported by the text of this Section.

Mitigation Measure (MM) 4.6-2a

This measure would require identification of the areas to be planted in hedgerow habitat.

Hedgerow type plantings will occur only around the Hutson parcel. The Hutson parcel was the only area that had an existing "hedgerow" in the sense that several trees occurred on the edge of this parcel prior to recent mining. The other parcels to be mined do not have existing hedgerow habitat and mining of these parcels should not result in impacts to native plant communities.

As noted in the EIR text, the proposed project would result in the creation of a significant extent of new woodland habitat while mining of the site will result in relatively minor impacts to native communities due to the highly altered character of the site. As an example, the EIR estimates that the restoration program will result in the planting of over 1,000 valley oaks while the mining program will cause the loss of 10 oaks (see below; the applicant proposes to reduce oak loss even further). Consequently, it would be difficult to characterize the provision of hedgerow habitat as needed mitigation for any of the applicant's actions. 3-41

The provision of hedgerow habitat would obviously improve the overall habitat values of the future farmed lands and might further objectives of those interested in total habitat quality in Yolo County. While these are laudable goals to which we would subscribe, requiring these actions as mitigation for non-existent impacts would conflict with case law and regulations on mitigable actions. In short, there is no "nexus" between project-related impacts and a mitigation measure that would require additional hedgerows.

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SOLANO CONCRETE
CO., INC

ZENTNER and ZENTNER

MM 4.6-2b

This measure requires the preservation of oaks on the fringe of the mining area.

This measure is acceptable to the applicant. By agreeing to preserve these oaks, the total impacts to oak trees is reduced from the loss of 10 trees to the loss of 5 trees.

3-42

MM 4.6-2c

This measure requires temporary fencing at the edge of Cache Creek.

The text of the EIR does not provide a clear demonstration of the need for fencing along the Cache Creek corridor. Presently, the corridor is separated from the mining areas by the haul road and the slope adjacent to the road. No mining activities that could be reduced by fencing have yet impacted the corridor based on our observations and the EIR does not produce evidence of such impacts.

Temporary fencing is useful (as around the dripline of oaks) as a visual marker to ensure construction equipment and activities do not disturb the soil under the oaks. We routinely specify temporary construction fencing where preserved wetlands or areas of important habitat will occur on construction sites. The Cache Creek corridor has its own barrier in the form of a steep slope; any construction activities in this area would result in significant damage to any construction vehicles or equipment. Consequently, temporary construction fencing does not appear to be necessary. It is important to note that this mitigation measure is also not well-supported in the text. Where actual impacts will occur, as in the loss of oak trees, the text is quite clear and precise in noting and defining these impacts. In this case, though, the text provides no justification for this measure.

3-43

MM 4.6-2d

This measure requires that levees be set back from the edge of riparian habitat and that biotechnical slope control be used in the area downstream of the I-505 bridge.

The EIR indicates that creation of a 3:1 fill slope along Snyder East and West will impact an existing riparian corridor. The impact is not clearly defined; the only work noted here is minor levee work and the cutting and revegetation of a gentler slope to reduce erosion. The EIR also recommends use of biotechnical means for erosion control near the I-505 bridge. Biotechnical means (coir and jute netting, willow wattles, etc.) are generally preferable to rip-rap. However, the ability of these materials to withstand moderate to high velocities in this soil is uncertain. If the project engineers determine that velocities will be low enough to allow biotechnical control to reduce erosion then such a program shall be developed and implemented by the applicant rather than using rip-rap.

3-44

MM 4.6-2e

This measure requires the removal of two exotic weed species and enhancement of existing resources at a site near Snyder East. 3-45

The removal of tamarisk and giant reed and enhancement of the depression near Snyder, East as recommended in the EIR are acceptable to the applicant with the understanding that the removal and enhancement would be completed to the extent practicable given access and other restrictions.

MM 4.6-3a

This measure requires the preservation or construction of earthen islands in the lakes rather than the artificial islands proposed by the applicant.

The construction or preservation of islands of aggregate in the proposed lakes is not supported as a mitigation measure in the text of the EIR. The EIR provides a precise discussion of existing and future habitat and other values of the project site. The EIR concludes that existing habitat values are relatively low in the mining areas and that the proposed habitat restoration activities will adequately mitigate for biotic impacts. Accordingly, there is no nexus for the requirement of such a measure.

While the provision of earthen islands might increase habitat values by some margin, the advantages and disadvantages of such islands should be carefully weighed and the value of earthen islands relative to the proposed floating islands considered. The advantages of islands are defined in the EIR to consist of the provision of "permanent, secure nesting and roosting habitat for a variety of species". This definition assumes that predators are a significant issue in this region and the provision of secure nesting sites important. The presence of large numbers of predators has not been identified in the EIR as an issue for habitant creation in this area. This definition also assumes that nesting and roosting habitat as provided by earthen islands is important. However, the EIR does not define which species would be using these islands for nesting. Given the shape of the islands (see the figure attached), they would not provide flat slopes near the water and they would be composed of highly permeable materials. These islands would probably be dominated by tall weeds the first few years before willows and cottonwoods begin to dominate the near shore areas. The resulting woodland would support nesting wood ducks and passerines but, because this type of habitat will be provided along the entire shoreline of the lakes and these species are not especially susceptible to predators, it is questionable whether this additional habitat is needed. 3-46

Additionally, these types of islands are often subject to significant maintenance requirements. At Great Linford in the UK, one of the most closely monitored and managed mining-wildlife complexes, the willows and alders that grow on their islands are cut every winter to encourage the thick ground cover that is most suitable for nesting dabblers.

SCALE: 1"=20'-0"

PROPOSED ISLAND
TYPICAL CROSS-SECTION

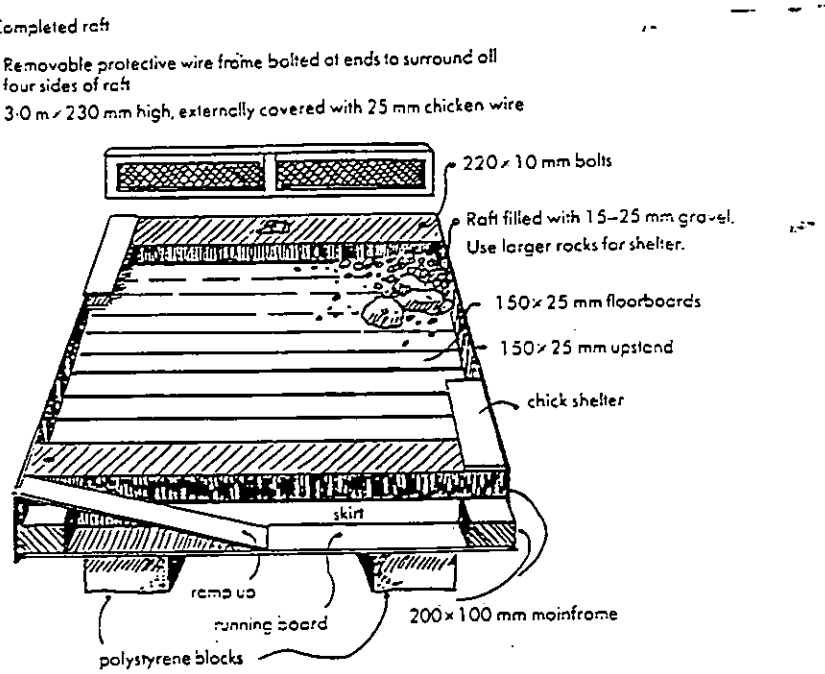
ZENTNER ...ZENTNER

Other disadvantages of the earthen islands must also be considered. The cross-sectional area of the proposed islands as defined would require the preservation of almost 5,000 square feet of material for every foot of island length. If an island were 200 feet long with no top width, it would require more than 33,000 cubic yards of material. The opportunity costs of preservation of this much aggregate should be considered.

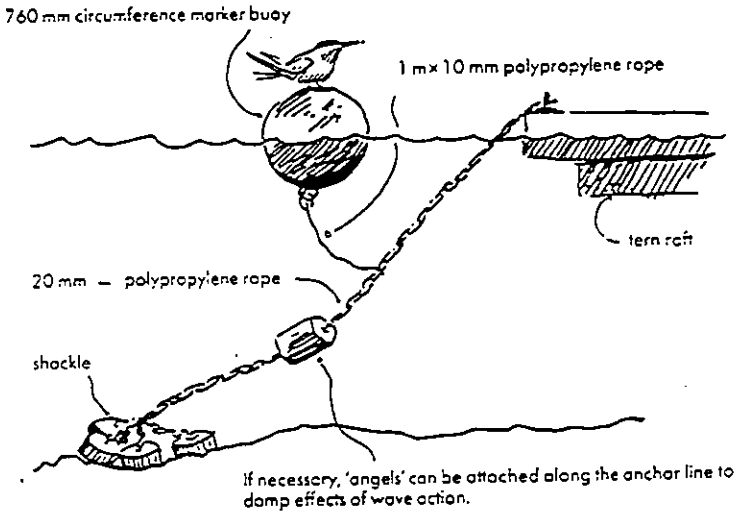
Generally, habitat or wildlife enhancement begins with an understanding of the objectives of the effort. The habitat goals of the proposed restoration work as contained in the HRP are relatively clear and are stated in terms of the plant communities to be established. The program provides opportunity and performance standards to ensure these habitats will be established. While the provision of islands can be important in many areas, the objectives and need for such a requirement do not appear to have been well-developed. 3-46

Floating islands are proposed in the project HRP to provide relatively level habitat near the water for resting dabbling ducks and shorebirds. With modifications, such as the addition of low-growing grasses and forbs, these can also function as nesting habitat for dabbling ducks such as mallards and widgeons. The use of artificial nesting islands has been well-documented in wildlife management projects. Attached figures show illustrations from sites in both the U.S. and U.K. Many of these sites are also subject to ice and snow yet the islands still last for many years. Neil Payne, in *Techniques for wildlife habitat management of wetlands* (1992, McGraw-Hill), lists eight different types of artificial islands, including commercially available forms, and concludes that these are important adjuncts to other habitat restoration efforts.

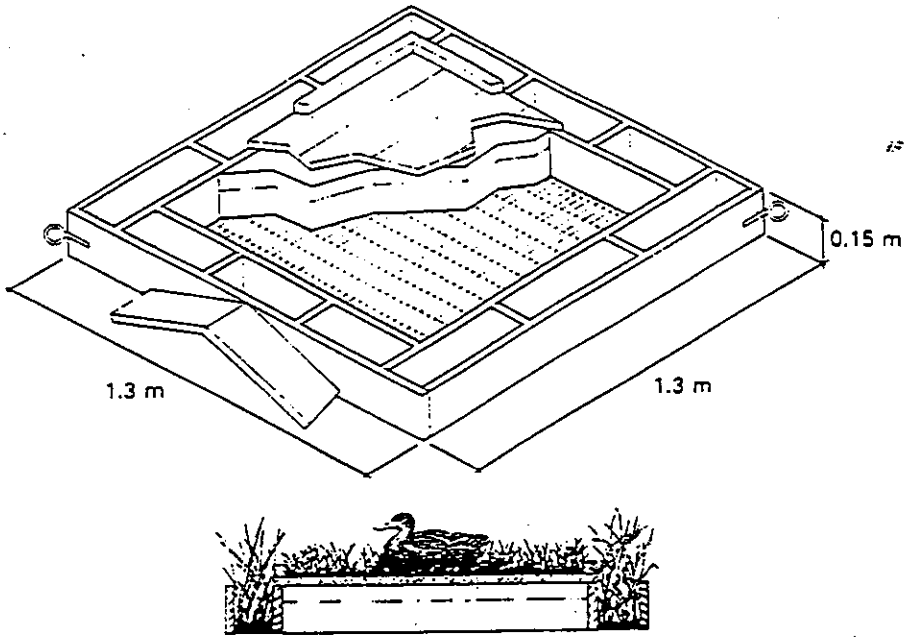
(a) Completed raft



(b) Anchorage for raft



FROM: Gravel Pit Restoration for Wildlife by John Andrews and David Kinsman



This box section nesting raft is ideal for a single nest. The cavity is filled with polystyrene and the rings are to allow the raft to be anchored.

FROM: Wildlife after Gravel, by Nick Giles

LETTER 3: SOLANO CONCRETE COMPANY, INC.

Response to Comment 3-1:

Thank you for your comment letter. For purposes of clarification, the letter is assumed to be referring to the Draft EIR (DEIR) as there was no circulation of a document entitled "Preliminary Draft" EIR. The commentor's information on Solano Concrete's operation and monitoring efforts are noted for the record. The information presented is consistent with the record and staff's observations.

Response to Comment 3-2:

The commentor's conclusion regarding the availability of aggregate resources and thickness of overburden in the area south of the proposed mining area are noted for the record. The DEIR acknowledges that overburden thickness increases to the south, away from the creek. However, the estimated average thickness of overburden and elevation of groundwater used in development of the alternative were based on subsurface information throughout the proposed site. These estimates were projected to the area south of the project site because of lack of available detailed information and the assumption that CDMG mapping of aggregate resources indicates the presence of aggregate resources in this area. The DEIR reached a conclusion similar to that of the commentor regarding the economic infeasibility of mining of this area.

Response to Comment 3-3:

Text Change #2 has been made in response to the comment.

Response to Comment 3-4:

In response to the comment, Text Change #6 has been made.

Response to Comment 3-5:

Text Change #8 has been made in response to the comment.

Response to Comment 3-6:

The comment specifically addresses the identification of the requirement of a 2081 permit from the California Department of Fish and Game for the disturbance of Swainson's hawk foraging habitat. As described in Impact 4.6-6 (page 4.6-39), the DEIR acknowledges that there is some question as to whether CDMG will consider the disturbance of Swainson's hawk habitat as a "take" under Section 2081. The impact analysis also describes the provisions of the County Habitat Conservation Plan (HCP) that relate to this issue. Mitigation Measure 4.6-6a (page 4.6-40) provides flexibility in the mitigation of the loss of this habitat, including other alternative mechanisms acceptable to CDFG.

Response to Comment 3-7:

The proposed language and the DEIR language essentially say the same thing. Mitigation Measure 4.2-3a contains adequate language to ensure that mining will not be allowed on Williamson Act contracted land unless the proposed reclamation is in conformance with the Williamson Act, or unless the Williamson Act contract has expired. No change is recommended for the EIR; however, staff will consider this language to clarify the recommended conditions of approval.

Response to Comment 3-8:

The commentor is correct, in that the Yolo County Resource Conservation District is not an agency that would be required to issue a permit for the project. However, the Resource Conservation District (RCD) is an agency which has powers (granted by statute) to develop guidelines for certain agricultural practices in Yolo County. CEQA does not limit the plan consistency analysis in an EIR to only regional or other agency plans that have permitting authority over a development project. The comment raises the issue of whether the County would or should identify permanent conversion of agricultural land to nonagricultural use as a significant impact for discretionary permits for other projects proposed within the County. As with any environmental impact analysis, the answer depends on the use proposed and site-specific circumstances of the project.

Response to Comment 3-9:

The comment is noted. The DEIR is correct; however, this additional information regarding ownership will be useful for consideration by decision makers.

Response to Comment 3-10:

The commentor proposes alternative language for Mitigation Measure 4.2-8a. The DEIR is appropriate for CEQA purposes. The alternative language will be considered by staff for inclusion in the recommended conditions of approval.

Response to Comment 3-11:

The commentor is correct. The description of the stratigraphy applies to the entire 1,828-acre project site, comprised of eight parcels. The information used to develop the description was based on regional information and site-specific information provided for the mining areas.

Response to Comment 3-12:

To provide clarification to the issues regarding 100-year flood protection raised in the comment, Text Change # 5 has been amended to the DEIR. The commentor's point that the incised channel has been mined was discussed in the second full paragraph of page 4.3-7.

Response to Comment 3-13:

The commentor is correct in pointing out that the surveying required by Section 10-5.512 of the Surface Mining Reclamation Ordinance applies to determination of elevation and not to a property boundary survey.

Response to Comment 3-14:

It is for the most part. The CCRMP boundary was determined from the best available information on the 100-year flood boundary and detailed analysis of the position of the historic channel. The historic channel can include areas landward of the 100-year flood boundary. Section 10-4.429(d) of the approved OCMP requires a minimum setback of 700 feet from the existing channel bank for all mining areas within the Streamway Influence Boundary. If it is demonstrated that a smaller distance will not adversely affect channel stability, the minimum setback can be reduced to not less than 200 feet. The 200-foot setback cannot include areas behind levees or within the historic floodplain as delineated in the CCRMP.

The appropriateness of this boundary at the project site was evaluated in the DEIR. In areas where the CCRMP boundary did not reflect site-specific hydraulic or topographic data indicating the historic channel boundary, a recommendation was made to revise the boundary (See Mitigation Measure 4.3-4a). Staff considers the revised boundary to be sufficiently well-defined to determine the setback datum. As the project site includes leveed areas and portions of the historic channel that do not provide a sufficient buffer against lateral erosion, the use of the 100-year flood boundary as the datum for the setback would not be consistent with the OCMP.

Response to Comment 3-15:

The geotechnical report submitted for the project did not include a full analysis of levee stability within the project site. It did not evaluate the construction history of the levees at the project site, and no geotechnical borings were made on the constructed levees. Therefore, the position taken by the commentor that the levees have been specifically evaluated is not supported. It is accurate that the physical distance from the raised levee road to the mining area boundary is over 200 feet. In addition, engineered levees require regular maintenance and upkeep that may not be provided once reclamation is complete. The 200-foot setback allows additional insurance against multiple erosion events in an untended reach to avoid "pit capture."

Response to Comment 3-16:

Please refer to Responses to Comments 3-14 and 3-15.

Response to Comment 3-17:

Staff does not agree with the text change recommended by the commentor. Staff and the preparers of the DEIR recommended completion of the levee improvements for the entire project within one year of commencement of mining, as stated in the DEIR. The extent of areas affected by overtopping of portions of the separator which do not provide 100-year protection has not been accurately delineated. Flooding of surfaces lowered by mining in earlier phases could occur during such an event.

Under the CCRMP, in-channel work would require a floodplain development permit from the County. Therefore, the "terms and conditions" of all in-channel work will indeed be under the control of the County. However, the applicant, not the County, will be the permit holder.

Response to Comment 3-18:

The nexus for requiring participation by the applicant in the Cache Creek Improvement Program is established through recognition of Cache Creek as a dynamic system potentially capable of causing changes that could affect or be affected by the presence of off-channel mining areas. Creation of the mining areas proposed by the project would be a significant development requiring protection from flooding and erosion caused by the creek. The applicant has elected to develop mining areas within the Streamway Influence Boundary (SIB). The SIB was established in the Technical Studies for the CCRMP as an area that has been affected by historic migration of the Cache Creek channel. Due to the potential for further channel migration of similar magnitude, the Technical Studies for the CCRMP, the OCMP, and the OCMP EIR recommended that mining areas be set back 700 feet from the existing channel bank. The OCMP and OCMP EIR recognized that the setback could be reduced to not less than 200 feet if individual projects could demonstrate that engineering protection of the channel bank could prevent erosion of the separator between the mining areas and the creek channel.

Although the project is required to provide 100-year flood protection for the proposed mining areas, changes in flooding hazards associated with the creek could result if the channel maintenance under the CCIP were not implemented. In addition, unstable hydraulic conditions could result in unexpected erosion of the channel bank. The implementation of the CCIP is considered by the County to be an important preventative measure for long-term maintenance of the separators bounding mining areas within 700 feet of the current channel.

The commentor's opinion that the position of the proposed project relative to the Esparto bridge does not establish a nexus for required participation in channel modification at the bridge is considered valid by staff. Therefore, Mitigation Measure 4.3-4i has been modified by Text Change # 15 to remove reference to improvement projects associated with the bridge.

Staff does not agree with the commentor's position that the level of participation should be proportional to the level of past contributions of mining activities to channel mining to channel instability or to the level of mining that may be approved for the proposed project. As discussed above, the nexus for requiring participation relates protection of the proposed mining areas to involvement in the channel improvement projects. The mitigation measure addresses improvement of the channel in the area of the proposed project. Therefore, staff does not believe that participation in the CCIP should be considered a "net gain" of the proposed project. The level of liability for activities under the CCIP would likely be similar to the liability that any property owner would incur as related to any other channel improvement project for protection of developed property. The bank stabilization proposed by the project would likely result in similar levels of liability. The applicant is encouraged to obtain legal counsel on the issue of liability. The scheduling and cost (and payment) of work would be the responsibility of the owner but subject to review by YCCDA under the CCIP. However, in-channel work done on properties other than those adjoining the permitted off-channel mining area would be seen as a "net gain."

Response to Comment 3-19:

Staff considers that the determination of the California Division of Safety of Dams (DSD) jurisdiction to be necessary prior to mining that could result in the conditions which may be subject to DSD approval. The commentor's suggestion that a request for determination by DSD sixty days prior to such mining would not meet the intended purpose of the mitigation measure. Within sixty days, DSD may not be prepared to make such a determination.

Response to Comment 3-20:

The commentor is correct. To mitigate potential impacts to the support of the I-505 bridge, the channel should be allowed to aggrade approximately five feet at the bridge. The maintained level of aggradation would decrease downstream toward the project site. Please refer to Text Change #17.

Response to Comment 3-21:

The requirement for three feet of freeboard on flood protection levees around the project site has been deleted under Section B of the Statement of Overriding Considerations for Adoption of the Off-Channel Mining Plan (dated 30 July 1996). It was determined that potential downstream flooding could be exacerbated by this requirement. Please refer to Text Changes # 16, 20, 21, and 22.

Response to Comment 3-22:

A description of the anticipated loss of mature oak trees is provided on page 4.6-35 of the DEIR, which acknowledges that only five oaks would be removed to accommodate mining, that an additional five oaks would be located at the periphery of mining activities and could be damaged or removed, and that over 1,000 valley oaks would be planted as part of

revegetation and restoration. Mitigation Measure 4.6-2b on page 4.6-36 of the DEIR was recommended to ensure protection of mature oaks at the fringe of proposed mining areas where loss of these trees could be avoided.

With regard to the proposed hedgerow plantings along the margin of the agricultural uses, the proposed Habitat Restoration Plan states that plantings would be "provided on the edges of the reclaimed agricultural lands" (page 46), but the Proposed Restoration Plan shown in Figure 4.6-2 on page 4.6-29 of the DEIR does not indicate the location of hedgerow plantings. The proposed Hedgerow Planting Details shown in Figure 4.6-6 on page 4.6-34 of the DEIR indicate hedgerow plantings along the western and northern edge of the Kaupke parcel. Further clarification in a correspondence by the applicant's biologist (Comment 3-41) indicates that hedgerow plantings are only proposed around the Hutson parcel to replace the hedgerow habitat once present as fencerows on this portion of the site. Action policy 6.4-13 of the OCMP calls for simply requiring replacement of hedgerow habitat where lost by mining activities. Additional hedgerow plantings could be established to enhance wildlife habitat for reclamation or as part of a site-specific mitigation plan a Section 2081 agreement with the CDFG. In response to the comment, Text Changes # 23 and # 24 have been made to indicate the proposed extent of hedgerow plantings on the site.

Response to Comment 3-23:

The concerns of the commentor regarding the appropriateness of creating permanent islands in the proposed lakes, the substantial amount of material to create these features, and the benefit of the proposed artificial islands is noted for the record. A discussion of the use of islands as a habitat feature is provided on page 4.6-37 of the DEIR. The proposed Habitat Restoration Plan for the project acknowledges that islands are an important component of open water habitat, but has proposed using floating artificial islands rather than creating permanent islands due to the substantial volume of sand and gravel which must be set aside or replaced in the pit to create them. The proposed use of artificial islands by the applicant's biologist provides an indication of the importance of islands to wildlife and enhancement of open water habitat. As noted by the applicant's biologist in a related correspondence (Comment 3-46), use of artificial islands may be "important adjuncts" to habitat restoration efforts. However, this is generally the case where permanent islands have not been incorporated into reclamation plans and the material required to create a permanent island is not available, making artificial islands the only feasible "adjuncts" for secure resting and nesting habitat.

The collective area occupied by the proposed lakes and the resulting substantial change to the existing upland habitat of the site warrants additional enhancement of the proposed water bodies. Performance Standard 4.5-13, listed on page 4.6-26 of the DEIR, contains provisions for permanent, vegetated islands when developing wetland areas and reclaiming wet pits. While the volume of material which must be left in place for a permanent island is considerable, creating a permanent island on at least one of the lakes would provide secure nesting and roosting habitat for a variety of species.

In response to the Comment, Text Changes # 26 and # 27 have been made to indicate that a permanent island should be required on only one lake and that the proposed artificial islands and submerged peninsulas should remain along the edge of the other lakes.

Response to Comment 3-24:

The County's Habitat Management Plan has not been adopted. Therefore, the framework for offset fees described in the comment has not been finalized and should not be referenced in this EIR. However, Mitigation Measure 4.6-4a provides for alternate mechanisms that are acceptable to CDFG for mitigation of loss of Swainson's hawk habitat.

The opinion of the commentor regarding the use of tree plantings and revegetation of restoration areas as adequate mitigation for potential impacts on Swainson's hawk is noted for the record. As discussed on page 4.6-39 of the DEIR, the site meets the two criteria used by the CDFG in determining suitable foraging habitat for Swainson's hawk for which mitigation must be provided if lost as a result of development. Areas of tree crops and the open water habitat of the lake would be unsuitable for foraging, resulting in the net permanent loss of approximately 384 acres of suitable foraging habitat. Mitigation Measure 4.6-4a on page 4.6-40 of the DEIR calls for securing a Section 2081 authorization with the CDFG to ensure that adequate mitigation is provided for the loss of Swainson's hawk foraging habitat. Tree planting and revegetation of the restoration areas would most likely be considered as part of the mitigation agreement, but this would be defined through further consultation between the applicant's consulting biologist and the CDFG.

Response to Comment 3-25:

As discussed on page 4.6-40 of the DEIR, elderberry shrubs occur in close proximity to proposed excavation areas and could be affected by project-related activities. There also remains a possibility that new elderberry shrubs could become established during the estimated 30-year life of mining activities, and destruction of any new plants supporting VELB would result in an unauthorized take of this endangered species. Mitigation Measure 4.6-5a on page 4.6-41 of the DEIR calls for compliance with the USFWS "General Compensation Guidelines for Valley Elderberry Longhorn Beetle", which has not been defined in the proposed Habitat Restoration Plan. Providing a preconstruction survey prior to initiation of each phase of mining would ensure that a thorough inventory of elderberry shrubs is prepared and appropriate provisions taken to avoid or mitigate impacts of future mining activities.

Response to Comment 3-26:

Mitigation Measure 4.6-5c on page 4.6-42 of the DEIR provides a number of options to replace the artificial bank swallow nesting habitat on the Hutson parcel. This includes creating new artificial habitat on side slopes of the permanent lakes, as well as restoring the vertical bluffs of the Snyder East parcel, as suggested by the commentor.

Response to Comment 3-27:

As discussed on page 4.6-41 of the DEIR, it is possible that one or more species of raptor may establish an active nest in the vicinity of proposed improvements at some time in the future which could be destroyed or abandoned as a result of construction activities. The Habitat Restoration Plan and other components of the project application do not indicate that tree removal would occur after August 15 and before March 1. Mitigation Measure 4.6-5d on page 4.6-42 of the DEIR calls for conducting a pre-construction survey prior to initiation of each phase of mining, which is to occur over specific portions of the site during the anticipated 30-year life of mining activities. The survey would extend throughout the new mining area, where tree removal and ground disturbance associated with mining activities would not yet have occurred, and establishment of new tree or ground nesting locations would be possible. The survey would only be required prior to initiation of a new phase of mining, not on an annual basis as indicated by the commentor. If an active nest is encountered as part of the pre-construction survey, a buffer zone may be necessary to protect the nest location until young have fledged depending on the distance between the nest and proposed mining activities.

Response to Comment 3-28:

The efforts of the applicant to run a clean plant and operation are acknowledged by the County and appreciated. The commentor assumes, however, that under the "no project" mining would occur elsewhere in the basin with "much longer haul routes." This is not necessarily the case. Any one of the existing operations along Cache Creek could theoretically supply this gravel, without measurable increases in haul distance.

The DEIR appropriately evaluates potential emissions associated with the project proposed by the applicant. It would be speculative to attempt to evaluate which company could provide the services the applicant proposes to provide over the next 30 years.

Response to Comment 3-29:

Text Change # 31 has been made in response to the comment.

Response to Comment 3-30:

The preparers of the DEIR made a concerted effort to address all comments submitted during the EIR process.

Response to Comment 3-31:

Staff and the preparers of the DEIR appreciate the comment, which is noted for the record.

Response to Comment 3-32:

Comment noted. No response is necessary.

Response to Comment 3-33:

The preparers of the DEIR agree with the commentor. However, the description of the regional environment in the DEIR was purposefully brief. As referenced at the end of the second paragraph on page 4.4-1 of the DEIR, an expanded discussion of hydrogeology is included in the OCMP EIR.

Response to Comment 3-34:

The uppermost clay occurs at depths ranging from 21 feet in the central portion of the mining area to 50 feet in the south-central portion. The 40-foot average depth was provided as a general average based on review of on-site boring log data.

Response to Comment 3-35:

Text Change # 19 has been made in response to this comment.

Response to Comment 3-36:

The discussion referred to by the commentor is located on page 4.4-14 of the DEIR, second to last paragraph. This discussion focuses on activities that could result in siltation of groundwater recharge areas. Although it does not specifically state in this paragraph that only portions of the mined areas would be backfilled with fine-grained sediment, this fact is stated frequently throughout the document, including in the project description. Filling of the saturated zone portions of some mining areas with finer-grained processing fines and overburden would result in localized reduction in hydraulic conductivity of the aquifer.

Response to Comment 3-37:

Section 10-4.417 of the Off-Channel Surface Mining Ordinance contains specific requirements for number and location of monitoring wells, frequency of monitoring, and constituents to be analyzed. The monitoring program proposed by "Groundwater Hydrology Report No. 3" included in the Solano application package (Appendix 4), acknowledges that the existing program only partially satisfies the requirements of the monitoring program suggested by the draft OCMP. The ordinance requirement expands components of the monitoring program presented in the application.

Response to Comment 3-38:

The comment in support of technical opinion presented in the DEIR is noted for the record.

Response to Comment 3-39:

The referenced paragraph refers to on-site soils. As the fourth paragraph on page 4.4-27 of the DEIR explains, pesticides may migrate through the unsaturated zone toward the water table. Prior to mining and reclamation to lowered surfaces, the distance of downward pesticide migration would be relatively greater, and therefore the likelihood of groundwater quality degradation may be lower. The DEIR preparers understand that the project does not propose importation of soil to the site for use as backfill.

Response to Comment 3-40:

The preparers of the DEIR do not have specific information on the likely duration of inundation events on lowered surfaces. The duration of inundation may not be directly comparable to flooding and drainage of natural higher surfaces (due to different soil conditions and hydraulic head relationships). The paragraph intentionally does not include a reference to inundation duration. Preparers of the DEIR acknowledge that high groundwater levels would be seasonal. Elevated groundwater levels could occur before or during spring planting season. Even periods of short duration, however, may have a critical impact on agricultural productivity, depending on the timing and the type of crop being produced.

Response to Comment 3-41:

The clarification provided by the commentor regarding proposed hedgerow plantings on the site is noted for the record. Refer to the Response to Comment 3-22.

Response to Comment 3-42:

The acceptability of the provisions in Mitigation Measure 4.6-2b of the DEIR to the commentor is noted for the record.

Response to Comment 3-43:

Mitigation Measure 4.6-2c of the DEIR was recommended to provide consistency with Section 10-4.436 of the Off-Channel Surface Mining Ordinance and to ensure that unauthorized disturbance to vegetation along the Cache Creek corridor is avoided. Scattered elderberry shrubs, riparian vegetation, and native trees remain along the corridor, and the area has been proposed for restoration as oak woodland and riparian woodland habitat in the Habitat Restoration Plan for the project. As discussed on page 4.6-35 of the DEIR, these features may be unintentionally disturbed at some point during mining and reclamation unless new haul roads were sensitively sited and fencing was installed to control heavy equipment operation. The remaining existing resources and proposed restoration plantings should be protected through the use of temporary fencing, as called for in Section 10-4.436 of the Off-Channel Surface Mining Ordinance.

Response to Comment 3-44:

The concerns of the commentor regarding the appropriateness of biotechnical slope stabilization are noted for the record. A discussion of the potential impacts of proposed levee improvements and other disturbance on sensitive vegetation resources is provided on page 4.6-35 of the DEIR. Mitigation Measure 4.6-2d on page 4.6-36 of the DEIR calls for protection of areas of established riparian vegetation and use of biotechnical methods to control erosion along the active channel. As noted by the commentor, biotechnical methods may not be appropriate along the active channel if engineering evaluations demonstrate that riprap must be used. In response to the comment, Text Change # 25 has been made to indicate use of riprap if necessary to control severe erosion.

Response to Comment 3-45:

As a part of ongoing monitoring of the project, the County will ultimately determine whether the applicant's implementation of the measure is in full compliance, or not acceptable. The restrictions to which the comment refers are not specified. No modification to the measure is recommended by staff.

Response to Comment 3-46:

The concerns of the commentor regarding the appropriateness of creating permanent islands in the proposed lakes, the substantial amount of material to create these features, and the benefit of the proposed artificial islands is noted for the record. Refer to the Response to Comment 3-23.

LETTER 4

July 18, 1996

To: Dave Morrison & Heidi Tschudin,
Yolo County Planning Department

Subject: Comments & Statements of Concern - DEIR - Off Channel Mining Plan Applications.

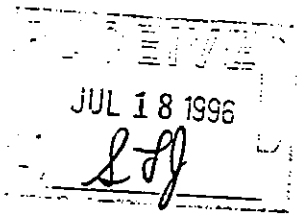
The enclosed documents consist of General and Specific Comments on the DEIRs for the following Off Channel Mining Applications.

Solano Concrete

Teichert Woodland

Teichert Esparto

Syar



We believe that the DEIR Consultants did not adequately address concerns raised earlier. We therefore have re-emphasized our concerns with the hope that adequate consideration will be given to these as well as the other issues. Since the proposed Development Agreement is a more recent issue, we plan to respond separately. 4-1

As indicated earlier the DEIR has not adequately presented the hazardous risk of the Open Deep Wet Pits to the major source of potable water in Yolo County. Some of these pits will exist into perpetuity acting as open, festering wounds on the landscape tearing deep holes into the aquifer holding our most precious resource - drinking water. This would be a terrible legacy to leave our children and future generations! 4-2

Bob & Mitzi Speirs
Environmental Issues Committee
Western Yolo Grange #423

Janet Levers
Cache Creek Coalition

Lois Linford
Natural Resources Committee
League of Women Voters,
Woodland

Jan Ekholm
Citizens for Responsible Mining

July 15, 1996

To: Dave Morrison & Heidi Tschudin

Yolo County Planning Department

Subject: Comments and Statements of Concern

DEIR- Solano Long-term off-channel Mining Permit Application

SCH # 960 12034

June 3, 1996

Part I EXECUTIVE SUMMARY OF COMMENTS

The following comments are discussed in much greater detail in the body of the response.

1. Has failed to adequately consider the public health aspects of lake eutrophication at vegetation maturity (10-20 years after reclamation), mercury considerations and the presence of the raw sewage lagoons of Madison and Esparto. These raw sewage lagoons are a haven for waterfowl and shore birds which can commute to the proposed pit-lakes (exposed potable aquifer) and carry human pathogens.

   There is no testimony offered on these matters in the DEIR that was submitted by properly licensed State Experts on Public Health. The testimony that is offered is submitted by people who appear to lack the required licenses. The report by Darrel Slotten on Mercury was excellent except that it was carried out over a very limited period of time and not during a period when the greatest mobilization of mercury is apt to occur. 4-3

2. The DEIR does not acknowledge the sealing of the sides and bottom of the pit-lake with the silt and clay that is agitated below the water level during actual excavation. It also fails to discuss the sealing of the pit-lakes by organic slimes after and during eutrophication. There is no testimony from expert aquatic biologists or limnologists. 4-4

3. The Migrant Farm Labor Housing Project with its concentration of children and Hispanics is not acknowledged. No indication that bilingual hearings or DEIR documents have been furnished or any Spanish language public hearings held. 4-5

4. The accepted safe slope for public swimming pools is not presented so the reader has no basis for comparison with the pit-lake side slopes recommended by Staff. This response fills that gap and offers graphics to demonstrate that the slope recommended by Staff is 4 times steeper than what is nationally recommended for safety of swimmers. 4-6

5. In calculating evapo-transpiration, the Technical Studies do not use specific micro-climate data for the project vicinity which experiences more frequent north winds with greater velocity than does the climate east of the Dunnigan Hills. Use of general climate data greatly understates the specific evapo-transpiration loss for the project location. 4-7

6. The DEIR never resolves the issue of whether the Division of Safety of Dams will require an engineered dam to be constructed as a separator in depressed areas adjacent to the channel. 4-8

7. Staff provides no engineering justification for agreeing not to require a 100 year flood protection levee and allowing a pit to be flooded. 4-9

8. Staff agrees to allow diversion from Cache Creek into a mining pit although no proof is offered that the specific parcel has riparian water rights. YCFC&WCD has already filed an application with the State for all remaining unclaimed water in Cache Creek. 4-10

9. Staff fails to indicate whether or not permits will be required from the SRB, COE, and DWR if diversion structures are to be constructed on Cache Creek. 4-11

10. Staff authorizes construction of flood control levees on the south bank of Cache Creek, but has not offered an engineered study on what the effect will be on properties upstream , downstream or on the north bank properties. Protecting the south bank may well flood the north bank properties. 4-12

11. The concept of a siltation basin being created by diversions from Cache Creek suddenly arises with no accompanying engineering feasibility study offered to ascertain expected performance. As presented this concept does not even meet the "wild guess" criteria. 4-13

12. Why is biotechnical bank protection favored when it is subject to fire, dry rot and termites? Caltrans, COE, DWR have never used it in Yolo County! Miles of the Sacramento River in Yolo County have been rip-rapped and much of it is no longer visible because riparian growth has become established in it. Rip-rap is by far the easiest and quickest to repair in emergencies. 4-14

13. The cone of depression of the Madison municipal wells has not been charted so neither Staff nor its consultants can ascertain with any validity whether pit-lake water will flow toward the wells. So far they have only "guessed". 4-15

14. The wells and lakes at the site have never been tested for phosphorus. Phosphorus in very small amounts promotes the growth of algae which is the precursor to eutrophication. The Staff's experts are willing to "guess" that this will not become a problem when they have absolutely no information on the presence of phosphorus. The recent preliminary investigation by UCD on mercury confirms that algae is already present in the existing pit-lakes. 4-16

15. The DEIR fails completely to recognize that fertilizer used on the reclaimed agriculture land would be one of the most serious health threats to the exposed potable aquifer by contamination with nitrates. Excess nitrates in the drinking water is of great concern to public health officials. 4-17

16. The use by a consultant of a mathematical model to predict the influence a lake would have on water movement through the aquifer yields results that are unacceptable. The consultant failed to consider the amount of sealing of the bottom and sides of the pit-lake that would be accomplished by the actual excavating through clay lenses below the water surface and the subsequent slime layer biological sealing that will occur as the lakes age. 4-18

17. The acceptance of a 4 stranded barbed wire fence as an adequate barrier to keep trespassing children out of the pit-lakes is ludicrous. Such a fence would not even be a challenge to a dog! 4-19

18. Staff and its consultants contend that eutrophication and biological sealing of a pond can be prevented by having steep sides. However 95% of the algae inhabiting the pond will be individual detached microscopic cells that will settle anywhere and which provide food for the biological slime organisms that will cause the seal. These organisms attach to any surface - vertical, horizontal or upside down. 4-20

<u>The testimony of competent aquatic biologists and limnologists is totally lacking.</u>

19. The DEIR weakly tries to fill in soft spots and gaping holes in its presentation by quoting unknowns and by telephone conversations. The reader is never informed as to what questions were asked or how much relevant background information preceded the question. Such casual conversations and hearsay, totally unsupported by documentation are nevertheless presented to the reader as having the same credibility as the Technical Studies. 4-21

20. No economic investigation and report is made on tree crops. Nowhere is the revenue for the 10 year warranty reclamation period of tree crops compared to the same period for reclaimed agriculture land. The reader has no way of knowing if this is a one to one ratio trade-off on land utilization or whether tree crops is a cheap way of avoiding the extra cost of agriculture reclamation. The forest fire hazard of densely planted tree crops is not discussed. 4-22

21. Higher groundwater in the future when the Tehama-Colusa Canal is extended south of Cache Creek has not been considered in establishing the minimum depth of restored topsoil over the annual average high ground water elevation. 4-23

22, The air quality discussion is invalid because it uses measurements taken at Woodland, approximately 10 miles from the project site. This disregards the local micro-climate which is significantly different. The Hungry Hollow area is surrounded on 3 sides by uplands. 4-24

23. Local emergency response and equipment is not discussed. The Esparto-Capay Fire Department is a volunteer organization and the response time should be discussed for accidental drowning type accidents. 4-25

PART II

Subject: SPECIFIC Comments and Statements of Concern

DEIR- Solano Long-term off-channel Mining Permit Application

SCH # 960 12034

June 3, 1996

PAGE	P#	COMMENTS
1-1	1.2	The Solano DEIR cannot by law legally "tier off" the OCMP which is a document that, as of June 3, 1996, had no official status in as much as the CCRMP Final EIR had not been circulated and it had not been approved by the Planning Commission or the BOS. CEQA does not allow one EIR to depend on a previous EIR that has not been approved by the official bodies that must approve EIRs'. This mining permit application in common with the other four individual permit EIRs currently circulating for public comment, is predicated on adoption of the OCMP as written and the development of regulating ordinances based on that plan. The present schedule sets July 23rd as the date for Board Action on the OCMP plan and members of the Board have insisted in public meetings that they have open minds on this issue and have not yet decided how they will vote. For this reason it seems highly improper for these applications to be circulating simultaneously. The fact that the Board of Supervisors authorized this action raises serious doubts about the integrity of the whole process. In Conclusion - it can be stated that the DEIR of this project is predicated on the outcome of a ball game that has not yet been played. THIS IS IN TOTAL CONFLICT WITH CEQA LAW !!
2.1 2.2	2.2	Areas of Controversy Fails to consider the public health aspects of contamination of the potable aquifer by a) the presence of mercury, b) conditions due to eutrophication as vegetation (algae) reaches maturity, c) transport of pathogens by waterfowl from the Madison and Esparto sewage ponds to the newly created lakes (the exposed potable aquifer).

4-26

4-27

PAGE	P#	COMMENTS	
		Also not mentioned is the degradation of the pit water (potable aquifer) through evaporation and the consequent concentration of salts. It fails to consider the concentration of boron due to evaporation as an adverse impact on farm crops via the irrigation system. No consideration is given to what might be an unsafe separation between a pit and the cone of depression in the aquifer created by the municipal wells of Madison, the Migrant Housing Project and Esparto. This could cause water from a pit close to a town to be drawn into the public water supply. The city of Woodland's 70+ years of water table measurements amply demonstrate this frightening possibility.	4-27
2-3		EFFECTS FOUND TO BE SIGNIFICANT AND UNAVOIDABLE Does not consider sealing of the sides and bottom of the wet pit with silt brought on by continuing agitation of the water during excavation as layers of soil, clay and silt are removed. No proof has been provided that such siltation will not materially affect the natural flow of the aquifer through the wet pit. There is no practical way of removing this seal.	4-28
		Fails to consider the microclimate at the Solano site, which has a much higher evaporation rate than that shown in the "Technical Studies" which used only broad general regional data not applicable in this location. This increased evapo-transpiration rate will result in greater concentration of TDS and boron locally which will in turn have an adverse impact on adjacent agricultural land using well irrigation. The micro-climate at this location is characterized by significantly more low humidity and hard north winds than the area east of the Dunnigan Hills. This is a glaring gap in information not covered by the County's EIR documents even though local climate conditions are basic to decisions governing the type of farming to be carried out in a specific area.	4-29

PAGE	P#	COMMENTS	
		No information is provided on the long term effects that eutrophication will have on the pit lakes 20 years hence when vegetation is at maturity. These long term effects drastically reduce recreation potential and have a profound effect on potable water quality. This subject is dealt with at great length in EPA document "The Practice of Water Pollution Biology". It should be noted that in all the public documents circulated to date regarding this issue no discussion has been presented by anyone with professional expertise on aquatic biology in relation to Public Health issues.	4-30
2-5	2nd	COMMENT The foregoing section of this DEIR is predicated on the false premise that the OCMP and CCRMP are "done deals". It further assumes that there will be no substantive changes in the OCMP and CCRMP if and when both receive final approval by the BOS, which is in the future. In reality previous response on both documents by concerned citizens has amply demonstrated that both the OCMP and CCRMP are seriously flawed documents and are unforgivably rife with errors, omissions, misinformation and general sloppiness.	4-31
3-3	Fig 3-2	Chap. 3.0 Project Description 3.1 INTRODUCTION Why does Fig. 3.2 show the MRZ-3 (156 Report) as being within the project when CCRMP states on page 4.3-17 that the "planning area is located within an identified MRZ-2 Zone (Dupras, 1988)? What purpose is served by granting a permit covering land outside of the CCRMP declared boundary? It appears that Staff considers the Planning Area boundary to be negotiable if and when the BOS approves the CCRMP or OCMP!	4-32
3-4	1st	PROPOSED AMENDMENT OF EXISTING RECLAMATION PLAN The COE in its 1995 Report states that the DWR has regulations dealing with permanent excavations in proximity to streams that require engineered type dam separators. Has DWR given an opinion on this proposal?	4-33

PAGE	P#	COMMENTS	
3-5		The Town of Madison is less than 1/2 mile from the project boundary - NOT one mile as stated if the scale of Fig. 3-2 is to be believed! Cache Creek is generally regarded as the south boundary of Hungry-Hollow - the description given is incorrect. It should be noted that the farm labor camp at Madison is not shown either on Fig. 3-2 or Fig. 3-3 but is locally regarded as part of the Town of Madison. The discussion on the proximity of dwellings to the proposed project is unacceptably deficient in not making this inclusion. The approximate population of this housing development should be stated.	4-34
3-16		PERMANENT - LAKES (WET PITS) "An irrevocable offer of dedication to an appropriate public agency"-- needs further elaboration. An offer, to be consummated, must also be accepted and this would necessarily have to include a dedication of ingress and egress. "An appropriate public agency" must be defined. What happens to the offer of dedication if the property changes ownership, etc.? As stated the offer has a fine altruistic ring to it but it is a "cute" way of absolving the operator of future responsibility while he still mines at a different location. Our elected representatives need to make their decisions on this issue known to citizens before officially approving the Final EIR.	4-35
3-16		ROW CROP AGRICULTURE All row crops grown in this locality (except organic) require fertilizer and in the newly reclaimed areas additional application will be necessary to regain prior productivity. Placement of the root zone much nearer to the water table will accelerate the accumulation of nitrates into the potable aquifer generating a health hazard. This should at least be mentioned as an unmitigable adverse impact.	4-36
4.2-1		SETTING Cache Creek Mineral Resource Zone does not extend to the Town of Yolo (See 156 Study Map) as stated and Fig. 3-1 is not applicable.	4-37

PAGE	P#	COMMENTS	
		The site's western boundary is less than 1/2 mile of the Town of Madison, not 1.5 miles east as stated.	4-38
4.2-2	Fig 4.2-1	Figure 4.2-1 is incomplete since it does not show the Madison Farm Migrant Housing Development and does not show the Madison sewage ponds which are near the proposed project. As presented the map is misleading and fails to show the high density housing that is closest to the project.	4-39
4.2-4	Fig. 4.2-2	Figure 4.2-2 is incomplete for the reasons described above.	4-40
4.2-9	Fig. 4.2-	Figure 4.2-4 is incomplete for the reasons described above	4-41
4.2-23		IMPACT 4.2-8 The boundary of the proposed project is less than 1/2 mile from the Town of Madison and even closer to the high density housing development of the Farm Migrant Housing Project. The DEIR is incorrect !	4-42
4.2-25		MITIGATION MEASURE 4.2-8a Unless and until the BOS by official action specifically agrees to accept such reclaimed lands this mitigation is speculative. Unless based on firm and timely commitment from the County this action would not seem to conform with CEQA requirements.	4-43
4.3-4	Fig. 4.3-2	Why is a source drawing from Luhdorff and Scalmanini being used when they are not geologists?	4-44
4.3-18	PS 2.5-4	Benches in a sideslope were specified for safety reasons presumably to prevent drowning accidents on slopes of 1:1. What research demonstrates that a slope of 1.5:1 prevents accidental drowning? Is this an arbitrary determination made by the applicant?	4-45

PAGE	P#	COMMENTS	
		Considering that the pit lakes will become an attraction to children inasmuch as there are no public swimming facilities in the Capay, Esparto, Madison area and Cache Creek has no water during the summer, can a waterside slope of 1.5 : 1 be considered safe for clandestine swimming by children?	4-46
4.3-18	PS 2.5-18	It should be noted that PS 2.5-18 sets requirements for slope stability and not for safety of swimmers and waders. If the pit-lakes are dedicated eventually to the County, the County inherits a potent safety hazard in terms of public recreation. Would it not be wiser to design the pit-lake slopes for safety at the outset and thus conform to generally accepted safety practices for such recreational activities?	4-47
4.3-18		PS 2.5-18 fails to address the silting that will occur in the excessive agitation occasioned by excavating below the water surface. The roiled up silt and clay will effectively seal the sides and bottom of the wet pit to adversely affect the natural movement of water through the exposed aquifer. In fact much of the aggregate washing will actually take place in the wet pit with no means of removal of the estimated 25% waste (DMG). It is necessary for the industry to reveal how much waste is left in the wet pit. Until this information is provided all projections made by the authors of the DEIR document are purely speculative.	4-48
4.3-19	PS 4.5-2	The project contemplates excavating within less than 200 ' of the existing channel bank of Cache Creek. However there is no indication that this will conform to the requirements of the Division of Safety of Dams or the DWR for separators which may entail an engineered type dam barrier. The preparers are in no position to comment until this hurdle has been cleared. (Kleinfelder 1995) HAS SDS COMMENTED?	4-49
4.3-26		Impact 4.3-4 Does not consider the silt generated by wave action along the shoreline. The project site is in a micro-climate that experiences a great many more hours per year of hard north wind than the area east of the Plainfield ridge. The wave action will release significant quantities of silt which will settle out on the pond bottom and sides.	4-50

PAGE	P#	COMMENTS	
		The fluctuating water level through the year greatly enhances the chances of erosion and the resulting silt deposition to the detriment of the free natural movement of water through the exposed potable aquifer. The technical Studies are grossly inadequate in not investigating this phenomenon and at least coming up with a mathematical model to predict the significance of silting generated by wave wash. The flatter the slope, the more wave-washed beach is developed - the steeper the slope, the more there will be undercutting and slope failures at the water edge which becomes a progressive encroachment as the water level fluctuates.	4-50
		The Kleinfelder 1995 report is a generalization and is not site specific. Inasmuch as every separate strata encountered in the excavation process will be exposed and since each strata has its own individual stability characteristic, it does not necessarily follow that "one designed slope fits all". The DEIR is promoting a "cookbook" approach. A highly erodible unstable lens of very fine sand topped by more resistant material will cause slope collapse if the fine sand strata is subject to wave wash erosion or carries a flow of subsurface water into the excavation. A scientifically engineered slope must be precisely tailored to fit the prevailing conditions that will only be exposed after excavation is completed. The DEIR presentation on the subject of slope stability and erosion suffers from over-generalization and demonstrates an inadequate grasp of a very import aspect of the project. ONE SLOPE ANALYSIS DOES NOT FIT ALL!	4-51
4.43-27		YEARLY SEDIMENT YIELD OF CACHE CREEK This question has been raised a number of times in the prior EIR documents --the 210,000 tons per year of sand and gravel (NHC, 1995) is actually sediment which includes sand and gravel. A DMG report agrees generally on the 210,000 tons figure for sediment of which ONLY 6% IS SAND AND GRAVEL. Actually on reading closely, NHC figures for sand and gravel agree with the DMG report within reason.	4-52

PAGE	P#	COMMENTS	
		The reason for the Cache Creek Settling Basin is to intercept the silt which makes up over 90% of the streamload - see COE reports. **The preparers need to understand that sediment is the total transported geological material down Cache Creek, not just sand and gravel! The preparers should also realize that sand and gravel is being stream-transported out of the planning area into the reach between Yolo and the Yolo By-pass. This is what has caused the significant lowering of the thalweg at the 4 bridges at Yolo.** **IMPACT 4.3-3 AND ITS EXPLANATION SHOULD BE CORRECTED AND RE-WRITTEN.**	4-52
4.3-29	5th line	**IMPACT 4.3-4** **Velocity of flow is expressed in "feet per second" not "cubic feet per second" which is a volume measurement. The preparers should become conversant with the terms that they use.**	4-53
4.3-29 4.3-30		**The discussion as presented fails to consider the considerable hazard of subsurface "piping" (underflow through a permeable strata) of the 100 year water surface into an area that has been lowered. This is precisely what the 1995 COE report stated about recharge pits short circuiting back into the creek. In this instance the direction of the flow would be reversed.** **Manipulation of the CCRMP boundary will not change or mitigate the threat.** **COMMENT** **Until the DEIR resolves the issue of what the DSD or the DWR considers to be a separator not subject to engineered specifications in this setting, the DEIR is in no position to make a judgment call.** **It is indeed troubling, that the preparers leap frog from subject to subject without resolving the interdependent connection which may or may not negate the position taken. The DSD separator issue should have been conclusively resolved the first time it was mentioned so that the course taken was straightforward and not skirted in every ensuing consideration with no definitive conclusion**	4-54 4-55

PAGE	P#	COMMENTS	
4.3-31	Fig. 4.3-7A	For clarity the map should be extended southward to show its relationship with SR-16. This is especially true for Mining Area I and Mining Area II which will give an indication of how close lakes will be to the Migrant Labor Housing Project and the safety hazard of unauthorized swimming by unsupervised children.	4-56
4..3-30		COMMENT The ethics and propriety of moving the CCRMP boundary in an EIR that has not been fully processed and upon which this DEIR depends, to accommodate this mining application is questioned. Apparently there was sufficient reason to draw the boundary as proposed in the CCRMP. Will this become standard practice to arbitrarily alter the playing rules to accommodate the player?	4-57
4.3-33	1st P	PROPOSED LEVEE NOT TO BE CONSTRUCTED This decision indicates that the County staff has agreed not to provide 100 year flood protection for a former mining pit, thus allowing the pit to be flooded in high flow events. Have these arbitrary negotiations met with the approval of FEMA, COE and SBR and other agencies in contact with the SCH? At what point is the public permitted to respond on the arbitrary adjustment of the CCRMP boundary considering that the public response period for the CCRMP DEIR has already ended! We are presented with a tactic that is unique in our experience of participating in the EIR process, A rule has been established in a general EIR document (CCRMP). A site-specific EIR predicated on the CCRMP is then circulated for Public Comment and in it we find that the applicant has engaged in discussions with "the County" (unidentified individual) proposing that "the improvements (raising the levee) not be implemented". They further state that approval by YCCDA of an exemption from Performance Standard 4.3-8 would be required. Where in such a back room wheeling and dealing atmosphere does the public have a right to be heard?	4-58

PAGE	P#	COMMENTS	
4.3-35		MINING AREA VII Inasmuch as Caltrans must be notified of any activities within the 100 year flood plain within one mile of a Caltrans bridge, what has been Caltrans response to the proposed riprap for the south bank of Cache Creek?	4-59
4.3-36		MITIGATION MEASURE 4.3-4C Considering that the YCFC&WCD has already filed an application with the State for any remaining unallocated water rights on Cache Creek does Staff have the authority to arbitrarily permit diversions from the creek? It is strongly suspected that Staff has not received the concurrence of the YCFC&WCD on this concept. HAS YCFC&WCD CONCURRED? It is further suspected that diversion structures can not be constructed on Cache Creek without the approval of several State and Federal agencies such as SDR COE, DFG, DWR and RWQCB. HAVE THESE AGENCIES BEEN CONTACTED AND WHAT IS THEIR RESPONSE? Does levee work along Cache Creek require permits from State and Federal agencies? The subject of levee construction along Cache Creek does not address the possibility of causing flooding on the north side of the creek or at least increasing any level of flooding potential that already exists. If the possibility will be created that the north side of the creek may flood because of levee construction on the south bank, why have the north bank owners not been notified, as required by law, that a DANGEROUS CONDITION may be created? Why is a complete hydrology study not required both upstream and downstream of any proposed levee construction or bank protection proposal to completely and accurately identify problems? IS "SILTATION BASIN" THE NEW BUZZ WORD TO REPLACE "RECHARGE BASIN"?	4-60 4-61 4-62 4-63

PAGE	P#	COMMENTS	
		It would be a very great money saver for the applicant if formerly mined land with a greatly lowered surface elevation could be exempted from retroactive obligations to reclaim the devastated area that will be permitted when the total Cache Creek EIR process is completed. The COE 1995 report has largely discredited the "recharge basin" concept and the YCFC&WCD has not publicly refuted the COE's comments.	4-63
		It would indeed be clever to change the title of this money saver to "siltation basin" with the hint that it may eventually become wetlands or habitat. However Staff and its consultants in their haste to embrace this concept is guilty of attempting to go from first base to third base by cutting across the infield and eliminating the pesky second base.	
		There are a number of serious concerns that the preparers have not explained to the reader:	
		1, Since the Technical studies did not consider "siltation basins" no studies, findings or recommendations have been made and consequently the public has not been given an opportunity to comment.	4-64
		2. The "Technical Studies" provides no recommendations for the design of "siltation basins". The mosquito breeding problem has not been addressed.	4-65
		3. No plans have been provided showing the necessary elevations of the thalweg, land to be silted, or eventual finished land elevation at the conclusion of reclamation.	4-66
		4. No historic data documenting surface elevations or winter creek flows have been provided. Since this provides the basis of design for diversion structures the depth of the water in the silting basin cannot be predicted without it.	4-67
		5. No prediction of the rate of siltation depth per year has been furnished and hence no forecast of the length of time to "top out" can be supplied.	4-68
		6. No historic creek flow data has been provided to predict the frequency of flooding of the basin.	4-69

PAGE	P#	COMMENTS	
		7. How long will the "topping out" take so that it will no longer be wetlands? What happens to the NET GAIN of wetlands when the water supply has ended? Will the wetlands become a noxious weed patch when the water supply ends?	4-70
		8. Federal and State agencies have strict requirements for dredging and filling. Why are the requirements for fill not provided to the reader for clarity of the concept?	4-71
		9. NWH and DMG both report that Cache Creek is sediment starved with resulting erosion to banks and channel scour. Why will the diversion of sediment not exacerbate this condition?	4-72
		Appreciable volumes of silt are transported by the creek only during high flow events which may not happen every year (DMG, COE, USGS) and even then only for a few hours since the creek rises and drops rapidly (flash floods). If the diversion structure is not gated, outflow from the basin will occur as soon as the creek flow subsides and the sub-colloidal material will not settle out and hence will be returned to the creek. To give perspective to the time required to build up silt, the Cache Creek Settling Basin trapped silt at an average rate of 600 acre feet per year in a 3,600 acre basin before Indian Valley Dam was built (COE). This represents a deposition rate of about 2 inches per year and included all flows. The proposed silting basins are not apt to reach this siltation rate and even if they did, it would amount to only 20 inches of fill during the 10 year warranty period to be imposed. This brings us to the question of who will operate this reclamation after the applicant has fulfilled his obligation? Inasmuch as the heaviest silting will occur at the inlet into the pond, the deposit will have to be cleared on a frequent basis or it will soon seal itself off. Who performs this function once the 10 year warranty is over?	4-73
		10. All of the water rights available for Cache Creek have already been applied for. What documentation can the applicant offer to show that the project land has riparian rights and has historically used them?	4-74

PAGE	P#	COMMENTS	
4.3-36		MITIGATION MEASURE 4.3-4d The annual report must be submitted by a properly licensed P.E. and said report must be sealed and signed. It is noted that the County has been accepting reports in the past that are not signed and sealed as per State law. it is illegal for the county to accept reports for the record that are not signed and sealed properly. The time for the annual inspection or due date of the report is not specified. The due date should allow enough time to complete remedial action prior to Nov. 1. How does the County place a restriction on the property deed for non-compliance? What is the legal procedure? How does the placing of a restriction on the property deed assure compliance? Doesn't this merely transfer the obligation at the time of title change to the next owner? The County really has no control unless it has the authority to stop the transfer of title - can the County do this? Has Staff ever run this by a title insurance company legal counsel?	4-75 4-76
4.3-37		MITIGATION MEASURE 4.3-4f Biotechnical bank protection uses combustible materials which are subject to rot and termites and are only of limited term effectiveness. Why is this procedure favored over riprap which is the choice of the COE for the Sacramento River and the Yolo By-pass? Wildfires in combustible bank protection are difficult to control because of extremely limited access for fire equipment. Sections of the Sacramento River in Yolo County are no longer recognizable as having been riprapped because vegetation and trees have taken over as the voids between the rocks have filled with silt. Willow mats are generally not available in this area since they are not commercially grown and the DFG will not allow the cutting of riparian willow thickets. If riprap fails, it is easily patched. This is not true of biodegradable and combustible material. Failed biotechnical bank protection will be invariably patched with riprap as it is the easiest, quickest, cheapest and most readily available material.	4-77 4-78

PAGE	P#	COMMENTS	
		Staff is requested to document areas where Caltrans, COE, DWR or any other flood control responsible agency has used biotechnical bank protection in Yolo County in the last 25 years. **Why build a maintenance problem?**	4-78
4.3-37		MITIGATION MEASURE 4.3-4e Caltrans must be allowed to comment on the proposed bank protection as per SMARA regulations.	4-79
4.3-37		MITIGATION MEASURE 4.3-4h A study must also be made of the north bank to ensure that protection placed on the south bank would not adversely affect the North bank. See NWH for further explanation.	4-80
4.3-37		MITIGATION MEASURE 4.3-4I Length of the agreement should be specified - warranty period of 10 years is not applicable inasmuch as improvement may take place at a time later than 10 years.	4-81
4,3-38		MITIGATION MEASURE 4.3-4j The County needs to know at the time of signing an agreement with the applicant if DDS type separators are needed. If they are needed, the financial assurance bond will need to be much greater as this is an expensive type of construction.	4-82
4.4-2	3p2s	SURFACE WATER "In the northern portion of the project site, storm water apparently flows eastward and northward –" COMMENT: Use of the term "apparently" suggests that the applicant does not know for certain which direction the drainage takes. The DEIR cannot be founded on speculation and guesses. The EIR should state definitively exactly how the drainage flows and Staff should not make a judgment until it precisely understands the drainage pattern. If the applicant is not familiar with the territory, he certainly has the obligation to become acquainted!	4-83

PAGE	P#	COMMENTS	
4.4-5	Fig. 4.4-2	Where is the location of "Hayes 1" supply well?	4-84
4.4-6		COMMENT: The migration of contaminants would be of the most concern to the municipal wells in the Town of Madison and to the adjacent migrant labor housing development. However Fig. 4.4-3 does not give groundwater contours for this vicinity! The cone of depression of the municipal supply should be indicated at its most adverse condition in order to assess the hazard, if any, of contaminant flow toward the municipal supply.	4-85
		COMMENT ON GROUNDWATER TESTING: The biggest concern in creating permanent pit-lakes in the potable aquifer is their eventual eutrophication as the pit-lakes age and the vegetation in and surrounding the pit-lake reaches maturity (probably 20 years in the future). One of the factors is excessive algae growth. Eutrophication may give rise to odors, unsightliness and may impart a disagreeable taste to the water. Eutrophication abounds in this region: Clear Lake and Lake Berryessa are examples as well as numerous ox-bow lakes along Yolo County's east border.	4-86
		A predictor of eutrophication is the presence of phosphorus, even in microscopic amounts. Phosphorus, a predictor of algae growth, is found in the atmosphere, agriculture run-off, percolation of irrigation water and in many fertilizers and pesticides. This has long been established by the EPA. NONE OF THE WATER QUALITY TESTS PROVIDED INCLUDED PHOSPHORUS!. Therefore we do not really know what the prospects for eutrophication are.	4-87
4.4-13		MUNICIPAL WELLS In the DEIR, municipal well information is attributed to "Lopes, 1996" but no information is provided regarding the identity and qualifications. Is he a recognized expert on municipal water supply?	4-88

PAGE	P#	COMMENTS	
		Staff apparently does not understand that the Madison wells are gravel packed wells and hence have hydraulic continuity from the sanitary seal (if any) to the bottom of the well. The position of the well screens are irrelevant inasmuch as the gravel pack (envelope) is continuous from the well head to the bottom of the well. The purpose of the gravel envelope is to intercept all possible sources of water.	4-89
		COMMENT: <u>The discussion on municipal wells is so fragmented and incomplete that it cannot be regarded as legitimate expert testimony and is inadequate for a DEIR.</u> One of the most troubling aspects of this discussion is the fact that the sewage oxidation ponds of both Madison and Esparto are within easy commuting distance for water fowl and shorebirds who might inhabit the pit-lakes to be created (exposed potable aquifer). The host of human pathogens from the sewage oxidation ponds will be readily transported to the pit-lakes. Once in the pit-lakes the contamination can travel laterally via sand and gravel strata toward the nearest well. Lateral migration through a granular medium does not filter out pathogens and viruses. They are however filtered out by a soil medium which is why the Madison and Esparto sewage ponds do not contaminate the municipal wells. A host of scientific reports are available on this subject. (see papers by H. Bouwer). It should be noted that the City of Woodland is required to chlorinate (disinfect) any treated wastewater that is discharged from its oxidation ponds. This treated wastewater is then detained in shallow ponds in the Yolo By-Pass to provide a resting place in the Pacific Flyway for migrating ducks and geese. This chlorinated treated wastewater prevents the ducks and geese from carrying human pathogens to the next resting spot which could easily be a drinking water reservoir. Staff and their consultants render a great disservice to County residents by their failure to address such an important issue.	4-90

PAGE	P#	COMMENTS
4.4-14	1stP	COMMENT ON LOCAL GROUNDWATER MYTH: This DEIR, in common with the other documents related to this process makes frequent references to statements of "technical experts" that the water table flow is at most only a few feet per year, thus limiting the capacity for contamination to spread. So far none of the cited studies, including Environ, Rivertech, CH2M Hill and Dames & Moore has ever cited an actual, credible study that measures groundwater movement in the "planning area". A study utilizing some type of "tracer" is urgently needed so that the flow route and rate of movement can be precisely identified. The study should deal specifically with groundwater movement in the Esparto to Plainfield Ridge vicinity along Cache Creek. 4-91 In order to conclude that it is not possible for wet gravel pits to hydraulically interconnect with the cone of depression it is necessary to graph the cone of depression around municipal wells in Madison and Esparto on a monthly basis for a full year. This has not been provided in the DEIR but should be. To provide Staff with an authentic documented example of groundwater movement in a local setting we would refer you to just one example from the City of Woodland's routinely documented well data. Staff should bear in mind that a vertical movement of the water table must also be accompanied by a horizontal movement or the wells would either overflow or would dry up. 4-92 Well #1 at 5th & Lincoln dropped 19 feet to an elevation of -5 ft MSL with no pumping. Well #6 at Grand & Lincoln dropped 35 feet to an elevation of -15 feet MSL while pumping 52,575,750 gallons. This was a drop of more than 1 foot per day during May. This pump is located about one mile from Well # 1. This clearly illustrates that groundwater can move impressive distances in short periods of time through Cache Creek gravel if extraction is heavy. The hydraulic gradient was about 10 feet in a mile between the two wells. By August, if the same extraction scenario is continued the hydraulic gradient between the two wells will be significantly greater and groundwater will move even further horizontally.

PAGE	P#	COMMENTS	
4.4-14	IstP	How will backfilled pits increase groundwater storage if all of the void space that was in the gravel before excavation has been removed. The capacity of the aquifer is directly dependent on the volume of the void space between the aggregate particles and soil particles. If water is to be stored on top of the backfill, the excessive loss through evapo-transpiration must be calculated for this discrete micro-climate and compared to the void space loss. Inasmuch as no calculations or site specific research has been offered to prove that storage capacity has been increased, the claim must be rejected as unfounded and untested. <u>The EIR process should avoid including self-serving platitudes that have no proof or hard evidence</u>	4-93
4.4-15		FERTILIZER INFILTRATION TO THE WATERTABLE Staff and preparers completely misunderstand how nitrates (the most objectionable constituent) reach the potable aquifer through application of fertilizer. The nitrates in fertilizers are dissolved in the irrigation water (in the spaces between the water molecules) and therefore are not filtered out. The excess not used by crop roots eventually migrates to the aquifer. This is exactly the condition being experienced in the agricultural regions of California (DHS, DWR, RWQCB - hundreds of publication on this subject). The lowering of the ground surface and its placement closer to the watertable will speed up the process. The Solano agricultural operation has not been in existence long enough to reflect this phenomenon.	4-94
4.4-16	4thP	Does not consider what the erection of levees on the south bank may do to the property along the north bank in regards to flood hazard. This has been discussed previously in this response.	4-95
4.4-16		The Staff cannot make the statement that evaporation after the project is completed will be less than significant because neither the DEIR nor the Technical Studies have produced any calculations using the appropriate micro-climate data that will demonstrate what the evapo-transpiration will be at least 20 years hence when vegetation and wetlands are at maturity.	4-96

PAGE	P#	COMMENTS	
		The use of a DWR general table on evapo-transpiration does not suffice for this site specific setting. Without adequate site specific data upon which to base its assumption Staff cannot make a flat assertion that would have any validity.	4-96
4.4-16 4.4-17		The Todd mathematical modeling is worthless because it did not make allowance for silting of the sides and bottom of the wet pit by the relentless churning and roiling of any and all clay and sediment lenses encountered. All of these released fines and sediment are not removed from the wet pit and remain to settle out, with the resulting sealing of the surfaces that it deposits on. A good indication of how much aggregate washing is being accomplished in the wet pit could be obtained by comparing it with the washed out sediment of dry pit mining carried out by Solano. DMG 156 uses an estimate of 25% waste for dry pit mining. Todd Engineering has no basis to predict anything on the movement of groundwater through the wet pit and aquifer. Mathematical modeling is only as good as the controlling data that is supplied - if the complete and accurate picture is not provided, the conclusions are not based on reality. "Garbage in, garbage out!".	4-97
4.4-17		Fails to explain that waterfowl and shore birds will commute from Madison and Esparto sewage ponds to the newly created lakes. These sewage ponds contain raw sewage which is constantly being introduced and disinfection, if any, only takes place at the point of discharge from the ponds. Contaminants from municipal waste will be inadvertently introduced by biological vectors as described above and elsewhere in the response. It is important to note that the sewage ponds as well as the Migrant Labor Camp were not referred to or included in the Figures 3-2,3-3,3-4, 4.2-1, 4.2-2, 4.2-3, 4.2-5, 4.3-5,4.4-3.4.4-4, 4.5-1, 4.5-2, 5-1, 7.1-7, 7.1-8, 7.2-40 -and others. This is an important omission since these Migrant Labor Camps are quite large, and have 2 large open sewage ponds nearby. It would seem that since these camps are Federally funded they would have to have a Federal Agency review the proposal to determine safety of their water supply, and possible risks to the children in the area. Why was this not done? Is there an attempt to mislead or misinform the agencies reviewing the proposal?	4-98

PAGE	P#	COMMENTS	
4.4-17		PS 2.5-8 A 4 stranded barbed wire fence does not specify height of fence. The wet pits will be an attractive nuisance to children from the Madison Area, especially the high density farm labor housing development. Inasmuch as there are no public swimming facilities in the Madison-Esparto area this will be a tempting place for kids to swim after plant working hours and on weekends. If the County will have signed an agreement with the applicant, the County will automatically be named in any lawsuit resulting from injury or death. The fence specified is certainly not a kid-proof barrier and warning signs will be of little use especially for kids from the Migrant Farm labor Housing Development. Some will not read English and some will not read at all. The wet pits will pose a most dangerous hazard.	4-99
4.4-22		MITIGATION MEASURE 4.4-16 Doesn't construction of flood control levees along Cache Creek require clearance from SRB, COE, DWR and Caltrans?	4-100
4.4-23		It is questioned if the DWR 3.92ft/year evaporation rate specifically applies to this micro-climate area inasmuch as many more hours of low humidity and hard north winds are experienced here than in Woodland. DWR gives the evaporation for Davis as 67 inches per year - See Bulletin 50. Wetlands growing tules, cattails and willows exceed the water usage of agricultural crops by several fold. Earlier response on the Technical Studies and OCMP conclusively proves that Staff's findings are not supportable - see earlier response.	4-101
4.4-24		Does not include contamination by waterfowl and shore birds from the raw sewage lagoons of Madison and Esparto. See previous comments on this subject in this response	4-102
		COMMENT: The use of bio-solids (sewage sludge) on adjacent farm lands is not addressed. Yolo County has no ordinance regulating the use of bio-solids on agricultural lands.	4-103

PAGE	P#	COMMENTS	
		The RWQCB acts as lead agency and has already approved its own Negative Declaration for permits for the Dunnigan Hills. The chances of introducing airborne biosolids into wet pits is a potent health menace given the hard north winds blowing from the Dunningan Hills. This Health Issue is currently being addressed by counties in the San Joaquin Valley. Why has Staff avoided this issue?	4-104
4.4-24		AGRICULTURAL TAILWATER RUNOFF This section fails to list the run-off of excess fertilizer. The most heavily used fertilizers contain nitrogen and nitrates and is a subject of great concern for the drinking water supply in California and especially in Yolo County. One future source of nitrates would be subsurface flow into the wet pits from adjacent pits reclaimed to agriculture which are apt to use excessive amounts of fertilizer to restore former production capability to meet reclamation requirements. The lowered agriculture land will no longer have the depth of separation between the root zone and the groundwater surface that formerly existed. Degradation of drinking water quality is a cumulative process that is ongoing in other parts of Yolo County to the detriment of the drinking water supplies.	4-105
4.4-25		COMMENT: *"Wet pits below the groundwater table would be constructed of relatively steep slopes."* These steep slopes will be a deadly hazard to trespassing children that are either poor swimmers or not able to swim. It is very easy for young children to panic if they slide down a slippery slope into deep water. The Madison-Esparto area has no public swimming facilities and these deep pits will be the only swimming locale.	4-106
		STEEP SLOPES DO NOT DISCOURAGE EUTROPHICATION Eutrophication is caused in great part by over-population of algae. More than 95% of the algae available for eventual population of the wet pits are individual free floating cells.	4-107

PAGE	P#	COMMENTS	
		Clear Lake, Lake Berryessa, the Madison and Esparto raw sewage ponds are at least 95% unattached algae. Attached and/or rafting algae is a very small part of the population. Free floating algae are independent of the configuration of the containment and hence slope has no influence.	4-107
		It is noted that on the recent mercury research study at Solano by UCD free floating algae is already present in the ponds where the fish were captured - see report (Slotten et al. 1996). In the Daily Democrat (4/20/96) it is reported that the degree of clarity in Lake Tahoe has reached an all time low. In 1995 it was measured at 70 feet, 6 inches, in 1968 it was measured at 100 feet. In our warm climate the Solano ponds are doomed to an early loss in clarity. It is interesting to note that the Sanitary Engineering Research Laboratory of the School of Public Health at UCB was able to raise algae at the rate of 50 dry tons per acre at depths of less than 4 feet of water (See EPA reports). Staff has not yet provided published reports on eutrophication made by qualified experts in the field and consequently the Scalmanini-Todd report is unacceptable and the DEIR is deficient.	4-108
4.4-25		EUTROPHICATION/BIOLOGICAL DEGRADATION Under Impact 4.4-4 the following statement is made: "*A wet pit that penetrates the groundwater table would be continually freshened by groundwater flow through the sidewalls and would therefore not be significantly susceptible to stagnation* "(David Keith Todd, 1995) This is a ridiculous statement and scientifically inaccurate! As previously explained in this and other responses on the total EIR process, Todd failed to recognize the inevitability of silt sealing of the pond's sides and bottom by the very act of dragline excavation through clay and silt lenses below the water surface. This practically washes the aggregate before it is lifted out of the pit-lake - DMG estimates that this amounts to 25% waste.	4-109

PAGE	P#	COMMENTS	
		There is no place for this agitated clay and silt to go except to settle out on the sides and bottom of the pit. In addition to this, the wave wash on the shores will constantly bring fine silt into the water with every breeze and this micro-climate is subject to strong north winds. Ponds in this climate become lined with organic slimes that are comprised of a host of different organisms that will quickly seal the submerged surfaces. Checking the sides of a Doughboy pool that has not been treated with a chlorine product will aptly demonstrate this. If the consultant had ever slipped on rocks in a trout stream he would understand what organic slimes are all about and trout streams are continually freshened beyond belief. Both Clear Lake and Lake Berryessa have active inflowing streams all year but both have the sides and bottoms sealed and as the lake level drops, this seal cracks and curls on exposure to the sun and is left on the beach. In summary - Todd's remarks can only be regarded as pure conjecture and flies in the face of experience in this area. **Such conjectures are generally considered inadmissible in the EIR. Todd must refer to scientific studies to substantiate his statements!**	4-109
4.4-26		**Bruce Macler - EPA Quote** **Bruce Macler was not informed by the consultant of the existence of raw untreated sewage ponds belonging to Madison and Esparto that are within 5 minutes flight time from the pit-lakes to be created by the proposed project. Waterfowl and shorebirds regularly use the raw sewage ponds. The RWQCB and EPA requires that the City of Woodland and the City of Davis chlorinate any discharge from their oxidation ponds so that humans will not be exposed downstream.** **Staff should understand that the Madison and Esparto raw sewage lagoons have raw untreated human sewage continually flowing into them. This is the water that waterfowl and shorebirds use. Their feet and under-belly feathers are submerged providing easy transport to the exposed drinking water aquifer of the proposed pit-lakes. Tame geese from a nearby residence are seen regularly on the Esparto ponds.**	4-110

PAGE	P#	COMMENTS	
		Why are these raw sewage ponds not listed in the numerous figures included in the DEIR report? Was there an attempt to cover up this important health issue?	4-111
		WHAT STAFF NEEDS TO KNOW ABOUT EPA! In California the State, not EPA, makes and enforces the rules of the contamination of the drinking water through the SWRCB, RWQCB, SDHS, and DMG. This is because California's requirements are stricter and more stringent than are those of the EPA. In California the EPA acts as an overseer, to see that California's enforcement does not fall below the lesser standards of the EPA. It should also be pointed out that Federal employees do not have to obtain the State licenses to practice that the health officials employed by the State do. Likewise, Federal employees of the COE, USGS, etc. do not need to have the proper State license to perform professional engineering. The reason is that Federal employees have to meet a much lower standard of expertise than do State employees or individuals in private practice subject to State professional requirements. Also Federal employees are often assigned to different states or regional offices. The point of this discussion is - if Staff wants to quote the most authoritative source on public health matters, IT MUST BE OBTAINED FROM THE PROPERLY LICENSED STATE OFFICIAL. The quote from Bruce Macler clearly indicates that he was not familiar with the territory in Yolo County, nor the proposed project plans. He did not appear to be familiar with the document "The Practice of Water Pollution Biology" nor did he have training as a limnologist.	4-112
		COMMENT: THE ABUSE OF USING CONVERSATIONS AS EVIDENCE FOR MITIGATION! This DEIR uses scraps of conversation with various individuals to substitute for compelling evidence of mitigation. (see Chapter 6, personal communications).	4-113

PAGE	P#	COMMENTS	
		However the reader is usually not told what question was asked, its background or how it was posed. It is not difficult to phrase a question so that the hoped for answer will be elicited. Generally the person questioned is happy to oblige out of courtesy with no real thought as to how the answer may be subverted to fill the question's needs. Moreover the questioner does not write up a summary of the discussion to send to the person supplying the "evidence" to make sure that he has been quoted accurately. This leaves the questioner free to apply his bias to the information quoted. The use of nebulous conversation fragments amounts to hearsay and could not likely be reproduced in court as legitimate testimony several years hence. The practice of using this type of evidence can at best be described as unprofessional and misleading since the reader usually does not realize that the information was taken from an informal telephone conversation which was not checked for accuracy.	4-113
4.4-26	6thP	<u>IS STAFF MAKING PUBLIC HEALTH FINDINGS WITHOUT BEING LEGALLY LICENSED?</u> Staff has absolutely no scientific basis for concluding that *"a significant pathogen source would not be present!"* Given the nearby presence of the raw sewage ponds of Madison and Esparto and the waterfowl and shorebirds that use the ponds, Staff is in no position to declare that the wet pits will never be contaminated. Furthermore, Staff has not produced any site specific research on this subject. Even more troubling is the fact that Staff has not demonstrated it has the proper State licenses to <u>legally</u> make such a finding - see DHS requirements. If Staff does not accept responsibility for their public health finding, what legally licensed person makes this finding? Does Macler of the EPA have the required California professional license? In the remote possibility that he might be legally licensed, it is not likely that he would declare a "pathogen free zone" without having researched and inspected the site.	4-114

PAGE	P#	COMMENTS	
		The Staff and their consultants appear to be sticking their necks way out when they ignore scientific papers submitted by concerned citizens plus a quote from Lederberg, a Nobel Laureate winner for his scientific work, all indicating that migratory ducks can be carriers of disease from one area to another. Please clearly indicate what are Staff "guesses" and what are the facts based on scientific evidence! If scientific evidence is to be disputed by Staff, please provide justification in the response!	4-114
4.4-27		INFILTRATION OF AGRICULTURAL WATERS Fails to discuss fertilizers and the threat of contamination by nitrates which is a great health concern. Fertilizers must be ultimately dissolved to be utilized by crops. Dissolved fertilizers are NOT FILTERED OUT by passing below the root zone. This is a major health hazard in several agricultural localities in the State, including some wells in Yolo County.	4-115
4.4-28		BIOACCUMULATION OF MERCURY (Including its Mobilization, Biomagnification and Toxicity.) The description of the Bioaccumulation of Mercury by Staff and their consultants is inadequate and only partially correct. In its elemental form mercury is not a significant hazard unless large amounts are vaporized and inhaled. Although elemental mercury can be found in soil and rock all over the world, it is found in especially high amounts in Northern California due to the presence of a Mercuriferous Belt which extends along the Coastal Range. Extensive mining of mercury ore carried out in this area for the past 150 years has contributed to the widespread presence of mercury and mercury ore (Cinnabar) in the sediment of Cache Creek, Clear Lake, Lake Berrryessa and other water bodies in this area. Under certain conditioons elemental mercury or mercury ore can become converted to methyl mercury in the presence of certain bacteria and fungi found in wet sediment. The converted methyl mercury is readily absorbed and accumulated in living plants and animals. It passes up the food chain, concentrating in fish and fish eating birds and in humans who comsume the fish.	4-116

PAGE	P#	COMMENTS
		Methyl mercury is a deceptive poison, its effects are initially mild and slow to be expressed. It is circulated in the blood stream and eventually concentrates in the brain and other nervous tissues where it remains intact for long periods of time (In fish the excretion rate is 2.5 years just to reduce the tissue levels by 50%). It eventually destroys the nerve cells in which it accumulates. The data obtained from the UCD monitoring teams (Slotten, et all 1996) have clearly demonstrated that the physical and chemical conditions established in the Solano open wet pits facilitate the mobilization and bioaccumulation of methyl mercury in amounts sufficient to have an environmental impact and to be a potential hazard to human health. A single sampling of fish taken from the wet pits was equal to that of fish taken from Cache Creek which is an "impaired" waterway because of its known high levels of methyl mercury in fish. <u>The mercury levels in these pit water fish is sufficiently high to be a health hazard, especially if eaten by pregnant women and children..</u> Fishermen who supplement their diet by consuming these fish on a regular basis could also be subject to irreversible brain and nervous system damage. 4-116 The methyl mercury levels in these pit water fish must be considered as an additional health hazard regarding the presence of methyl mercury in this area. Moreover if these wet gravel pits were to be used in the future for stocking fish, methyl merecury poisoning could become extensive. Once conversion to methyl mercury has taken place there is no practical way to prevent its accumulation in biological organisms and no way of preventing its magnification to toxic levels in aquatic organisms. The deep water pits will be an attractive "nuisance" for trespassers for fishing as well as other water sports Once the fish are known to be present in the pit water there is no way to enforce fishing rules, especially as far as children and migrant workers are concerned. Thus the excavation of the deep wet gravel pits greatly increases the total amount of available methyl mercury in the area and augments the potential risk of methyl mercury poisoning to human health.

PAGE	P#	COMMENTS	
		The proposed implementation of a groundwater or pit-water monitoring program is not a mitigation for the potential hazard. The mercury and the conditions required for its conversion are already present and bioaccumulation has been clearly demonstrated by the UCD monitoring team. Additional monitoring of pit-water fish must be performed to determine how high the levels may eventually go, the seasonal variations, and how long the high levels will persist. Meanwhile the existing Solano Wet pits constitute a serious threat to the environment and to human health. Is Staff going to continue recommending additional deep wet pits which will contribute additional areas of mercury mobilization, bioaccumulation and Biomagnification? **Where does Staff draw the line on subjecting the public to additional serious health risks?**	4-116
4,4-29		**IMPACT 4.4-5** **The DEIR does not consider the fact that the wet pits could at some time in the future be used as wells to irrigate adjacent lands. This would eliminate the expense of drilling a well and a much cheaper pumping plant could be installed. However, pumping from these wet pits could produce other hydrological conditions that have not been investigated. Nothing in the DEIRs produced thus far prohibits using the wet pits as a future irrigation supply. This opportunity will most certainly occur to someone in the future, therefore it should be addressed now.** **Although Staff considers the reduced flow through the aquifer to be less than significant for this project, it is noted that the total parcels are being included in the DEIR. The wet pit mining that may be done in the future may well have a cumulative impact that is significant. Will the granting of a permit now preclude further permits if a significant cumulative impact can be demonstrated?**	4-117
4.4-29	7thP	**IMPACT 4.4-6** **Can the miner arbitrarily conduct storm water into Cache Creek by a new route without securing State and Federal permits?**	4-118

PAGE	P#	COMMENTS	
		QUESTION: It is stated that overburden may be disposed of as backfill into the wet pits. Is topsoil considered overburden? If this is so, why is valuable agricultural soil not used in reclamation to agriculture?	4-119
4.5-15		IMPACT 4.5-2 To provide the 1 : 1 ratio offsets: 1. What is the program to improve non-prime soils? None has been presented in the DEIR.	4-120
		2. How does the placement of agricultural preserve easements on prime farmlands not currently protected change anything - it is already zoned for agriculture?	4-121
		3. All lands under consideration have the underlying aquifer so all have a potential water supply as does the whole "planning area". How can any land be limited by lack of irrigation water supply - a well can be drilled anywhere? COMMENT: The 1 : 1 ratio has certainly not been demonstrated by Staff, it clearly fails to prove its case.	4-122
4.5-15		The purposes presented in Impact 4.5-2 are simply speculations. Historical crop production on these lands must be provided in order to have a baseline with which to compare future production.	4-123
		The DEIR never addresses the use of additional fuel occasioned by the vertical lift of the lowered agriculture land surface to haul the crops out.	4-124
4.5-17		IMPACT 4.5-4 Fails to describe or consider the extreme fire hazard (forest fires) that tree crops and uncontrolled habitat will present. These locations will be difficult for fire equipment to reach, especially the internal areas. Once a tree crop forest has been swept by a wildfire, it will take years to recover if not totally destroyed. This exact conditions has occurred in the past in local eucalyptus groves (Dunningan and Zamora areas). These were the first tree farms in Yolo County and were planted circa 1910-1920.	4-125

PAGE	P#	COMMENTS	
		No data has been provided on whether the proposed species to be planted are subject to insect or fungi and what the control requirements are. Even more importantly who provides the care after the warranty expires? If the trees are harvested after the warranty, who plants and tends the next crop. Does the area revert to a fire hazard weed patch? How long is the warranty on the "net gain"? A tree crop forest next to a wheat field is certainly a significant increase in potential conflict as far as fire hazard is concerned. These issues need to be considered in the DEIR!	4-126
4.5-17, 4.5-18		IPACT 4.5-5 The DEIR fails to consider a situation where the historic high groundwater may become even higher. A plan to extend the Tehama-Colusa Canal southward from its present termination at Bird Creek to south of Cache Creek has been under consideration for a long time. This would permit the pumping of surface water westerly into the Madison vicinity and possibly connect to the YCFC&WCD system. Should additional surface water become available in the vicinity of the project area, the groundwater level will certainly rise because of reduced pumping.	4-127
4.5-21	2ndP	IMPACT 4.5-7d *"No significant environmental impacts to agriculture would result from tree crop production"*. the DEIR fails to point out that groves of trees provide birds such as crows and starlings a base from which to operate when adjacent seed type crops are planted. This has long been a problem for safflower, sunflower, sprouting wheat and barley. Farmers also report crop losses in areas close to resting spots for birds. This is especially true for grapes and other berry type crops. The crow, blackbird and starling populations have skyrocketed locally as all are classified as protected by DFG. It used to be common practice to poison and shoot these crop predators. In fact, Yolo County used to pay a bounty for crows and this was a way for young hunters to pay for their ammunition.	4-128

PAGE	P#	COMMENTS	
		COMMENT; Nowhere does the DEIR compare the gross income of tree crops as compared to the conventional agricultural crops traditionally raised in this area. This comparison should be based on the 10 year warranty period. Without a favorable revenue being demonstrated for tree crops, tree crops become a cheap and easy method to avoid agricultural reclamation costs and to use areas more difficult to reclaim. Perhaps the fines and waste now proposed to be dumped into the wet pits along with the overburden (top soil?) could be utilized in the tree crop area to bring a much greater "net gain" to the County's economy.	4-129
		COMMENT; THE GREAT "NON-SEALING BY SEDIMENT POND" HOAX This discussion of the measures to prevent sealing of the wet pits with sediment which prevents the free movement of water through the potable aquifer when viewed in its totality is probably by far the most hilarious section of the whole DEIR. A good laugh is certainly needed in threading one's way through this document. Consider the following paradoxes and contradictions: 1. The very act of excavation with a dragline scarifies the sides and bottom of a pond because of the teeth in the bucket. The bucket would not self-load when dragged across the earth if it did not have teeth to make it dig into the soil or gravel. The teeth are angled like an ordinary carpenter's wood plane to dig in (this is called "suction.) 2. The side slopes cultivated by the bucket teeth, will be washed into the pond with the first rains as the runoff is greatly accelerated. This cultivated top layer will be quite effective in silting up the bottom and sides of the pond when dissolved or washed by rainfall.	4-130 4-131 4-132

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		3. Seeding this already prepared seed bed with grasses will be ineffective because the seed will wash into the pond. Additionally, it may take several rains to wet the seed bed enough to sustain continued growth after germination (if it does occur). Moisture penetration is a slow process on a steep slope, to give perspective, the Dunnigan Hills can only be planted to grain crops every third year because it takes 2 years of fallow to conserve enough enough moisture for the 3rd year's planting.	4-133
		4. The slopes are not likely to be hydro-mulched (spraying of seed in a matrix of straw mixed with water) as it is not specified and requires specialized equipment. If they were to be hydro-mulched it would likely be at the time of reclamation at mine-out for the pond. The intervening years with rainfall, erosion and wind erosion will have already provided the sediment seal to the pond. Sad, isn't it? In Sonoma County it was mandated that the sloped areas be reseeded annually until the vegetation was adequate. Why can't that be stipulated in the permit process for Yolo County? The mere act of seeding a slope does not guarantee that growth will be adequate.	4-134
		5. A review of Figure 4.3-2, page 4.3-4 "Typical Subsurface cross-section reveals a middle clay layer of significant dimension separating the upper sand and gravel from the lower sand and gravel. The very act of excavating through this middle clay will release huge quantities of clay slurry if the clay is submerged. Clay is the smallest soil particle encountered, suspends easily and if you were going to seal a reservoir, it would be the material of choice to construct a waterproof lining. However, if we are lucky enough to be in a dry period when we excavate through the middle clay, we will certainly encounter the lower clay when we bottom out. How else will we know when we get to the bottom of the sand and gravel? When we take out the last bit of sand and gravel, we have automatically scarified the clay, thereby roiling up great clouds of clay to seal the side and bottom inasmuch as this is below the water surface.	4-135

PAGE	P#	COMMENTS
		6. In the event that we have not thoroughly sealed the sides and bottom of the ponds by the time we are through excavating, wave wash on the steep side slopes brought on by the extremely hard north winds in this micro-climate will go a long way in creating any additional sediment seal needed.
		7. In case you are still worried that the above described sealing is not thorough enough, there is a whole new efficient method yet available - biological sealing. This seal is created by the host of microscopic flora and fauna that largely feed on the free floating algae of the type already found in the Solano ponds (see ongoing UCD Research, Slotten et al, 1996). This biological seal is often referred to as "slime layers".
		The biological seal is about as efficient a waterproofing layer as can be produced without using sealing compounds. The City of Woodland has more than 50 years experience dealing with slime layers in activating hundred of acres of percolation ponds each year to dispose of treated cannery waste. It has been demonstrated hundreds of times in dozens of ponds that once the biological slime layer is established, the only pond water loss is to evaporation.
		Unfortunately in the EIR Process the Staff relied on Consultants willing to operate outside their field of expertise (Their resumes indicated absolutely no experience or training in this field).
		How does Staff extricate itself from this seemingly unfathomable tangle of paradoxes and contradictions? It is really quite simple, you load the mess into a mathematical program and run it through a computer. The program can be readjusted if need be to provide an answer that states that flow through the aquifer will not be seriously impacted. The fact that the programmer did not consider the above 7 points of discussion in his model is apparently of little consequence. One cannot but help to stand in awe of the wonders of the computer age!
		How can Staff determine that the hundreds of acres of pit-lakes proposed in the next 30 years will not adversely affect the natural flow through the aquifer.

4-136

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4-139

4-140

PAGE	P#	COMMENTS	
		To begin with Staff appears completely ignorant of the various factors that have to be considered.	4-140
4.6-4		DESCRIPTION OF REGIONAL ENVIRONMENT Fails to recognize the presence of the Madison and Esparto sewage oxidation ponds which provide habitat for waterfowl and shorebirds both local and migratory. It also fails to recognize livestock reservoirs in the adjacent Dunnigan Hills. It does not inventory the dozens of miles of permanent irrigation ditches that provide riparian vegetative habitat. Local mallard ducks that nest in the grainfields use the ditches for swimming.	4-141
4.6-7		GRASSLAND This is an extremely abbreviated list and should have at least twice as many entries.	4-142
4.7-2 4.7-3		DESCRIPTION OF LOCAL ENVIRONMENT The description is WRONG! Rumsey Hills are not on the southwest as stated. Measurements of air quality for Woodland are not applicable as the project is in a distinct micro-climate that is significantly different from Woodland. Many more hours of north wind of greater velocity than generally experienced in Woodland are experienced at the project site. Also both rainfall and temperature range varies from Woodland. Why is the project evaluated on wide regional air quality measurements rather than site specific data? All other considerations are supposedly based upon site specific data. The topographic restraints of the project are quite different from Woodland. The usual excuse that Woodland's air quality measurements are the only ones available poses the question as to why site specific measurements were not acquired - Woodland has neither asphalt plants nor aggregate mining. This is akin to taking one patient's blood pressure in a hospital and then saying the rest of the patients fall within that measurement range.	4-143 4-144

PAGE	P#	COMMENTS	
		COMMENT: Using air quality measurement taken 10 miles from the project site is not credible science. Readers of the DEIR are entitled to a factual local presentation. Certainly Staff has an obligation to provide data that specifically applies to the project.	4-144
4.7-3		EXISTING EMISSIONS In preparing an earlier agenda for an economic study it was stated that a transit-mix concrete plant was also located here. Why has it not been listed in this DEIR?	4-145
		COMMENT: Why does the DEIR ignore the increased emissions created by agriculture trucks hauling crops upgrade out of the lowered reclaimed agricultural land. Hauling 20 tons up a ramp will require maximum throttle and a low gear.	4-146
		Why is the subject of atmosphere stratification not discussed for the reclaimed agricultural land which will now be in a basin? This will be especially significant during harvest season.	4-147
4.12-1		HAZARDS - INTRODUCTION The issues listed do not include accidents resulting from steep slopes, e.g., bicycles, hiking, motorcycles, ATMs.	4-148
		GENERAL COMMENT: The project is within easy walking or biking distance of Madison and the adjacent Migrant Farm Labor Housing Project. There are no public swimming facilities in the Madison/Esparto area and there are no other bodies of water deep enough for swimming during the summer. Hundreds of children reside in the area.	4-149
		Existing pit-lakes and those to be created will become irresistible attractive nuisances for children, especially after mining hours and on Saturdays and Sundays. The fencing proposed is in no way "kid proof".	
		Even the flattest slopes proposed for the pit-lakes sides greatly exceed those recommended for swimming pool standards for public use.	

PAGE	P#	COMMENTS
		Inexperienced swimmers and waders are subject to extremely hazardous conditions. It is quite likely that responsible adults will not be accompanying clandestine swimming excursions by trespassing minors. Once a wader/swimmer is in trouble there is not likely to be a responsible person present to extend lifesaving assistance. **Children from the migrant camp will likely be Hispanic and many are left at home unsupervised while the parents work in the fields. Many may not be bilingual or even able to read warning signs.** **Once a child is in trouble in the water (after mining hours) the proposed pit-lake locations are too isolated from SR-16, I-505 or any nearby dwellings for other children to seek help on a timely basis. It is difficult to visualize a more inviting hazard and one so remote and far from emergency help!** **Because the County as the lead agency, has promulgated the regulatory safeguards and will be a party to the permit agreement, it will most certainly be named in any lawsuit involving injury or death. It is seriously doubted that the County can escape responsibility with a "save harmless" clause in the permit because the regulations written at this reading seem to be far from adequate.** **Lawsuits brought on behalf of the occupants of the migrant labor housing project will have cost free legal assistance through the various legal services created for the disadvantaged and minorities.** **Staff is remiss in not obtaining a complete risk assessment of this situation provided by experts in the field. Written comments by the County's insurance carrier should also be included. The citizens who ultimately are left with the bill are entitled to this!** **Furthermore, it should be pointed out that there are no plans for any public swimming facilities to be constructed in the next 30 years in the Capay/Esparto/Madison area. The local Unified School District is impoverished and school bonds are most difficult to pass. In the meantime the juvenile population continues to increase and the potential for juvenile swimming trespass will increase. It is not likely that privately owned swimming facilities will be built for profit as this sector of the business has long been unprofitable.**

4-149

PAGE	P#	COMMENTS	
		<u>If we must have pit-lakes they must not be allowed to become "death traps" for our children!</u>	4-149
4.12-8		IMPACT 4.12-3 See earlier discussion Posting of signs is of little value for children especially considering that some from the Farm Labor Housing Project may be unable to read and most are Hispanic. Fencing will not be of a sufficient standard to prevent kids from climbing. The City of Woodland Parks & Recreation Department has been unable to keep children out of the municipal pools with an 8' chain link fence topped with barbed wire. The police respond to many calls of illegal swimmers at night after the pool has been closed. Staff should cite the commonly accepted standards for swimming pool safety as promulgated by safety engineers. The vbinadequate safeguards offered entirely miss the mark!	4-150
		LOCAL EMERGENCY RESPONSE CAPABILITY NOT GIVEN The Esparto/Capay Fire Department is mostly volunteer - its make-up and response capability should be fully explained. The response time to an emergency at a Solano Concrete pit-lake should be noted as well as how long it would typically take to assemble the volunteers at the accident site. It should be determined whether the Fire Departments have sufficient rescue apparatus on board, including a foldable raft to facilitate reaching a swimmer in trouble some distance from the shore. <u>Staff has failed badly to adequately appraise one of</u> <u>THE MOST POTENT SAFETY HAZARDS OF THE WHOLE PROJECT!</u>	4-151

PAGE	P#	COMMENTS
		COMMENT: **WHERE ARE THE MISSING EXPERTS?** An adequate DEIR would most certainly have a lengthy and detailed discussion on public health and safety hazards performed by a competent, experienced, safety engineer. it is painfully clear that Staff does not possess these qualifications. Staff has gone to great lengths in other parts of this DEIR to quote "experts" no matter how obscure or poorly equipped they are to discuss the subject under consideration. However on this safety subject no one with even the minimum qualifications has been invited to comment. For Staff information the following quote is from the "Annual Report", May 1995 (the latest) of the California Board of Registration for Professional Engineers and Land-surveyors on page 5: "Under current California law, engineers may register in three practice disciplines (Civil, Mechanical or Electrical) or in 13 title disciplines (Agricultural, chemical, control systems, corrosion, fire protection, industrial, manufacturing, metallurgical, nuclear, petroleum, quality, SAFETY and traffic)." In an appraisal of what appears to be the cumulative infractions of the registration law thus far by Staff and its consultants on the total EIR documents thus far submitted for review, it may well be just cause for requesting an investigation by the Registration Board's investigation Staff.
		COMMENT: HAS THE YOLO COUNTY HOUSING AUTHORITY BEEN ASKED FOR COMMENT? The Farm Migrant Workers Housing Project is the closest concentration of children to the proposed project. The population is predominantly Hispanic with many children and English may well be the second language while some may not be literate. Has a Spanish DEIR been furnished to the housing project and have any bilingual public meetings been held so that the residents have the opportunity to be heard?

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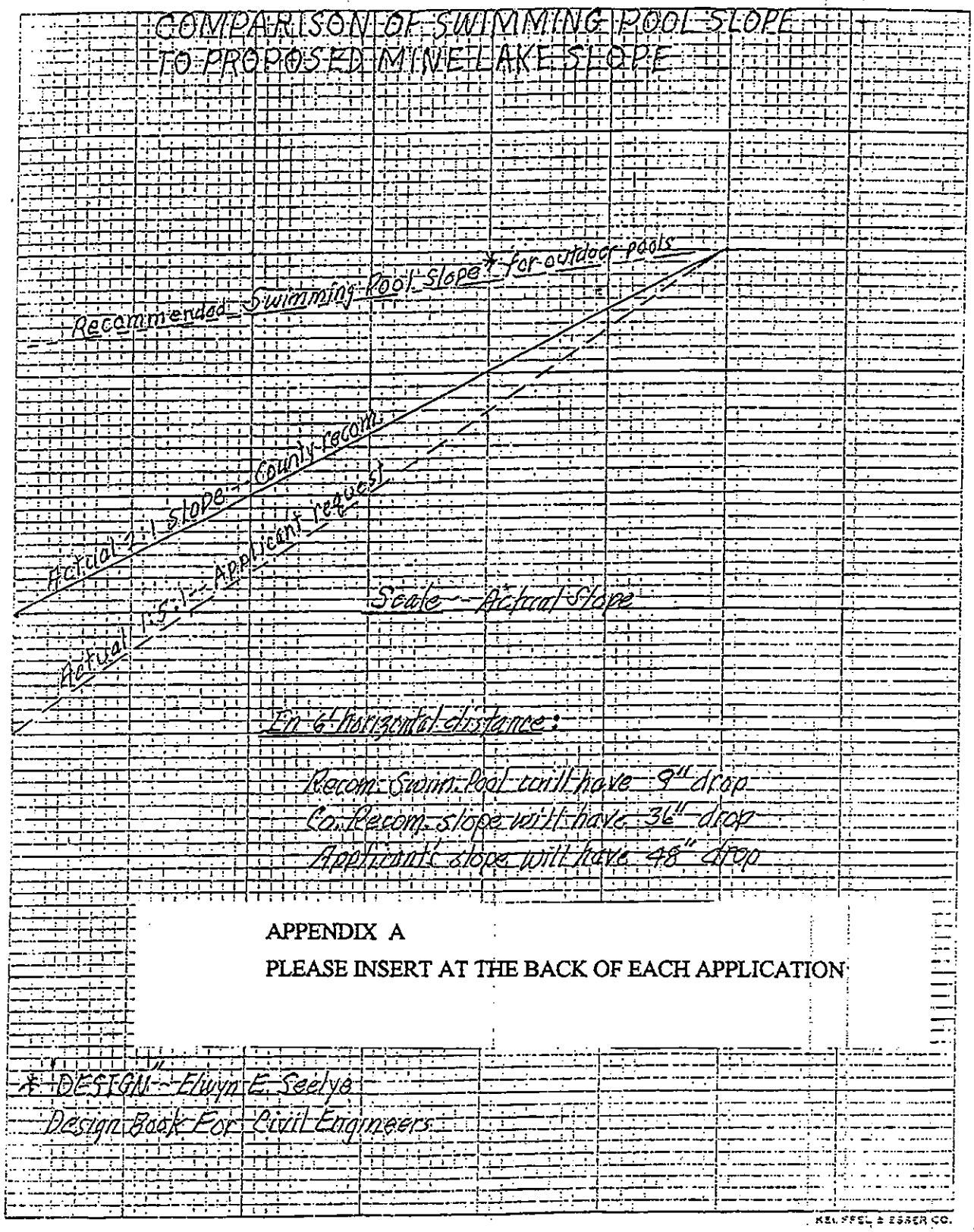
PAGE	P#	COMMENTS
		There are specific State and Federal laws (not CEQA) that deal with the information to be furnished minorities and low income groups. Such groups in many cases are entitled to levels of information, explanation, and notification over and beyond the formal published legal notices generally required by CEQA. The minorities and the disadvantaged enjoy more protection under State and Federal law than provided by CEQA. THESE REQUIREMENTS MUST BE MET!
		COMMENT: SIDE SLOPES OF PIT-LAKES EXPLAINED The average reader of the DEIR cannot visualize a 1.5 : 1 or a 2 : 1 slope for a proposed lake as this is typical engineering jargon. Above all, the reader cannot equate the numerical designation of slopes to what is considered an acceptable slope for the bottom of a public swimming pool. The DEIR should provide an understandable graphic to provide the reader comprehension of what is being proposed. Given the absence of such a graphic, one is provided (see attached) that is drawn to actual scale for comparison purposes. For further explanation comparison is made on the amount of vertical drop that would occur for a horizontal distance of 6 feet.: Recommended drop in a public swimming pool = 9 inches ("Design" book for Engineers by E. E. Seelye) Staff recommended drop 36 inches Applicant's recommended drop 48 inches This demonstrates that Staff's recommendation is 4 times steeper than the recommendation for public pools. The applicant's proposed drop is 5.3 times steeper than the recommendation for public pools. This gives a basis of comparison to demonstrate how dangerous the Staff's proposed 2 : 1 slope is. (see attached drawing)

4-153

4-154


COMPARISON OF SWIMMING POOL SLOPE
TO PROPOSED MINE LAKE SLOPE
Recommended Swimming Pool Slope* for outdoor pools
Actual 2:1 slope - County recom.
Actual 1.5:1 - Applicant request
Scale - Actual Slope
Actual
In 6' horizontal distance:
Recom. Swim. Pool will have 9" drop
Co. Recom. slope will have 36" drop
Applicant's slope will have 48" drop
APPENDIX A
PLEASE INSERT AT THE BACK OF EACH APPLICATION
* "DESIGN" - Elwyn E. Seelye
Design Book For Civil Engineers
KEUFFEL & ESSER CO.

LETTER 4: ENVIRONMENTAL ISSUES COMMITTEE WESTERN YOLO GRANGE #423, CACHE CREEK COALITION, NATURAL RESOURCES COMMITTEE LEAGUE OF WOMEN VOTERS WOODLAND, CITIZENS FOR RESPONSIBLE MINING

Response to Comment 4-1:

Thank you for your comment letter. The contents of the DEIR have been developed in response to concerns received on the Notice of Preparation and at the scoping meeting. Staff has verified that all relevant comments from that process were adequately addressed in the DEIR.

Response to Comment 4-2:

The comment is unsubstantiated, and inconsistent with the independent findings of the DEIR and earlier studies. The commentors have reiterated their specific concerns in the attachment to Letter 4 received on this DEIR. Responses to these specific comments are provided in Responses to Comments 4-3 through 4-154.

Response to Comment 4-3:

Regarding eutrophication and potential biological degradation of wet pits, please refer to Response to Comment 4-30. Regarding licensing of experts, please refer to Responses to Comments 4-112 and 4-152. Regarding mobilization of mercury, please refer to Response to Comment 4-116.

Response to Comment 4-4:

For the discussion of the potential for sealing of the sides and bottoms of permanent wet pits with silt, clay or biological material, the commentor is referred to Response to Comment 4-28.

Response to Comment 4-5:

Please refer to Response to Comment 4-153.

Response to Comment 4-6:

The commentor is referred to Response to Comment 4-19.

Response to Comment 4-7:

The summary of climatic data presented in the OCMP EIR on pages 4.4-1 and 4.4-2, and referred to in the DEIR, was prepared based on Federal meteorological publications. The preparers of the DEIR consider the summary to provide adequate detail to support the subsequent hydrology and water quality analysis. Further, the OCMP EIR acknowledged

that evaporative losses would occur at the wet pit lakes, but that these losses are acceptable (as a matter of County and Regional Water Quality Control Board policy) to support biological habitat diversity. Furthermore, the OCMP EIR included the potential higher evapotranspiration of wetland areas at the perimeters of the wet pit lakes. Staff is recommending no change to the DEIR.

Response to Comment 4-8:

The preparers of the DEIR reviewed the California Water Code regarding jurisdiction of the Department of Water Resources, Division of Safety of Dams (DSD) over the alluvial separators proposed by the project (page 4.3-20, third paragraph of the DEIR). Based on this review and discussions with DSD engineers, it appears that permitting of the separators under DSD would not be required. However, to be conservative, Mitigation Measure 4.3-4j recommends that the applicant contact DSD, prior to implementation of the project, for a formal determination. For the record, such a determination has been received regarding the Cache Creek Aggregates application. For that application, DSD responded that the proposed off-channel mining did not fall within their justification.

Response to Comment 4-9:

Staff interprets the commentor to be referring to the option of controlled flooding of areas behind the Solano Concrete levee. The commentor is referred to Response to Comment 4-58.

Response to Comment 4-10:

The construction of a controlled flow inlet channel would merely protect the existing bank during flooding, it would not substantively affect creek flow conditions or result in new diversions. Water rights concerns are not relevant to this issue.

Response to Comment 4-11:

Mitigation Measure 4.3-4c of the DEIR describes two alternatives for mitigating the lack of compliance of the project with the minimum 200-foot setback requirement of the OCMP. An exemption from the OCMP requirement would require construction of controlled flow inlet structures for areas inundated by a 100-year flood event. The determination of whether the controlled flow inlet structures would be installed has not yet been made. The construction of the inlet structure would not result in any new diversion of water from the creek; the structure would only control potential erosion associated with existing flooding hazards. A design of the structure has not been completed. It is not possible to accurately determine at this time which agencies would have jurisdiction over the installation of these structures. The applicant would be responsible for obtaining all appropriate permits.

Response to Comment 4-12:

Please refer to Response to Comment 4-80.

Response to Comment 4-13:

The commentor appears to have misunderstood the concept of the controlled flow inlet structures. Under the existing condition, flood waters enter former mining areas through a low portion of the alluvial separator. The controlled flow structure proposed by the applicant, which may or may not be constructed, would provide bank protection to prevent erosion and downcutting during these overtopping events. No new inlet or "siltation basins" would be constructed.

Response to Comment 4-14:

The preparers of the DEIR have recommended biotechnical slope protection for the project site to promote integration of bank protection into the goals for the CCRMP. Well designed biotechnical bank treatments are well-established alternatives to the placement of riprap. The specific design of the treatment will be constrained by the same engineering requirements for conventional treatments such as riprap. The commentor suggests that biotechnical methods are susceptible to fire, dry rot, and termites, implying that all biotechnical methods are supported by wooden materials only. However, a wide range of stabilization techniques ("mixed construction") are available that incorporate structural bases (including reinforced earth, gabions, and, in some cases, riprap) for rooting medium and suitable surfaces for development of vegetation. The preparers of the DEIR agree that riprap slopes can eventually provide rooting substrate for plants under some conditions, including along the Sacramento River. Riprap treatment cannot be assumed to be more effective or long-lasting than a properly designed biotechnical slope. Although easier to repair, the riprap slope may require similar or more intensive maintenance. Staff does not agree with the commentor's implication that the requirement for biotechnical slopes should be reverted back to the riprap design proposed by the project. However, Text Change #14 has been made to address the possibility that a riprap design is the only acceptable bank protection solution for the project site.

Response to Comment 4-15:

The distance of the Madison wells to the nearest proposed mining area is approximately one mile. This distance is five times the minimum setback (1,000 feet) between mining areas and municipal wells specified by Section 10-4.427 of the Off-Channel Surface Mining Ordinance before modeling of effects to the wells is required. The Off-Channel Surface Mining Ordinance, which includes setbacks for mining from wells, was certified by the Yolo County Board of Supervisors on 30 July 1996. The Madison public water supply wells are located upgradient of the proposed mining areas as indicated by the groundwater elevation contour maps presented in Figures 4.4-3 and 4.4-4 of the DEIR. The contouring does not suggest that the groundwater table is significantly impacted by the cone of influence associated with the Madison wells. Groundwater flow is directed eastward at the site, not westward toward the Madison wells. The relative low pumping rates of the wells, the high transmissivity of the unconfined aquifer, and the distance of the wells from the proposed mining areas suggest that, in the professional opinion of the preparers of the EIR, the wells would not affect or be affected by any change in the groundwater flow regime caused by

the proposed project. If the wells were within 1,000 feet of the proposed mining areas, Section 10-4.427 of the Ordinance would require the applicant to conduct capture zone analysis (which would include determination of the cone of depression) for the Madison wells.

In addition, Section 10-4.417 of the Ordinance requires installation of a monitoring well network to establish local background groundwater conditions and document any changes in groundwater elevations resulting from implementation of the proposed project. It is also significant that agencies responsible for protection of water quality and review of the adequacy of technical information presented in EIRs prepared for mining and reclamation proposal (including the Central Valley Regional Water Quality Control Board and the California Department of Conservation) have not submitted any comments suggesting that the treatment of water quality issues, including drinking water, have not been adequately addressed in the OCMP EIR or any of the long-term mining application project EIR.

Response to Comment 4-16:

Phosphorous has been included as a required sampling parameter in the water quality monitoring program required in Section 10-4.417(a)(3) of the Off-Channel Surface Mining Ordinance. The required monitoring includes determination of background water quality data prior to mining and monitoring during mining and reclamation. This monitoring requirement is extended to the proposed project by Mitigation Measure 4.4-4a of the DEIR. If maximum concentration levels are exceeded, these mitigation measures require the operator to submit a report, to both the County and the Regional Water Quality Control Board, describing the proposed means to remediate any problems caused by mining and reclamation activities. Staff also points out that the evaluation of conditions in the existing mining pit lakes at the Solano Concrete property (see Appendix C of the OCMP EIR) included investigation of algae levels. The evaluation indicated that chlorophyll A levels (a quantitative measure of algal growth) were low in the lakes and that organic matter concentrations in sediments at the bottom of the lakes were also low. These data indicate that significant algal populations do not develop in these lakes.

Response to Comment 4-17:

Nitrate has been included as a required sampling parameter in the water quality monitoring program detailed in Section 10-4.417 of the Off-Channel Surface Mining Ordinance. This monitoring requirement is extended to the proposed project by Mitigation Measure 4.4-4a of the DEIR. In addition, the Surface Mining Reclamation Ordinance requires prevention of runoff into reclaimed mining areas (Section 10-5.507) and a five-foot minimum separation between reclaimed mining area surface and the seasonal high groundwater level (Section 10-5.516). These requirements will minimize the potential discharge of agricultural runoff (possibly containing nitrates) to the groundwater underlying the site.

Response to Comment 4-18:

Regarding the potential for sealing of the sides and bottoms of permanent wet pits with silt, clay or biological material, please refer to Response to Comment 4-28. The use of mathematical modeling for groundwater analysis is discussed in Response to Comment 4-139.

Response to Comment 4-19:

This DEIR identifies the future wet pits as a potential attractive nuisance and therefore a potential hazard, especially if trespassers were to fall into the pits. As a result of this potential hazard, the DEIR recommends mitigation measures to minimize this impact; the mitigation measures in this DEIR consist of a reference to the OCMP EIR mitigation measures (codified in Section 10-5.510 of the Surface Mining Reclamation Ordinance), since this impact is an impact that is not unique to this project but pertains to all off-channel mining projects. The Ordinance requires fencing (a minimum of 42-inch barbed wire fence or equivalent), signage, and a change in pit slopes near the water's edge during and following mining. These mitigation measures are considered to be conservative measures to protect the health and safety of trespassers.

The barbed wire fence and associated signage were recommended to indicate the presence of an open body of water so that trespassers would not inadvertently fall into the pits during day- or night-time. The fence would not be effective in eliminating access to the pits. It is not possible to eliminate access to the pits for someone who wants to access them. The extreme security measure could be walls similar to those surrounding State and Federal penitentiaries, and such measures are not reasonable for this potential impact. Additionally, the barbed wire would be a minimum — other types of fencing are allowed and encouraged where property owners experience trespass problems.

The commentor has indicated in subsequent comments that the suggested mitigation measures for a gentler slope (2:1) would be totally ineffective in preventing the accidental drowning of children from nearby areas, who would access the pits during the summer for swimming. The commentor suggests that since these children would trespass to go swimming in the pits, the pit side slopes should be constructed similarly to the requirements for bottom slopes in swimming pools. It should be noted that public swimming pools have shallow ends and deep ends, unlike the proposed wet pits which will have 2:1 slopes around the entire perimeter. The deep ends of public pools are frequently 8 feet deep with vertical sides that present enormous risks to children. The 8:1 slope referred to by the commentor is only applied along the length of the pool, not the width. Moreover, Yolo County has determined that 42-inch fencing is adequate protection for public and private pools in densely settled urban areas. As the commentor notes, the wet pits will be remote and isolated and will not be readily accessible to small, unattended children.

Furthermore, there are no standards for the steepness of slopes of wet pits, except those that require that the slopes must be geotechnically stable. The California Department of

Conservation, administering SMARA, does not have any requirements for pit slopes except for engineering requirements to ensure slope stability; they also do not keep any statistics on individuals falling into reclaimed pits. Cal OSHA also does not have any requirements for finished pit slopes, only safety orders pertaining to working mines. In fact, Cal OSHA has indicated that the flatter the slopes to a pit, the greater the attractive nuisance.

The County balanced the need to protect trespassers from being injured with the lack of regulations for slope steepness, and the fact that flatter slopes could possibly increase the attractiveness of the pits to trespassers. The 2:1 pit slope requirement reflects this balance, and is similar to the slopes at Shadow Cliffs, a very popular deep-pit reclamation project in Alameda County, which is now an active recreation area. It should be noted that Solano Concrete proposes a 3:1 slope around the lakes for habitat enhancement purposes.

Response to Comment 4-20:

Regarding eutrophication and associated water quality degradation in the mining pit lakes, please refer to Response to Comment 4-30. The potential for formation of a biological "seal" in the lakes is addressed in Response to Comment 4-28.

Response to Comment 4-21:

EIR preparers often contact public agencies and/or special experts during the evaluation of environmental impacts. This is a prudent activity since individuals may possess information that is not published. For example, Yolo County officials were contacted for the preparation of this DEIR to ascertain the status of permitted underground tanks at Solano Concrete's facility, whether inspections occurred, and whether any violations of permits had been recorded. Also the DEIR preparers contacted the agricultural commissioner's office to ascertain historic pesticide and herbicide uses in the County and to obtain information on agricultural practices in the County. This type of information can only be obtained from direct communication with knowledgeable individuals. This DEIR also uses personal communications with knowledgeable individuals to present information to the readers of the DEIR; whenever personal communication has been used by the DEIR preparers, the person contacted has been referenced by name, title, and agency affiliation. This allows the interested reader to also contact the person, should he or she wish to do so.

Response to Comment 4-22:

The California Environmental Quality Act (CEQA) requires an analysis of <u>environmental</u> not economic impacts. Economic effects are to be studied only if there is a direct link to a physical change in the environment (see Section 15131 of the CEQA Guidelines). The issue of whether the economic revenue over a ten-year period from tree crop production versus conventional row crop production was not investigated in the DEIR prepared for the Off-Channel Mining Plan and, consequently, the proposed project was not addressed in this DEIR. However, the 10 July 1996 Planning Commission Staff Report for the OCMP

presented a comparison of expected revenue for poplar trees to conventional row crops. In addition, the economic viability of poplar plantations was described in the Response to Comments document for the 1995 Solano Concrete Company, Inc., Short-Term, Off-Channel Mining Permit Application.

The risk of wildfire at the project site is not significantly increased by the proposed planting of tree crops. Fire hazards would be similar to those posed by conventional crops or the riparian habitat along Cache Creek. See also Response to Comment 4-125, below.

Response to Comment 4-23:

The Director of the Yolo County Flood Control District as well as the hydrologist for the District have both been contacted numerous times regarding compatibility of the OCMP goals, policies, and regulations with District operations. It is our understanding that the OCMP and implementing ordinances are compatible with existing and planned District operations and projects including the pending District Groundwater Recharge and Recovery Program.

Based on discussions with the District, the construction of the canal referred to by the commentor is not a scheduled project. The availability of water is in question. Furthermore, a construction project of that magnitude would require environmental impact analysis under CEQA (and potentially NEPA). If and when the project is formally proposed, the environmental impact analysis would examine potential impacts associated with increased groundwater levels.

Response to Comment 4-24:

Climatic data for the air quality analysis were obtained from the Woodland monitoring station, close to the project site. There are only a limited number of monitoring sites within Yolo County and having a station that close to the site is fortuitous. The Woodland monitoring site measures PM-10 and ozone, two regional pollutants. Being regional in nature means that because the pollutants sources are so spread out geographically, the concentrations of ozone and PM-10 do not show great variation over distances within a few miles. Localized pollutants, such as carbon monoxide, could show strong variations over short distances, but carbon monoxide is not a problem pollutant in Yolo County in general or specifically in the project area.

Air quality monitoring data for Woodland is the closest available data and is considered representative of the project area. Air quality impacts were evaluated on a regional basis. The impacts assessed in the EIR are those related to the increase in regional emissions as a result of the project, or impacts of emission of a specific pollutant on nearby sensitive receptors. The EIR assessed the total impact of the project and cumulative impacts on air quality. Project traffic will disperse on roadways in the region, and winds will disperse pollutants throughout the region. For these reasons, a localized analysis of air quality impacts would be misleading and not be representative of the project's impact on regional air quality and attainment of air quality goals.

Response to Comment 4-25:

The OCMP EIR discussed potential increases in demand for public services to the OCMP area in response to implementation of mining in the OCMP area and determined that there would be no significant increases in demand for services from mining activities in the OCMP planning area. This DEIR tiers off the OCMP Program EIR.

Response to Comment 4-26:

This DEIR is a project EIR prepared under the OCMP Program EIR. The OCMP EIR was certified by the Board of Supervisors on 30 July 1996 as adequately describing the environmental impacts from the Off-Channel Mining Plan. This project EIR tiers off the OCMP Program EIR, as provided for in the California Environmental Quality Act. Certification of this EIR would follow certification of the Program EIR and take into account any and all changes to the latter document. Phasing the preparation of the environmental documents allows for full public participation in their processing and is in full accordance with the requirements of CEQA.

Response to Comment 4-27:

Staff does not agree that the water resource issues raised by the comment were not addressed in the DEIR. The exclusion of these issues from the section "Areas of Controversy" does not ignore the extensive analysis provided in the project- and program-level EIRs. Eutrophication, biological degradation (including pathogens) and mercury bioaccumulation were discussed in Impact 4.4-4 of the DEIR. These issues were also discussed in the OCMP EIR. Evaporation was discussed in Impact 4.4-2 of the DEIR and additional discussion of associated water quality impacts is presented in Response to Comment 4-29. Potential impacts of the proposed project were evaluated in Impact 4.4-5 of the DEIR. The Madison (including the Madison Migrant Center), Esparto, and Woodland public water supply wells are located more than 2,000 feet from the mining areas of the proposed project. Section 10-4.427 of the Off-Channel Mining Ordinance requires groundwater modeling to evaluate impacts of mining and reclamation on water supply wells only if proposed mining areas are within 1,000 feet of municipal wells or within 500 feet of domestic wells. The distances were considered appropriate for protection of water wells in the Technical Studies for the CCRMP and were supported in the OCMP EIR analysis. In response to this comment the DEIR has been amended as indicated in Text Change # 1.

Response to Comment 4-28:

The commentor's opinion regarding whether or not the mining pit lakes will transmit water to the surrounding aquifer appears to be inconsistent within Letter 4. When potential water quality threats to the potable aquifer, such as degradation of water quality at Madison wells (Comments 4-15, 4-85, 4-89), or migratory water fowl (Comments 4-3, 4-90, 4-98, 4-102, 4-110), or airborne biosolids from sewage sludge (Comments 4-103, 4-104) are claimed by the commentor, the mining pit lakes, by inference must readily transmit water to the

aquifer. However, when discussing eutrophication and sealing of the mining pit lakes by silt, clay, and biological material (Comments 4-4, 4-18, 4-20, 4-28, 4-48, 4-50, 4-97, 4-109, 4-130) the commentor concludes that the mining pit lakes will become sealed.

The preparers of the DEIR have been consistent in the DEIR analysis; some mechanical and biological clogging of the mining pit lakes may occur. However, based on empirical data and observations from other similar systems, these lakes, will maintain hydraulic communication with the surrounding aquifer.

Any silt and clay layers encountered during excavation will be largely removed from the mining pit. Undoubtedly, some sediment fines will settle on the pit bottom and sides during mining. However, a thick accumulation of fines is not likely to occur. As mining proceeds, and the pit is deepened, the fines that settle out as a result of previous mining would be excavated or remobilized into the water. This process of on-going excavation and remobilization would continue to occur until the end of mining.

With regard to "proof" that this sealing (either from clay deposits or biological clogging) would not occur, similar completed mining pit lakes in alluvial systems were reviewed. Based on the rapid responsiveness and high degree of correlation of water levels in mining pits and the surrounding groundwater system in the existing Solano Concrete mining pit lake and the mining pits in the Middle Reach of the Russian River, including pits that are over 20 years old, groundwater flow through the mining pit lake walls is maintained. Specifically, the Basalt Pit, which is located adjacent to the Russian River just south of the confluence with Dry Creek, may represent a "worst case scenario" for eutrophication and remains hydraulically connected to the aquifer. The Basalt Pit receives approximately one million gallons a day of secondarily treated wastewater from the Healdsburg Wastewater Treatment Plant. The water within the pit is highly eutrophic; visibility is typically only a few inches. However, fluctuations of pit water elevations and adjacent groundwater elevations show correlation, indicating that flow occurs readily through pit walls. Discharges from the treatment plant to the Basalt Pit have been occurring since 1980. Sixteen years of "worst-case scenario" eutrophication has not resulted in sealing the pit walls. Therefore, biological sealing of mining pit lakes that have no such nutrient source, such as proposed under this project, are not expected to occur, much less result in a significant and unavoidable impact.

Response to Comment 4-29:

Regarding microclimates, please refer to Response to Comment 4-7. With regard to salt-loading of the wet pits, it has been estimated in the Technical Studies for the CCRMP that increase in salt content (as measured by total dissolved solids (TDS)) would stabilize at approximately five percent above concentration in newly created wet pit lakes. This estimated increase would apply to boron salt compounds. This increase is not considered significant because the effects of increased TDS would decrease by dilution in the groundwater system with distance from the wet pits.

Elevated boron levels in groundwater within the lower Cache Creek basin were also discussed in the Technical Studies. Background levels of boron in groundwater can be as high as 3 mg/L. Testing of boron in groundwater samples and water within existing mining pit lakes at the Solano Concrete property in 1994 indicate that levels of boron in the lake water (2.2 mg/L) are similar to levels in groundwater collected from wells upgradient and downgradient of the lake (1.8 to 2.4 mg/L).

Response to Comment 4-30:

Staff does not agree with the commentor's opinion that the potential impacts of eutrophication have not been addressed in the DEIR. The commentor is referred to the discussion of eutrophication presented in Impact 4.4-4. A similar discussion was presented in the DEIR for the OCMP. Additional discussion was provided in the Response to Comments document for the OCMP. The DEIR for the OCMP was certified by the Yolo County Board of Supervisors on 30 July 1996, and the subject analysis tiers from it. It is also significant that agencies responsible for protection of water quality and review of the adequacy of technical information presented in EIRs prepared for mining and reclamation proposal (including the Central Valley Regional Water Quality Control Board and the California Department of Conservation) have not submitted any comments suggesting that the treatment of water quality issues, including eutrophication, have not been adequately addressed in the OCMP EIR or any of the long-term mining application project EIR.

The preparers of the DEIR question the validity of the commentor's opinion that the mining pit lakes proposed by the project would be subject to eutrophication. The technical term "eutrophication" was defined in the DEIR as the loading of inorganic and organic dissolved and particulate matter to lakes at rates sufficient to increase the potential for high biological production. The term is somewhat subjective and is not typically defined quantitatively. A eutrophic lake is typically characterized by high algal biomass, resulting from high nutrient loading, and poor circulation. The proposed mining pit lakes do not present conditions that would encourage eutrophic conditions. Conditions expected in the lakes which would inhibit eutrophication of reclaimed lakes include deep, steep-sided morphology, relatively short residence time for water (caused by flow of groundwater into and out of the lakes), relatively low nutrient loading (related to the prevention of surface water flow into the pits), and the relatively high pH of source water (groundwater). Although algal growth will occur within the lakes, as in all natural lakes, an unusually high algal population is not expected. Monitoring of chlorophyll A levels in the existing Solano Concrete mining pit lakes indicated low algal density in these lakes in April 1996. The sampling of sediments indicated low organic content in the sediments at the bottom of the lakes. These data suggest relatively low algae production in the lakes. The preparers of the DEIR expect that thermal stratification and possible low oxygen conditions in the basal waters of the lakes could develop during late summer. This condition would be temporary and would not necessarily cause significant eutrophication of the lakes.

The preparers of the DEIR are familiar with other mining pit lakes that have been constructed in similar environments to the proposed lakes in the lower Cache Creek basin. The deep, steep-sided aggregate mining pit lakes in the area of Pleasanton, California, and

similar lakes along the Middle Reach of the Russian River in Sonoma County are not significantly eutrophic. Although thermal stratification of these lakes occur, high algae populations do not typically develop in these lakes unless high nutrient loading occurs.

The preparers of the DEIR have reviewed the 1969 Federal Water Pollution Control Administration publication referenced by the commentor. As is explained in this reference (and many others), eutrophication is dependent on available nutrients, primarily phosphorous and nitrogen. Lakes and reservoirs which receive excess nutrient have the potential to become eutrophic. As described in Table 3 (page 39 of the 1969 publication), major sources of phosphorous include sewage effluent, industrial discharge, phosphate rock, agricultural drainage, and benthic (sea floor) sediment releases. As discussed in the DEIR none of these nutrient sources would be available to the wet pits. Table 3 further lists minor contributors, including domestic ducks, sawdust, rainwater (where pollution is present in atmosphere), wild duck, tree leaves, and dead organisms. Of the minor contributors, it is anticipated that only wild ducks and dead organisms would be introduced into the wet pits. This discussion demonstrates that only minor amounts of nutrients would be introduced, minimizing the potential for significant eutrophication to develop. Sources of phosphorous would be limited to phosphorous supplied in groundwater and from atmospheric fallout.

Although the preparers of the DEIR consider the potential for significant eutrophication to develop to be low, the OCMP requires that the operators of permanent reclaimed mining pit lakes monitor temperature, dissolved oxygen, pH, eH, and dissolved carbon levels in the lakes for up to ten years after completion of reclamation. Development of eutrophic conditions, which may result in increased methyl mercury production, would require mitigation.

Response to Comment 4-31:

The proposed project cannot be approved unless the project is found to be consistent with the approved OCMP and CCRMP. The EIRs for the OCMP and CCRMP were certified as adequately describing the environmental impacts associated with those projects. The OCMP was approved on 30 July 1996 and the CCRMP was approved on 20 August 1996 by the Board of Supervisors. The commentor's opinion regarding the quality of analysis contained in the OCMP and CCRMP EIRs is noted for the record.

Response to Comment 4-32:

The commentor appears to be confusing the purpose and content of the CCRMP and the CCRMP EIR with the proposed project. The proposed project is not located within the CCRMP area. The CCRMP planning boundary is entirely within the CDMG MRZ-2 boundary as correctly indicated in the CCRMP DEIR. The commentor is referred to Figure 4.3-5 of the Solano DEIR for delineation of the CDMG boundaries for Mineral Resource Zones (MRZ) in the project area. Although the southern end of the Solano West parcel is located within the MRZ-3 boundary, all proposed mining within this parcel is located within the MRZ-2 boundary.

Response to Comment 4-33:

Please refer to Response to Comment 4-8 for discussion of the potential permitting requirements by the Division of Safety of Dams (DSD) of the Department of Water Resources (DWR). Although the project EIR has been sent to DWR for review, they have not offered any response indicating concerns regarding DSD jurisdiction.

Response to Comment 4-34:

The commentor is correct. The distance from the western edge of the project boundary (the Solano West parcel) to the Town of Madison (including the Madison Migrant Center) is approximately 0.2 mile. The distance between Madison and the nearest areas to be mined is approximately 0.85 mile. For clarification, the text of the DEIR has been amended as Text Change # 3. Figures 3.3 and 3.4 of the DEIR have been amended by Text Change # 4 to show the Migrant Center. The Migrant Center houses 88 families and operates 6 months of the year.

The comment regarding Hungry Hollow is noted. The project location description on page 3-4 states that "Cache Creek transects the [Hungry Hollow] valley, flowing eastward," which is an accurate statement.

Response to Comment 4-35:

The DEIR discusses potential impacts associated with dedication of lands to a public agency on pages 4.2-24 and 4.2-25 of the DEIR. The commentor is correct that this could be a potential impact of the project, especially issues concerning public access. Mitigation 4.2-8a has been recommended to reduce this impact to less than significant. As noted in the Mitigation Measure, the land will not be dedicated until reclamation is complete. The operator is in no way absolved of his responsibilities. An appropriate public agency would be one that has experience in managing lands for open space, habitat, and/or recreational purposes. Examples of such agencies include Yolo County and the California Department of Fish and Game.

The comment regarding what happens to the proposed dedication if the land were sold is an administrative issue, not an environmental impact. However, for the commentor's information, any easements would run with the land as would an Irrevocable Offer of Dedication (IOD).

Response to Comment 4-36:

It should be noted that over the past nine years Solano Concrete has not used higher than average applications of fertilizer in its reclaimed agricultural areas, and has achieved increased crop production rates over similar, unmined fields. In addition, past groundwater monitoring conducted by Solano Concrete of the water in the mining pit lakes immediately

adjoining reclaimed lowered agricultural fields has consistently contained nitrate levels below the threshold for drinking water (45 mg/L).

The OCMP and implementing ordinances require extensive monitoring of nitrates in the wet pit lakes and groundwater. If nitrate levels were identified in the pits or groundwater higher than background, corrective action would be required by Section 10-4.417 of the Off-Channel Surface Mining Ordinance. Corrective action could include alteration of agricultural practices to reduce nitrate loading (alternate crop selection, reduced fertilizer application) at the surface.

Response to Comment 4-37:

The Mineral Resource Zones (MRZ) delineated by CDMG extend to just west of the town of Yolo. The description presented in the DEIR is considered a general perspective for the purpose of the land use discussion. The reference to Figure 3-1 is intended to regionally orient the reader.

Response to Comment 4-38:

Text Change # 3 has been made in response to the comment.

Response to Comment 4-39:

Figure 4.2-1 has been modified to specifically indicate the Madison Migrant Center. Please see Text Change # 10.

Response to Comment 4-40:

Figure 4.2-2 has not been modified to indicate the Madison Migrant Center because the figure illustrates General Plan land use designations, not current land uses.

Response to Comment 4-41:

Figure 4.2-4 has not been modified to indicate the Madison Migrant Center because the figure illustrates project lands under Williamson Act contracts, not current land uses.

Response to Comment 4-42:

The text on page 4.2-23 has been modified as Text Change # 11, to note the location of the Madison Migrant Center in relation to the project.

Response to Comment 4-43:

Mitigation Measure 4.2-8a addresses the need for the County and the applicant to negotiate the dedication of reclaimed lands in Phase V and VI for a Recreation Node, as

planned in the Cache Creek Resource Management Plan (CCRMP). The CCRMP contains several policies about the County's intent to acquire lands through dedication.

Goal 5.2-2 in the CCRMP states "Establish a variety of outdoor recreational and educational opportunities along Cache Creek for use by the public." Two Actions outline how the land for these recreational areas are to be acquired: "Solicit the dedication of restored habitat areas and/or recreational areas to the County or an appropriate land trust, such as the Cache Creek Conservancy, in order to provide continuous open space along the creek" (Action 5.4-1), and "Acquire future sites, through purchase or voluntary donation, so that the County can maintain and develop the areas according to the future recreation plan" (Action 5.4-7). During the public hearing on the OCMP on 23 July 1996, the Board of Supervisors specifically asked each of the participating operators (including Solano Concrete) if they would offer land for dedication. The Board's intent was quite firm and clear.

Upon adoption of the CCRMP, the Yolo County Board of Supervisors has indicated the County's intent to comply with these policies and acquire lands for future recreational areas through dedication and purchase.

Response to Comment 4-44:

Luhdorff and Scalmanini Consulting Engineers has compiled extensive hydrogeological data on the region in past reports and documents. The preparers of the DEIR know of no requirement that compilation of stratigraphic information be conducted by geologists. However, the staff of Luhdorff and Scalmanini includes hydrogeologists and engineers who are qualified to compile and present hydrogeological data. In addition, the preparers of the EIR who reviewed technical reports submitted with the application include California Registered Geologists, a Certified Hydrogeologist, and a Certified Engineering Geologist.

Response to Comment 4-45:

Benches on 1:1 slopes are not required to protect trespassers but are included to provide mitigation for slope stability. The 1.5:1 slopes proposed by the applicant were also designed to address slope stability, not public safety. These slopes were not chosen "arbitrarily" but were developed on the basis of slope engineering principles and site-specific slope modeling. Also please refer to Responses to Comments 4-19 and 4-46.

Response to Comment 4-46:

Please refer to response 4-19 for a discussion of mitigation measures to minimize safety impacts associated with open wet pits during mining and after reclamation. Please note, that the proposed project does not include slopes of 1.5:1 at the margins of the pits but rather 3:1 and 4:1 (flatter slopes).

Response to Comment 4-47:

The slope requirements in Section 10-5.530 of the Surface Mining Reclamation Ordinance address engineering standards for slope stability of the slopes and include provisions for flatter slopes to minimize safety impacts. These requirements (as presented in the OCMP EIR) are referenced in this DEIR under Mitigation Measure 4.3-2a.

Response to Comment 4-48:

Please refer to Response to Comment 4-28. Also note that the operator indicated that the site-specific level of waste fines is approximately 17 percent. The 25 percent figure referred to by the commentor was an average for the entire MRZ-2 area.

Please note that swimming has never been included as a potential use of future recreational areas in the OCMP. Intensive uses, such as public swimming areas, could increase the potential for groundwater contamination.

Response to Comment 4-49:

Please refer to Response to Comment 4-8. The applicant has submitted plans to the Division of the Safety of Dams but has not yet received a response.

Response to Comment 4-50:

Wave erosion in the mining pits reclaimed to lakes would not present a serious slope stability threat to vegetated reclaimed slopes proposed by the project. Minor sloughing may occur at the margin of the lakes as the result of undercutting by wave action. This potential condition is acknowledged in the DEIR (page 4.3-26). Annual evaluations of erosion problems at the mining areas by a qualified geologist or geotechnical engineer, as required by Section 10-4.701(g) of the Off-Channel Surface Mining Ordinance, will provide additional insurance that any unanticipated erosion problems are identified and mitigated.

The fluctuating water level in the mining pit lakes will expose slopes to erosion. However, erosion potential caused by runoff would be typically increased during winter months when water levels are generally high. Although the lower portions of the slopes within the zone of fluctuating water levels would support a different vegetative community than the slopes above this zone, the slopes are not proposed to be bare. Reclamation plans for the project site include a vegetative zone that would be appropriate for these areas.

Wave action would result in erosion and redistribution of fine-grained sediments initially located at the margins of the mining pit lakes. The sediments moved by this process would be repeatedly reintroduced into the water column until they are redeposited in deeper portions of the lake. Following reclamation, the sediment volumes delivered to the lake would be limited to sediment generated by erosion of the sideslopes of the lake (runoff from other areas is diverted away from the lakes). Therefore, areas in which fine-grained sediments are removed may become relatively more permeable, while deep areas of the

lake would become less permeable. Water movement through the mining pit lake slopes may be preferentially increased in the shallow portions of the lake. The preparers of the DEIR do not consider the effect of this redistribution of sediment as a significant influence on the ability of water to move through the mining pit lakes.

Mathematical modeling is not necessary to evaluate the potential impact of wave erosion and redistribution of sediment. The qualitative discussion presented above is supported by data collected within and around the existing mining pit lake at the Solano Concrete Company property. Bottom sediment sampling (Slotton, et al.) of the lake indicate that the finest sediment is deposited in the deepest portions of the lake. Coincident changes in water levels in the lake and groundwater levels in wells in the vicinity of the lake provide evidence of hydraulic continuity between the lake and groundwater. No evidence supports the commentor's suggestion that the redistribution of sediment is causing a significant impact at this existing lake.

Finally, the preparers of the EIR concur with the commentor's general description of the relationship of slope steepness and the morphology and erosion processes at the margin of a lake. However, as discussed above, the DEIR has adequately mitigated the potential impacts of erosion caused by wave action.

Response to Comment 4-51:

Preparers of the DEIR consider the geotechnical report prepared for the project (Kleinfelder, 1995) to be a site-specific evaluation of the conditions which could affect the stability of surface and subsurface materials at the project site. The report was prepared in conformance with generally accepted field, laboratory, and slope stability analysis methodologies. The subsurface conditions were evaluated at 13 locations throughout portions of the project site. In addition, the consultant has also performed extensive subsurface investigations within the same alluvial deposits at the Syar Industries properties between County Roads 87 and 89.

Geotechnical engineering practice acknowledges that subsurface exploratory borings only identify the actual conditions at the location of the borings. Interpretation is required to estimate the conditions between the borings. Although the alluvial deposits are heterogenous, the properties of these materials can be reasonably characterized through the collection of site-specific data and familiarity with similar materials. The slope stability analysis performed for the project evaluated a range of slope designs for the mining and reclamation slopes.

The commentor is correct in assuming that some of the deposits exposed by mining may be relatively more erodible than others. The commentor is referred to the Response to Comment 4-50 for a discussion of wave erosion in the mining pits reclaimed to lakes.

Staff does not agree with commentor's opinion that the DEIR evaluation is overly generalized or inadequate. The Department of Conservation (DOC), which is the agency responsible for reviewing the technical aspects of the DEIR (including slope stability), did

not present comments in support of the opinion of the commentor. The commentor is referred to page 7.2-32 of the DEIR, which presents an opinion by DOC that "the geotechnical and hydrological aspects of this site are adequately addressed" in the geotechnical report for the proposed project.

Response to Comment 4-52:

As has been stated before, the DEIR numbers are correct. The commentor is referred to page 3.3-29 of the Technical Studies, where NHC states that the average annual sediment yield for Cache Creek at Capay equals 927,600 tons, of which 210,100 tons are composed of sand and gravel. The remaining 717,600 tons are composed of fine materials and sediments. The DMG report referred to by the commentor is assumed to be "Special Publication 98 - Fluvial Geomorphology and River-Gravel Mining." Pages 13-14 of this document state that the bedload transport was estimated at 77,000 tons or 6 percent of the suspended load. This estimate was based on limited work prepared by the USGS between 1958 and 1967, and is not comparable to the recent data and extensive modeling provided by NHC.

Again, according to NHC, fine materials make up approximately 77 percent of the suspended load, not 90 percent. Nevertheless, the preparers of the EIR agree with the need for the settling basin. Staff understands the basic concepts of sediment transport and acknowledges that material may be carried out of the planning area into downstream reaches, as is stated on page 4.3-27 of the DEIR. Staff also agrees that sediment transport has adversely affected the streambed elevations and local bridge structures.

No changes are required in the text of the DEIR regarding this comment.

Response to Comment 4-53:

The commentor is correct that velocity is measured in distance divided by time (e.g. feet per second). However, discharge, as discussed in the referenced paragraph, is measured in volume divided by time (e.g. cubic feet per second). The DEIR discussion is accurate.

Response to Comment 4-54:

The potential for piping was addressed in the geotechnical evaluation prepared for the proposed project (Kleinfelder, 1995). The conclusion of the analysis was that the potential for piping was remote at the project site. This conclusion was based on laboratory analyses which indicated that the permeability of the material in the separator would prevent the development of critical seepage velocities which could initiate piping. In addition, high flow conditions which could develop gradients required for increased groundwater flow velocities within the separators would be temporary conditions. The condition could be more permanent in recharge basins if the water level in the basins are maintained at elevations significantly above the flow elevation in the creek.

The purpose of the recommended adjustment of the CCRMP boundary at the site was to reflect more accurate site specific information on the location of the 100-year flood hazard boundary. The CCRMP boundary is based, in part, on the estimated position of the 100-year flood boundary. The preparers of the DEIR considered the data presented for the project to be more accurate than the data used in the US Army Corps of Engineers hydraulic analysis on which the original CCRMP boundary was based. Concurrence with this position was given by the preparers of streamway analysis in the Technical Studies for the CCRMP. Staff considers the recommended change to be an improvement in the positioning of the CCRMP, not a "manipulation" as characterized by the commentor. The public is free to comment on the proposed change, as the commentor has done in this letter, during the periods for review of this project, in accordance with CEQA.

Response to Comment 4-55:

Please refer to Response to Comment 4-8.

Response to Comment 4-56:

The purpose of Figure 4.3-7a is to show the relationship between the proposed mining areas and Cache Creek. Extending this Figure southward would not serve the purpose of that figure in the Geology section of this DEIR. However, in response to this comment, Figures 3-3 and 3-4 have been amended to show the relationship of the requested features to proposed mining and reclamation areas. Please refer to Text Change # 4.

Response to Comment 4-57:

The commentor is referred to Response to Comment 4-54 for discussion of the reason for recommended adjustment of the CCRMP boundary at the project site.

Response to Comment 4-58:

The comment is unclear. The referenced paragraph does not represent a "decision," agreement, or "arbitrary negotiation" by staff. It does reflect a proposal by the applicant to address an inconsistency with the required minimum 200 foot setback in a particular way, as well as the environmental analysis of that proposal.

The commentor, as well as any member of the public, is welcome to respond on this aspect of the project proposal at any time. In any event, staff will have to balance the environmental effects of the particular request with other factors in making a recommendation to the Planning Commission and Board of Supervisors. The Planning Commission and Board of Supervisors will have to weigh all relevant factors in making their decisions.

The commentor implies that there is a policy or regulation in the CCRMP that requires 100-year flood protection of former in-channel mining areas. Staff is not aware of any such

rule. The commentor is referred, however, to Section 10-4.417 of the recently adopted Off-Channel Mining Ordinance, which requires flood protection for new off-channel operations.

The EIR indicates that flooding of formerly mined areas that are not currently protected against 100-year flooding could provide benefits to the efforts to sustain riparian vegetation established in these areas. Periodic flooding of these areas would provide nutrients and provide fill in these areas. Adjacent areas proposed for mining would not be inundated by the 100-flood event; the separator height is significantly above the 100-year flood elevation to prevent flooding. Due to hydraulic conditions, controlled flooding of these areas would not, in the opinion of the engineers and engineering geologist, present significant potential for adverse erosion of the channel bank adjacent to the separator. This flooding would occur under existing conditions and would not, therefore, specifically require permitting by agencies with permitting authority for activities in the Cache Creek channel. However, all of these agencies are responsible agencies in the CEQA process and copies of the DEIR have been circulated to these agencies for their review. None of these agencies has submitted comments that the analysis or mitigation measures presented in the DEIR are inappropriate or conflict with their permitting authority.

It is important to point out that the text on Page 4.3-33 of the DEIR states "following discussions between the County and the applicant. . ., the applicant has proposed that the improvement (raising) of the levee not be implemented." The text clearly does not state that staff agreed to the proposal. Staff's formal recommendations will be made to the Planning Commission in the staff report for this project.

Response to Comment 4-59:

Caltrans was involved in reviewing the proposed project designs during their development. In a letter presented on page 7.2-19, the agency stated that the levee stability analyses and hydraulic analyses for the project met the agency's expectations. Caltrans also has provided comments on the OCMP EIR and this project DEIR. The agency did not specifically address the proposed requirement for biotechnical bank stabilization. However, Caltrans staff is aware of the issue from discussions with County staff and the applicant.

Response to Comment 4-60:

Please refer to Response to Comment 4-10. The Yolo County Flood Control and Water Conservation District has reviewed copies of the OCMP and CCRMP plans and EIRs, as well as copies of each project-level EIR. No response has been received.

Response to Comment 4-61:

As stated previously, this is not a new diversion structure, but bank protection. Regarding the acquisition of permits, please refer to Response to Comment 4-11. As stated previously, all of the agencies referred to by the commentor have received copies of the project-level EIRs.

Response to Comment 4-62:

Regarding the acquisition of permits, please refer to Response to Comment 4-11. Permits from state and federal agencies may be required for levee construction along Cache Creek, depending on the nature of the work to be performed.

Section 10-4.416 of the Off-Channel Mining Ordinance requires that flood protection features constructed at the mining areas not result in impacts to base flood levels at or near the project site. Without additional mitigation, raising the levee in the vicinity of the former mining area would channelize more flood waters during extreme events and increase downstream flooding. The applicant has the choice of designing a stable controlled flow inlet channel (which would not impact current or proposed mining areas) or provide the 100-year protection by raising the levees in conjunction with some other mitigation that would offset the potential increase in base flood elevations.

Response to Comment 4-63:

The commentor appears to have misunderstood the concept of the controlled flow inlet channel. No recharge basins are proposed. Please refer to Response to Comment 4-13. The reference to "retroactive obligations to reclaim the devastated area that will be permitted" is unclear. All mined areas under the OCMP will be reclaimed and the CCRMP will result in the creek's restoration, not devastation. The proposal would enhance existing riparian habitat, and provide channel stabilization. Please see Responses to Comments 4-13, 4-64, and 4-66.

Response to Comment 4-64:

The public was given the opportunity to comment on the applicant's proposal, with the release of the DEIR and the 45-day review period that followed. Additional opportunities will be given at the public hearings for this project. The applicant's proposal has been discussed with NHC consultants, who have agreed that it is consistent with the recommendation made in the Technical Studies.

Staff would also like to refer the commentor to page 31 of the U.S. Fish and Wildlife Service (USFWS) report included in the U.S. Army Corps of Engineers Reconnaissance Report for Cache Creek Environmental Restoration. It states:

> "In particular, some pits parallel the creek channel, and are separated from the channel by narrow raised berms. The habitat values of the riparian corridor may benefit by incorporating some of these mined areas into the floodplain of the stream corridor by partially or completely connecting the pits with the active stream floodplain. Potential habitat benefits include increasing the flooding frequency of the pits, increased silt and organic deposition by flood waters -- thus creating areas for establishment of willows, cottonwoods, oaks and other riparian plants, widening of the artificially narrow, entrenched reaches of the stream channel, and reduction of flow velocities under flood conditions."

Staff agrees with the assessment of the USFWS.

Response to Comment 4-65:

Silt basins have not been proposed as part of this project along the inboard side of existing levees. Along certain portions of the levees there are currently lowered surfaces subject to flooding; these areas currently have standing water following flooding events. The proposed project would not change this condition. Mosquito-generating habitat would be addressed by the Sacramento-Yolo Mosquito Abatement District. Regarding the design of "siltation basins," please refer to Response to Comment 4-13.

Response to Comment 4-66:

Please refer to Response to Comment 4-13. The area referred to has already been reclaimed and supports existing riparian vegetation. Construction of the levee would separate this area from the channel and create a hydraulic discontinuity. The controlled flow structure would allow floodwaters to continue to replenish this area and further enhance habitat, while minimizing potential erosion of the bank. As long as the area remains connected to the channel, siltation will continue to occur as it does now. The flow structure would be an erosion control measure only and would not alter the existing flow characteristics of the creek. Detailed plans of the structure will be submitted to the Floodplain Administrator, if this option is approved.

Response to Comment 4-67:

Please refer to Response to Comment 4-13.

Response to Comment 4-68:

Please refer to Response to Comment 4-13.

Response to Comment 4-69:

Please refer to Response to Comment 4-13.

Response to Comment 4-70:

The hydrology of the formerly mined areas would not be significantly changed if the controlled flow inlet channel were constructed. The channel would merely stabilize existing hydrologic conditions by stabilizing the bank and preventing erosion during overtopping events.

Response to Comment 4-71:

Significant dredge and/or fill would not likely be included in the construction of the controlled flow inlet channel. However, since the design has not yet been prepared, it is not possible to determine the extent of these operations. As stated previously (Response to Comment 4-11), the applicant would be responsible for obtaining all appropriate permits.

Response to Comment 4-72:

Please refer to Response to Comment 4-70.

Response to Comment 4-73:

The primary purpose of the controlled flow inlet channel would be to prevent erosion of the existing channel bank during high flows and overtopping events. Since the bank is higher than the formerly mined areas behind the bank, some water and sediment would be trapped behind the bank during overtopping. As stated by the commentor, the quantity of sediment is likely to be small since overtopping events will be infrequent and the amount of sediment in the water limited. Construction of the controlled flow inlet would not create a new "siltation basin."

Response to Comment 4-74:

The project does not require appropriation of additional water rights. Property ownership along a water body generally establishes riparian rights. The applicant currently owns property along the creek and uses groundwater for processing of aggregate and irrigation of agricultural lands.

Response to Comment 4-75:

Mitigation Measure 4.3-4d specifically states that the levee and channel bank inspections shall be conducted by a licensed engineer. Staff agrees that the reports should not accepted as complete by the County unless the report bears the signature and seal of the engineer responsible for the report. Mitigation Measure 4.3-4d also requires that remedial actions recommended in the annual report be completed by November 1.

Response to Comment 4-76:

The deed restriction recommended in Mitigation Measure 4.3-4e provides a legal mechanism for notification of all subsequent property owners of their responsibility to implement continued inspection and maintenance of levees and channel banks at the project site during the post-reclamation. The YCCDA, as the implementing agency, has the responsibility to ensure compliance with the monitoring and reporting requirements. Failure to comply would be a violation of Sec. 10-5.506 of the Surface Mining Reclamation Ordinance and the owner could be subject to administrative penalties described in Sec. 10-5.1210 of the Ordinance.

The County would ensure that the deed restriction is placed on the title by the operator. Once in place, it would be incorporated into future deeds automatically. There would be no need for the County to interfere with the transfer of title. Staff has consulted with attorneys familiar with real estate law, as suggested by the commentor.

Response to Comment 4-77:

The commentor is referred to Response to Comment 4-14. The commentor's point regarding the availability of willow mats and CDFG restrictions on cutting willows is noted for the record. It should be pointed out that these materials are not needed for all biotechnical slope stabilization measures and that these materials are not required by Mitigation Measure 4.3-4f or 4.3-4h.

Response to Comment 4-78:

The commentor is referred to Response to Comment 4-14. Biotechnical slope stabilization methods are commonly applied to projects which emphasize habitat restoration in river management projects. Staff has personally visited sites in Monterey and Alameda counties where biotechnical stabilization techniques have been effectively implemented. It should be noted that riprap is not readily available in Yolo County, nor is it inexpensive. Riprap and other "hard" engineering solutions also require frequent maintenance. The limitations of riprap were apparent at the north bank upstream of the Capay bridge during the March 1995 flood event.

Response to Comment 4-79:

Staff agrees that Caltrans should be specified as reviewing agency for the proposed bank stabilization design. In response to the comment, Text Change # 13 has been made.

Response to Comment 4-80:

The OCMP and OCMP EIR establish a performance standard that any modifications or raising of levees associated with the project cannot result in exacerbation of off-site flooding problems, including the north bank of Cache Creek near the site. The only activity proposed by the project that could impact off-site flooding conditions is the construction of the levee to protect Mining Areas III, V, and VI, as described in Mitigation Measure 4.3-4c. Preliminary hydraulic analysis indicates that raising of this levee would have minimal affects on flooding away from the site. However, prior to raising the levee, if that is the selected alternative, a hydraulic analysis prepared and signed by a licensed engineer, demonstrating that off-site flooding impacts would not be created, must be submitted to the County for review.

The requirement for three feet of freeboard on flood protection levees around the project site was rejected from the final OCMP. It was determined that potential downstream flooding could be exacerbated by this requirement. Please refer to Text Change # 12.

Response to Comment 4-81:

Staff agrees with the commentor that the agreement between the County and the applicant should provide a time limitation on participation in implementation of the CCIP. This would be accomplished through execution of the development agreement between the County

and the operator. The period for compliance with this mitigation measure, as with all mitigation measures for an approved project (unless otherwise noted), would be the length of the permit approval. In this case the permit period would be 30 years if the requested permit period is granted. Staff considers this period to be appropriate for reasonable implementation of the mitigation measure which assures the applicant's participation in the CCIP.

Response to Comment 4-82:

Staff does not agree that a determination by the Division of Safety of Dams (DSD) is necessary prior to completion of the development agreement required in Mitigation Measure 4.3-4i. The financial assurances for mining and reclamation are a separate matter. The financial assurances are regulated under SMARA and the County's Surface Mining Reclamation Ordinance. These regulations require annual adjustments of the financial assurances if significant changes in the labor or material costs for reclamation occur, and can be increased to include additional engineering projects.

Response to Comment 4-83:

On a relatively flat unpaved site, especially one that is subject to earthmoving (e.g. agricultural plowing and releveling, aggregate accumulation and relocation, scraping) it is often difficult to determine exactly which way storm water flows at each portion of the site from year to year. Based on review of recent topographic maps and interviews with site workers, storm water flows primarily eastward and northward.

Response to Comment 4-84:

The Hayes 1 supply well has been added to Figure 4.4-3. Please refer to Text Change #18.

Response to Comment 4-85:

Please refer to Response to Comment 4-15.

Response to Comment 4-86:

Please refer to Response to Comment 4-30.

Response to Comment 4-87:

Please refer to Response to Comment 4-16.

Response to Comment 4-88:

As referenced in Section 6.3 of the DEIR, Tony Lopes is the Manager of the Madison Service District. Mr. Lopes is in a position to know more about the Madison wells than

anyone else. He provided the preparers of the DEIR specific data on the location, construction, and pumping capacity of the Madison wells.

Response to Comment 4-89:

The commentor is correct that wells constructed with continuous sand or gravel packing in the annular space (space between casing and/or screen and side of the boring) could allow groundwater from various levels to enter the well. However, it does not change the EIR preparers' analysis that the Madison municipal wells would not be affected by the proposed project.

Response to Comment 4-90:

The commentor raises concerns regarding the potential for transport of human pathogens and viruses by waterfowl from sewage treatment facilities in proximity to the project site to mining pit lakes and infers a significant threat to public health. Staff and the preparers of the EIR do not agree that a significant threat to water quality is posed by the use of the lakes by waterfowl. It is expected that waterfowl within the area could be attracted to both the open oxidation ponds at the sewage treatment facilities and the mining pit lakes which would be created by the proposed project. Although ducks have been identified as potential carriers of human influenza viruses, the quantity of human pathogens that could adhere to the underside of a duck as it swims in the oxidation ponds would be extremely limited. The potential for the transmission of the pathogens by birds to the mining pit lakes would be reduced by dripping and evaporation of water on the birds during flight from the oxidation ponds to the lakes. Under these conditions, the potential for deactivation of viruses is increased over conditions within the sewage activation ponds. If pathogens were transported to and deposited in the lakes, the concentration of the pathogens would be expected to be very low, given the large volume of water in the lakes and the small volume of water transported to the pit by birds.

If pathogens were deposited in the lakes, the potential for human exposure to them would be minimal. Water contact recreation is not proposed by the project and fencing of the sites is required to keep trespassers out of the lakes. The potential for direct human contact with the ducks in the lakes or with lake water would, therefore, be minimized. Exposure could possibly occur through ingestion of groundwater affected by pathogens released in the lake. However, the potential for migration of pathogens to water supply wells is very low. The migration of the viruses would be limited by the physical filtration of particles contain pathogens and deactivation of the viruses within the aquifer.

Virtually all documented cases of viral contamination of groundwater are associated with septic tank effluent, discharge of sewage effluent, or other sources with high concentrations of raw human sewage. Recommended setback distances established by the USEPA for drinking water wells from suspected sources of pathogen contamination (generally applied to sources of raw sewage) are 100 to 400 feet (see OCMP EIR page 4.4-41). The California Well Standards require drinking water wells to be set back a minimum of 150 feet from cesspools or seepage pits to minimize the potential for

contamination of the wells. The potential risk of pathogen contamination is clearly lower for lakes visited by waterfowl than sources of sewage. As discussed in the EIR, there are no wells within 1,000 feet of the proposed wet pit mining areas, well beyond recommended setback distances from sewage sources.

Mr. Bruce Macler, the Manager of the Groundwater Disinfection Rule for the USEPA, was consulted during preparation of the OCMP EIR regarding the issue of potential biological contamination of the proposed mining pit lakes. Mr. Macler did not consider waterfowl flying from the sewage ponds to the mining pit lakes a significant source of pathogen transmission to drinking water. In his judgement, dilution and processes within the lake and filtering capability of the surrounding aquifer would provide treatment to remove any residual pathogens introduced by waterfowl.

Chlorination of treated wastewater by the City of Woodland is not specifically performed to reduce the potential transfer of pathogens by waterfowl. The chlorination is required for discharge of wastewater to surface waters to reduce the potential of direct human contact with wastewater that potentially contains pathogens.

Response to Comment 4-91:

Reference to a groundwater flow rate of a few feet per year was not made on page 4.4-14 of the DEIR. However, as described in the Technical Studies, this is the approximate seepage velocity of the ambient groundwater conditions in the planning area. In other words, this is the approximate rate of natural groundwater flow. Of course, variations occur within layers of the aquifer and based on proximity to the sand and gravels underlying Cache Creek. This is not a groundwater myth, but founded on the basic principle of Darcy's Law. When the hydraulic conductivity, gradient, and effective porosity of an aquifer are known, the seepage velocity can be determined by simple calculation. Tracer investigations can be useful, but require introduction of a foreign material (dyes, salts, radionuclides) into the potable aquifer, which may impact water quality.

Response to Comment 4-92:

Regarding the proximity of mining to municipal wells, please refer to Response to Comment 4-15. Regarding the vertical movement of the water table in response to pumping, the commentor is correct in stating that groundwater in the planning area could flow at a considerably faster rate when under stress from pumping. The regional ambient groundwater flow rate discussed in Response to Comment 4-91 of several feet per year is the approximate flow rate within the nonstressed aquifer (i.e., without pumping). Flow velocities increase exponentially with proximity to a pumping well. However, beyond the influence of pumping wells, groundwater flows under natural gradients at a rate ranging from one to ten feet per year. So many agricultural wells operate simultaneously during the irrigation season that a network of groundwater drawdown centers (cones of depression) are created, locally capturing groundwater around each well.

The commentor presents an estimate of the groundwater gradient based on water levels from two water supply wells. The period over which the change of elevation of water level dropped 19 feet in the unpumped well (Well #1) is not identified. Seasonal groundwater fluctuation of 10 to 20 feet is expected within the lower Cache Creek basin. In addition, it is not known if the groundwater level at the well is being influenced by pumping of wells that are not operated by the City. Finally, if the groundwater gradient (0.0019) estimated by the commentor is accurate, it would not be significantly different from the regional gradient (0.002) used to calculate the seepage velocity reported in the DEIR.

Response to Comment 4-93:

The commentor is correct that storage capacity of an aquifer is dependent on volume of void space (porosity). The backfill for the pits would consist of relatively well sorted fine sand and silty sand. The porosity of these poorly graded sediments would be higher than the well graded mixture of clay, silt, sand and gravel deposits of the aquifer. Therefore, groundwater storage capacity would be increased in the backfilled pits by the proposed project. The relationship of grain size and sorting to porosity and the relationship of porosity to storage capacity of an aquifer are basic and fundamental concepts used in hydrogeologic analysis. Evaporation from the backfilled pits would be inconsequential to the potential groundwater storage capacity. Water lost by evaporation would be replaced by groundwater flowing out of the aquifer and into the lake. The impact of evaporation was described in the discussion of Impact 4.4-2 of the DEIR.

Response to Comment 4-94:

The DEIR evaluated the potential impacts of infiltration of agricultural waters in the post-reclamation period (page 4.4-27). The preparers of the DEIR agree that infiltrating agricultural waters could result in migration of nitrates to the groundwater table. As indicated in Response to Comment 4-36, Mitigation Measure 4.4-4a of the DEIR requires monitoring of nitrate levels in groundwater. However, the preparers of the DEIR do not agree that the Solano agricultural operations have not been in existence long enough to provide valid information regarding the potential for nitrate problems. The commentor did not present any reasons for his opinion that the existing conditions at the Solano Concrete project site are not relevant.

Response to Comment 4-95:

Please refer to Response to Comment 4-80.

Response to Comment 4-96:

The impacts of evaporation from proposed mining pit lakes were evaluated in Impact 4.4-4 of the OCMP EIR which was certified on 30 July 1996. Calculation of the expected amount of evaporation (considering the lake surface and surrounding wetland habitat) from the mining pit lakes was presented. The OCMP EIR concluded that the cumulative loss of water through evaporation was a less-than-significant impact because the creation of the

lakes provide a beneficial use (wildlife habitat) of the water resources. The proposed project would contribute a portion of the cumulative evaporative loss described in the OCMP EIR. Staff does not consider it necessary to calculate the amount of evaporation associated with the project because the impact was found to be less-than-significant in the program-level EIR from which the project EIR is tiered.

The commentor presumably refers to Table 4.4-1 of the OCMP EIR in expression of the opinion that "a DWR general table on evapo-transpiration does not suffice for this site specific setting." The preparers of the EIR acknowledge that there may be variations in evaporation rates within microclimates within the area. Estimates of evaporation, however, are based on the best available information given the location of existing evaporation monitoring stations. The source presented in the OCMP EIR presents variation in evaporation rates within the Sacramento Valley and is, therefore, considered by the preparers of the EIR to be an appropriate and reliable source for estimates of evaporation at the project site.

Response to Comment 4-97:

Please refer to Response to Comment 4-28 for discussion of siltation of the mining pits. The application for the proposed project estimates the waste factor, on the basis of previous and current mining and processing, to be approximately 17 percent (exclusive of overburden). This waste was incorporated into volume calculations for the reclamation plans. The commentor is referred to Response to Comment 4-139 for a discussion of the appropriateness of hydrogeologic modeling.

Response to Comment 4-98:

Please refer to Responses to Comments 1-15, 4-39, and 4-90. Please also refer to Responses to Comments 1-15 and 4-39 for discussion of proximity of the project to the Madison Migrant Center and 4-90 for discussion of water quality impacts related to waterfowl. The land at the Migrant Center is owned by the County and the Center is managed by the Yolo County Housing Authority. The potential water quality and public health safety impacts of the proposed project were described in the OCMP EIR and the EIR for the proposed project. These documents were reviewed by the County and state agencies responsible for protection of water resources and public health. Staff is not aware of any requirements for federal agency review of the proposed project.

Response to Comment 4-99:

Please refer to Response to Comment 4-19 for a discussion of the potential hazards of open pits. Section 24400 of the State Health & Safety Code requires abandoned excavations to be fenced to protect trespassers. No slope or sign requirements are imposed, nor are any specifics made as to the type of fencing required. By requiring reclamation, as well as 2:1 slopes and posted signs, the EIR exceeds state requirements.

Response to Comment 4-100:

This Mitigation Measure was deleted (see Text Change # 22) in response to the adopted OCMP.

Response to Comment 4-101:

Please refer to Response to Comment 4-7. The comment implies that water usage for native vegetation is inappropriate. This position, if correctly interpreted, is at odds with the adopted OCMP and CCRMP.

Response to Comment 4-102:

Please refer to Response to Comment 4-90.

Response to Comment 4-103:

The application for the project does not propose use of biosolids at the project site. The commentor is correct in noting that there is no County ordinance regulating biosolid application at this time, although one is in the process of being developed. Therefore, speculation on potential future biosolid application in areas outside the project site in this EIR would not be appropriate. Control of dust generation from biosolid application away from the site should be evaluated by environmental analysis of these types of operations.

Response to Comment 4-104:

Please refer to Response to Comment 4-103.

Response to Comment 4-105:

Please refer to Response to Comment 4-36.

Response to Comment 4-106:

Please refer to Response to Comment 4-19 for a discussion of the issues contained in this comment.

Response to Comment 4-107:

Regarding the likelihood of advanced eutrophication to occur in the wet pit lakes, please refer to Response to Comment 4-30. Regarding biological material forming an effective barrier to water flow through a wet pit wall, please refer to Response to Comment 4-28.

Response to Comment 4-108:

The commentor notes that "algae is already present" in the existing Solano wet pit. This is to be expected since essentially all untreated surface water contain measurable amounts of algae. The fact that Lake Tahoe has experienced a reduction in clarity is not directly relevant to this project. Lake Tahoe receives runoff and groundwater flow with a significant nutrient load from a relatively large multi-use watershed area. Major contributors to nutrient loading of Lake Tahoe that would not be present at the proposed project site include sewage effluent, industrial discharge, agricultural drainage, and urban runoff. Similarly, the UCB project reported by the commentor was conducted under conditions vastly different from the proposed project. Algae growth is enhanced in shallow warm water; the project proposes deep steep-sided wet pit lakes. For further discussion regarding the likelihood for advanced eutrophication to occur, please refer to Response to Comment 4-30.

Response to Comment 4-109:

Please refer to Responses to Comment 4-28 and 4-30.

Response to Comment 4-110:

Mr. Bruce Macler, Manager of the Groundwater Disinfection Rule, US Environmental Protection Agency (USEPA), was contacted during preparation of the OCMP EIR and subsequently during preparation of this EIR to discuss the potential impacts on water quality impacts related to subsurface water supplies. Mr. Macler is responsible for management of the group of groundwater specialists and health professionals working on development of guidelines and requirements for testing of the water quality of water supply systems which use groundwater.

The commentor is correct in indicating that communications between Mr. Macler and the DEIR consultants did not specifically address the location of the sewage treatment facilities for the town of Esparto and Madison relative to the location of the proposed mining areas. However, in subsequent conversations with Bruce Macler of the U.S. EPA, he stated that, in his opinion, the threat to water quality posed from waterfowl migration from the sewage ponds to the proposed mining pit lakes was essentially nonexistent. See also Responses to Comments 4-90 and 4-112.

Response to Comment 4-111:

Please see Responses to Comments 1-15, 4-39, and 4-90.

Response to Comment 4-112:

The commentor's opinion regarding the qualifications of federal, state, and private practice environmental professionals is noted for the record. Staff does not agree with the commentor's position that licensing of a professional in any specific state is a direct

indication of the level of expertise of the individual in the field in which they practice. Many recognized experts, including federal and state agency employees and university professors do not hold licenses in their professions. Some of these professionals provide expert testimony in public hearings and courts of law. The reasons that these individuals choose to become or not become licensed is a personal decision. Professional licensing is only required in California for certain types of activities controlled by specific regulations.

Staff does not agree that information or opinions on public health issues must be obtained for a "properly licensed state official". Numerous authorities on groundwater and surface water quality are not employees of the state and exclusion of such experts is not sensible. The commentor does not specify the licensing to which he is referring. The commentor may be referring to California registered environmental health specialists (formerly called registered sanitarians). Registration as an environmental health specialist does not demonstrate expertise in determination of water quality impacts.

Finally, Mr. Bruce Macler was not contacted as a local expert in environmental conditions in Yolo County nor as a limnologist. Mr. Macler was contacted to provide the perspective of an expert involved in the development of federal standards for analysis and management of drinking water supplies. Staff considers Mr. Macler's position as manager of the Groundwater Disinfection Rule as suitable for qualifying him as an expert in addressing issues regarding potential sources of contamination to drinking water supplies. Mr. Macler's familiarity with the cited reference (a general report published in 1968) is irrelevant. It is noted by staff that the Director of Yolo County Department of Public Health (the local agency responsible for public health protection) has reviewed and commented on the water quality monitoring programs which were developed in the OCMP EIR and incorporated into its implementing ordinances. The Director has judged the proposed water quality and public health protection mitigations to be acceptable.

Response to Comment 4-113:

Staff emphatically disagrees with the commentor's conclusion that mitigation measures presented in the DEIR were based on "scraps of conversations with various individuals". The bibliography and listing of persons contacted presented in Chapter 6 of the DEIR is formidable. The accusation presented in the comment is not substantiated by any evidence other than that addressed in Comments 4-110 and 4-112. The commentor may not be aware of the need to draw from current information or site-specific knowledge during evaluation of impacts of a project. Many times, this information is not finalized or published. The DEIR preparers made the effort to contact identifiable authorities in certain issue areas to obtain additional information. This is common practice during preparation of EIRs which require description of existing conditions, conditions which may not be accurately characterized by published data.

Response to Comment 4-114:

Regarding the waterfowl as a potential pathogen source, please refer to Response to Comment 4-90. Regarding the qualifications of the preparers of the DEIR, please refer to Response to Comment 4-152.

Response to Comment 4-115:

Please refer to Responses to Comment 4-36.

Response to Comment 4-116:

Staff does not agree that the description of bioaccumulation of mercury is "inadequate and only partially correct." Information requested in the comment regarding the characteristics and environmental hazards were summarized in the discussion of bioaccumulation of mercury presented in the analysis of Impact 4.4-4 of the DEIR. As indicated in the DEIR, a more detailed discussion of bioaccumulation of mercury is presented in the OCMP EIR.

The commentor is correct in asserting that the results of testing of fish samples collected in the existing Solano Concrete Company mining pit lakes indicate that bioaccumulation of methylmercury is occurring. The commentor is also correct in pointing out that the levels of mercury in fish from the lakes are comparable to the levels in fish collected from Cache Creek. The mercury levels in fish from the lakes and creek are lower than the current FDA fish advisory criterion (1.0 mg/kg); some of the levels are higher than the fish consumption level (0.5 mg/kg) recommended by the National Academy of Sciences in 1973. Similar levels of mercury have resulted in the issuance of fish consumption advisories by the California Department of Fish and Game (CDFG) for Clear Lake and San Francisco Bay. CDFG has not issued a fish consumption advisory for Cache Creek.

Mitigation Measure 4.4-3a of the OCMP EIR directly addresses the potential for methylmercury production in the mining pit lakes, requires monitoring of mercury levels in mining pit lakes, and presents specific mitigation measures for potential accumulation of methylmercury. The provisions of this mitigation measure also provide recommendations to post warnings at the mining pit lakes in the event of issuance of a fish warning based on required mercury testing in fish in the lake and the creek. Although the mining pit lakes could be attractive to fishermen, unauthorized persons using the lake and defying security provided by required fencing and gates would be doing so in violation of trespassing laws. Mitigation Measure 4.4-4a of the project level DEIR tiers off of the OCMP requirements. Staff considers these precautions to be appropriate mitigation of the potential exposure of people to biota affected by mercury within the lake environments.

The measure includes provisions for remediation to ensure protection of the public. In addition, the OCMP has instituted a maintenance and remediation fund for addressing any long-term problems that may occur.

Response to Comment 4-117:

Although the application for mining submitted for this project does not specify that any of the mining pit lakes would be used for agricultural water supply, the preparers of the DEIR are aware of no regulations prohibiting this activity. It is unlikely that such a practice would be cost beneficial or logistically advantageous. Since irrigation wells are already located throughout the site and provide adequate flow and distribution, it is difficult to understand why new capital expenditures would be made to draw water from the wet pit lakes. Assuming the irrigation wells are drawing from the uppermost groundwater, lift requirements would be approximately equivalent (since the aquifer is largely unconfined, groundwater and surface water elevations would be approximately the same). It is also unclear why pumping from a pit would have any different hydrological effects than pumping from an irrigation well. The impacts on water levels would be similar.

Response to Comment 4-118:

Provided the alteration to runoff patterns does not result a significant increase in discharge quantity or decrease in quality, the applicant can make alterations to runoff patterns without specific permits. The CEQA process acts as a review of potential environmental impacts. Quantity of storm water discharges from the site would decrease under the proposed project since internally drained lowered surfaces and lakes would be created. Storm water quality at industrial facilities is regulated under the Clean Water Act, which requires site inspections and runoff quality monitoring. The gated culvert was evaluated in the EIR for the short-term mining permit for Solano Concrete and has already been installed, in accordance with the existing Streambed Alteration Agreement. The applicant is currently in compliance with these regulations.

Response to Comment 4-119:

During mining, the applicant proposes, consistent with the OCMP, to segregate the upper organic-rich topsoil (A-horizon), subsoil (B-horizon), and undifferentiated overburden soil (C-horizon) overburden material. Backfill for the mining pits to be placed below the water level in the pits would be restricted to C-horizon soils. Topsoil would be reserved for placement at the surface of reclaimed lands (i.e. above the water level). These proposed mining and reclamation practices are described in Section 3.4 of the DEIR.

Response to Comment 4-120:

The discussion of Impact 4.5-2 on page 4.5-15 describes the improvement of approximately 90 acres of Class III and IV soils at the project site. The applicant would be required to identify additional offset for permanent conversion of 162 affected prime farmland for offset, as a condition of approval.

Response to Comment 4-121:

Mitigation Measure 4.5-2 requires the individual aggregate mining applications to comply with Mitigation Measure 4.5-2 in the OCMP EIR, which in turn requires a 1:1 replacement of prime agricultural lands lost to slopes or other non-agricultural uses. The replacement can be provided by placing conservation easements on prime lands. Although agricultural lands not under protective easement are already zoned for agricultural uses, as the commentor notes, the lands could be rezoned for other uses. The effect of placing conservation easements on prime lands would be to ensure that the lands would be protected from urbanization in perpetuity.

Response to Comment 4-122:

The comment suggests that the offset for permanent loss of prime farmland must occur at the project site. This is not required by Mitigation Measure 4.5-2a. The offset could be met by improvements in areas without available water.

The requirement for the 1:1 offset for the permanent loss of prime agricultural land is a mitigation measure for the proposed project. Mitigation Measure 4.5-2a provides for options for meeting this measure. The applicant would be required to demonstrate compliance with this mitigation measure as a condition of approval. This measure is widely used by many jurisdictions, including Yolo County and the City of Davis, in order to offset impacts to agriculture.

Response to Comment 4-123:

Historical crop production on lands within the project boundary is discussed on page 4.5-2 of the DEIR. The discussion under Impact 4.5-2 notes that the reclamation plan for the project proposes to mix soils to reduce the current adverse effects of clayey soils and low permeability. The productivity of the reclaimed lands would be monitored annually to ensure that the crop yields are equal to or better than the historic crop yields on the site, as required by the OCMP and the implementing ordinances, and SMARA.

Response to Comment 4-124:

Potential impacts associated with increases in energy use as a result of project implementation was not included in this DEIR. The Initial Study for the OCMP EIR found that energy was not an area of potential significant impacts. This project DEIR tiers off the OCMP Program EIR and is part of the projects evaluated in the OCMP EIR. The OCMP EIR notes (page 5-7) the "The OCMP would result in the irretrievable commitment of energy resources (primarily in the form of fossil fuels, including fuel oil, natural gas, and gasoline for automobiles, trucks, and construction equipment) to fuel mining, processing, and subsequent reclamation activities." Response to Comment 13-170 in the OCMP EIR discusses this issue and did not find it to be a significant concern.

Response to Comment 4-125:

The DEIR did not address the issue of forest fire hazards associated with tree crops or habitat areas because the issue was not identified as a potentially significant environmental impact in the OCMP EIR. The potential for increased fire danger due to the planting of poplars and other tree crops in place of row crops, or the creation of habitat, is expected to be low. No local fire districts or other public agencies have raised concerns about the issue during the review of the OCMP. The project proposes planting of poplars as a tree crop, not eucalyptus, which could present a more significant fire hazard. Eucalyptus produces an oil that is highly flammable. In addition, the bark of eucalyptus peels producing fuel for ground fires. Frost damage can produce significant dead wood. Poplars are deciduous and not susceptible to frost damage. Shading provided by the canopy of a plantation reduces understory growth and limits the development of lower branches, reducing potential for fire.

The potential fire hazards associated with poplars would be similar to those posed by similar trees within the riparian corridor along Cache Creek or an orchard crop. Although fire could result in damage to the tree crops, the project does not present significant sources of ignition. In addition, fire within the tree crop areas would not present an increased danger to the structures or project improvements. Poplar trees would also be harvested on a five-year schedule, since they mature much quicker than species such as eucalyptus.

Response to Comment 4-126:

The DEIR discusses the tree crops proposed by the applicant on page 4.5-20. In addition, the viability of tree crop agriculture within the project site boundaries was evaluated in the EIR for the Solano Concrete Short-Term, Off-Channel Mining Permit Application (BASELINE, 1995). No major pest problems have been reported as linked to hybrid poplar plantations. Pesticide and herbicide treatments are not typically required for these crops. The Surface Mining and Reclamation Act (SMARA) requires that reclamation of agricultural land shall be deemed complete when productive capability of the reclaimed land is equivalent to or exceeds, for two consecutive crop years, that of the pre-mining condition. After reclamation is deemed complete, the reclaimed land is considered capable of maintaining production. Continued production of agricultural crops is then the prerogative of the land owner.

The "warranty" to which the comment refers is not clear. Regarding the issue of fire hazards of tree crops, see Response to Comment 4-125, above.

Response to Comment 4-127:

The DEIR requires, in compliance with Mitigation Measure 4.4-8a of the OCMP, that the applicant demonstrate the location of the average seasonal high groundwater level. The possible changes in conditions that would cause significant difference in groundwater levels (e.g., change in climate, construction of dam, increases or decreases in agricultural

use of groundwater) would be speculative. Also, please refer to Response to Comment 4-23.

Response to Comment 4-128:

The tree crop plantations proposed at the project site would provide similar habitat for birds as the riparian corridor for Cache Creek. Existing vegetation does not present a significant pest population for adjacent row crops. If adverse populations develop, non-destructive mitigations are available to discourage habitation in the plantation. The commentor's remarks regarding bird populations and control are noted for the record.

Response to Comment 4-129:

The issue of whether the economic revenue over a ten year period from tree crop production versus conventional row crop production has not been investigated in the OCMP EIR or in this DEIR. The California Environmental Quality Act (CEQA) requires an analysis of environmental, not economic impacts. Also see Response to Comment 4-22. For comparison of the tree crop gross income per acre versus other crops produced in Yolo County, please refer to Attachment K of the 10 July 1996 staff report to the Planning Commission. The areas reclaimed to tree crop uses would be backfilled with processing fines and overburden.

Response to Comment 4-130:

Please refer to Response to Comment 4-28.

Response to Comment 4-131:

Staff acknowledges that the dragline process requires buckets with cutting teeth, which facilitate excavation. However, staff does not agree with the commentor's reference to "suction" as a part of this process.

Response to Comment 4-132:

Portions of the side slopes above the water level would be excavated by scrapers and bulldozer, not by draglines as inferred in the comment. Although the exposed soil and sediment could be eroded, Mitigation Measure 4.3-2a requires that erosion control be established by November 1, the beginning of the rainy season. This mitigation would reduce the potential for erosion to a less-than-significant level.

Response to Comment 4-133:

Staff agrees with the commentor that revegetation of mining and reclamation slopes could present challenges in the control of erosion. Mitigation Measure 4.3-2a of the DEIR requires implementation of performance standards for erosion control contained in Section 10-5.508 of the Surface Mining Reclamation Ordinance. These performance standards

require that the required slope cover be established on reclaimed slopes prior to November 1 in areas where mining of materials above the groundwater table has been completed. Alternatively, erosion control is required. Annual inspection of mining and reclamation slopes by a qualified professional for erosion problems is required by Section 10-5.506 of the Surface Mining Reclamation Ordinance. In addition, Section 10-5.1202 of the Ordinance requires annual inspection of all mining operations. These inspections and resulting requirements for corrective action will ensure identification of conditions related to erosion which are not in compliance with the provisions of the Ordinance.

Staff does not agree that the comparison of cultivation of grain crops in the Dunnigan Hills is relevant to the discussion of revegetation of mining and reclamation slopes. Moisture requirements for these crops is typically higher than those for grass cover. A more appropriate comparison would be for open space/rangeland vegetation in the area. Once established, this vegetation provides ground cover without irrigation or maintenance.

Response to Comment 4-134:

As discussed in the Response to Comment 4-133, the applicant is required to establish vegetation on the mining and reclamation slopes or provide alternate erosion control prior to November 1. Failure to control significant erosion would result in a violation of the mining permits. The DEIR neither requires nor prohibits the practice of hydro-seeding, as this practice may or may not be effective in establishing the required vegetation. As pointed out by the commentor, reseeding of the slopes does not ensure the establishment of the vegetation. Therefore, the requirement of annual reseeding, suggested by the commentor, is not superior to the Yolo County's requirements for the proposed project.

Response to Comment 4-135:

Please refer to Response to Comment 4-28 for a discussion of the potential for siltation during mining. The commentor is generally correct in pointing out that the proposed mining pits will extend to the depth of the top of the bottom clay. The accumulation of fine-grained sediments at the bottom of the completed mining pit would not significantly reduce the permeability of this stratum.

Response to Comment 4-136:

The commentor is referred to Response to Comment 4-51 for a discussion of wave action erosion and related sediment production and deposition.

Response to Comment 4-137:

Please refer to Response to Comment 4-28. Staff and the preparers of the DEIR do not agree with the commentor's suggestion that the accumulation of biological sludge in percolation ponds, used to treat cannery waste, is comparable to the biological material which could be expected in the proposed mining pit lakes. The loading and treatment of processing waste from a cannery would be expected to develop significant amounts of

sludge which would affect the performance of the percolation ponds. A comparison of the mining pit lakes to the existing Solano Concrete lakes or similar mining pit lakes is more appropriate.

Response to Comment 4-138:

The EIR preparers include Registered Geologists and a Certified Hydrogeologist with experience in conducting groundwater investigations and contamination remediation. The commentor is referred to Response to Comment 4-152.

Response to Comment 4-139:

The hydrogeologic modeling conducted for the Technical Studies was performed by respected and qualified professionals. In the judgement of these professionals, clogging of the pit walls and pit bottoms would not occur to the degree described by the commentor (please refer to Response to Comment 4-109). The modeling was applied to the analysis of the completely backfilled mining pits. This scenario would represent more restricted flow conditions than those described by the commentor and demonstrated that flow conditions and groundwater levels would be affected only very near the backfilled pits. For example, a 135-acre pit excavated and backfilled to a depth of 80 feet would result in approximately one foot of groundwater level lowering 570 feet downgradient of the simulated pit. One foot of groundwater elevation change at this distance (and therefore less change further from the pit) would not be considered significant under most circumstances. These modeling results were considered when developing mitigation measures presented in the OCMP EIR and the project level EIRs.

Response to Comment 4-140:

The discussion of potential impacts of the creation and backfilling of mining pits was discussed in Impact 4.4-5 of the DEIR. Whereas the filling of the pits would be expected to result in groundwater levels in the area adjacent to the pits. No wells are located within 1,000 feet of the pits. Therefore, no wells would be adversely impacted by localized changes in the vicinity of the pits. The Technical Studies for the CCRMP and the EIR for the OCMP concluded that wells located greater than 1,000 feet from filled mining pits would not be significantly affected by expected groundwater flow changes caused by the pits. This determination was made by qualified hydrogeologists on the basis of data on the characteristics of the aquifer and site-specific information on groundwater conditions, including those in the vicinity of formerly mined and backfilled pits at the project site.

Response to Comment 4-141:

The presence of habitat features in the surrounding regional environment, such as the Madison and Esparto sewage oxidation ponds located west of I-505, livestock reservoirs in the Dunnigan Hills to the north, and vegetated irrigation canals in the project vicinity, are noted for the record. The importance of some of these features was recognized in the OCMP EIR. With the exception of the proposed relocation of approximately 1,000 linear

feet of the drainage ditch in the southeastern portion of the site, discussed on page 4.6-43 of the DEIR, none of these features would be directly affected by proposed mining activities, and because no significant impacts would occur, they were not identified in the DEIR.

Response to Comment 4-142:

The concerns of the commentor regarding the number of species identified for grassland habitat on the site is noted for the record. The species identified in the discussion on page 4.6-7 of the DEIR were intended to simply characterize the grassland habitat, not provide an exhaustive list of all grassland plant species on the site. More detailed lists of plant species occurring on the site are contained in the Vegetation and Wildlife Analysis prepared by the applicant's biologist, and referenced on page 4.6-1 of the DEIR.

Response to Comment 4-143:

The commentor has correctly identified a typographical error. The text of the DEIR has been changed accordingly in Text Change # 30.

Response to Comment 4-144:

The commentor is referred to Response to Comment 4-24.

Response to Comment 4-145:

The project site does not currently include, nor does the project propose, a transit-mix concrete plant.

Response to Comment 4-146:

Any increase in truck emissions related to the vertical lift from reclaimed agricultural surfaces would be off-set by the reduced emissions from the same vehicles driving down to the agricultural surfaces. Vehicles hauling agricultural products from the reclaimed surfaces would be a minor and intermittent source of pollutants.

Response to Comment 4-147:

Pollutant stratification is not a potentially significant impact for the proposed project. This issue was addressed in the OCMP EIR (Response to Comment 13-176).

Response to Comment 4-148:

The DEIR, page 4.12-1, lists four items as being a public health concern. The third item is drowning hazards to the public due to steep pit slopes. The commentor suggests that we erroneously omitted accidents from bicycles, hiking, motorcycles, ATMs [*sic*] associated

with on-site slopes. Access roads to the mining areas would be gated and signs posted to indicate that the site is restricted. The mining areas would be fenced as well.

Response to Comment 4-149:

Please refer to Response to Comment 4-19. The views of the commentor regarding child care practices as related to ethnic background are not relevant CEQA issues. The comments regarding the County's legal obligations and the ability of the local school districts to provide for swimming pools are noted for the record.

Response to Comment 4-150:

The views of the commentor regarding the ability to read as related to ethnic background are not relevant CEQA issues. Please refer to Response to Comment 4-19.

Response to Comment 4-151:

CEQA requires an evaluation of a project's impact on public services. The Initial Study prepared for this project concluded that the project would not create any foreseeable increase in the need for fire or sheriff equipment or personnel. OCMP requirements for signage and fencing, in combination with lake design, would sufficiently mitigate impacts related to hazards of drowning. It should be noted that the existing Solano Concrete wet pit mine has been in operation for 15 years in general proximity to Madison and the Migrant Center without any reported drownings or other accidents involving trespassers. Therefore, there is not expected to be a significant increase in demand on emergency services related to drowning.

Response to Comment 4-152:

The DEIR preparers are listed in Chapter 6 of the DEIR. The state guidelines for preparers of EIRs are identified in the CEQA Guidelines Section 15142: " The EIR shall be prepared using an interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the consideration of qualitative as well as quantitative factors. The interdisciplinary analysis shall be conducted by competent individuals, but no single discipline shall be designated or required to undertake this analysis." The preparers of the DEIR far exceed the qualifications requirements of the CEQA Guidelines. Neither staff nor the EIR preparers have committed any infractions of the registration law and are available to respond to any concerns that the California Board of Registration may offer.

Response to Comment 4-153:

The views of the commentor regarding family size and literacy as related to ethnic background are not relevant CEQA issues. Neither CEQA statutes nor Guidelines require the preparation of an EIR in a language other than English. This has been supported in litigation, though the decision was not published. Under State law English is the official language; non-English requirements are very few and must be expressly authorized.

The County has received no requests for bilingual meetings.

Response to Comment 4-154:

The commentor's explanation of slopes is appreciated. Please refer to Response to Comment 4-19 for a discussion of design of the wet pits and potential safety hazards.

LETTER #5

THE LEAGUE OF WOMEN VOTERS OF WOODLAND

P. O. Box 2463, Woodland, CA 95776

1121 West Street
Woodland, CA 95695
July 18, 1996

To: David Morrison and Heidi Tschudin
Yolo County Planning Department

Subject: Specific comments on Solano Concrete Long-term Off-channel Mining Permit Application

The following are the specific comments of the League of Women Voters of Woodland.

The League does not believe it is legal for the Solano Concrete application to be able to "tier" off of the Off-Channel mining plan. The OCMP has not been adopted by any official body. At the County Planning Commission meeting on July 10, the vote for accepting the plan was deadlocked 2 to 2. This results in a negative recommendation to be taken to the Board of Supervisors. The other document referenced in the Solano application is the Cache Creek Resources Management Plan (CCRMP) and this will not even appear before the Planning Commission for action until July 24. Therefore, this application is "tiering" off of two plans which have no official status yet. How can this be consistent with CEQA? 5-1

Ever since the schedule for these off-channel mining plans was released last fall, the League has maintained that the five specific long-term applications should not be considered until the OCMP, the CCRMP , the long term ordinances and reclamation plans are in place. 5-2

It appears that Solano Concrete is asking for a benefit for land in the Williamson Act that is not available to farmers. The Williamson Act was created to protect farmland and any farmer asking to have his land taken out of this Act without waiting for the 10 year period would have to pay the back taxes for the land as it would have been normally assessed, without Williamson. The League understands the Board of Supervisors has not looked too kindly on such requests.

Yet if the zoning changes are adopted as requested in the OCMP, and recommended by staff, Solano will be able to mine on Williamson land without any penalty at all. If the request and recommendation is adopted, it would appear to give the mining industry a great financial advantage, not enjoyed by the farming industry in Yolo County.. The complaint is frequently heard that this County is very short of tax revenues. If the Board of Supervisors is indeed this short of funds, they 5-3

will not approve this recommendation.

The staff report available for the June 26, 1996, meeting of the County Planning Commission listed the approvals necessary for each long term application to be accepted. A development aggreement was listed as a necessary component of each plan. But such a development agreememt was not available. There is none available in the DEIR for Solano's long -term application. Therefore, the public has been denied the opportunity to comment on such an agreement. 5-4

For such an agreement to be in effect, the County must first adopt a so-called "generic" aggreement. That agreement, in the form of an ordinance, was not available to the public until July 3, and then only to those of us who made an effort to go to the County Development Agency and pick up the staff report documents for the July 10 Planning Commission meeting on the OCMP. There was no discussion of such an agreement by the Planning Commission because the Commission deadlocked 2 to 2 to deny the OCMP project, and therefore, never considered the recommended action. 5-5

The public has had no opportunity to make specific comments on any development agreement. The League submits that the development agreements have never been subjected to CEQA review and that is a requirement before they can be adopted.

This is in direct contrast to the manner in which the off-channel mining ordinance has been presented. It came out last fall with the first draft of the Off-channel Mining Plan, and the zoning changes, and was thus available for pulic scrutiny. How can we comment when we haven't seen Solano's Development Agreement to know what should be in their final agreement? Similarily the Department of Fish and Game, and the Department of Conservation have had no opportunity to comment. 5-6

For example, if it is appropriate to have the net benefits that Solano Concrete's proposal would provide, spelled out in the July 10 Planning Commission staff report, why aren't these benefits specifically spelled out in this DEIR document to clarify the section 201(a)of a draft model Development Agreement.? Because the adoption of this development agreement will be a legislative act, the Lead Agency can specify the kinds of public benefits which will accrue, as well as the restrictions. This DEIR is totally vague about the specifics that Solano's agreement will contain, and thus leaves far too much to the discretion of the Board of Supervisors, without adequate information on which to base their decision. 5-7

Solano's DEIR has also not discussed a reasonable array of alternatives 5-8

to the proposed project, as required by CEQA. While they have listed two shallow mining alternatives neither of them goes any deeper than ten feet above the seasonal high groundwater level. Therefore, the proposed project concludes they do not offer enough gravel to be feasible. According to the chart on 4.4-5 mining that went to the average high groundwater level would allow for twenty feet of mining thus producing about twice the amount of gravel. 5-8

Such an alternative would have been reasonable and could have been seriously considered.

It would not preclude extraction of resources at some later date. It would not create permanent lakes and leave the threat of contamination with all the monitoring aspects. It would continue employment of 14 people. It would be consistent with the agricultural policies of the Yolo County Resource Conservation District since lands would be reclaimed to agriculture. Pit capture would be minimized. Direct release of hazardous materials, accidents on pit slopes,and mosquite breeding in the open pits would not occur 5-9

The topography of Solano's mining site is different from that of the other mining sites. Was that taken into consideration? What calculations and figures were used to arrive at Solano's mining allocation? 5-10 5-11

The League believes the DEIR is deficient in that it mas not complied with CEQA in producing the reasonable array of alternatives required. 5-12

Patricia Murray
Patricia Murray, Co-president

(not available for signature)
B.j. Ford, Co-president

Lois V. Linford
Lois V. Linford, Natural Resources Chair

LETTER 5: THE LEAGUE OF WOMEN VOTERS OF WOODLAND

Response to Comment 5-1:

Thank you for your correspondence. Staff disagrees with the commentor's opinion that the tiering of the proposed project from the program-level EIRs for the OCMP and CCRMP is inconsistent with CEQA. Under CEQA, tiering is strongly encouraged to avoid repetitive discussion of the same issues in successive EIRs, and to allow successive EIRs to concentrate on environmental effects that can be mitigated or avoided in connection with the decision on each later project. The schedule and process of staggered evaluation of the OCMP, CCRMP, and long-term mining applications were established by the Board of Supervisors in 1994. In evaluating the program-level EIRs first, significant environmental impacts associated with off-channel mining were addressed and underwent extensive public review. The analysis of those general environmental impacts were incorporated into the evaluation of the proposed project to ensure compliance of the project with the OCMP and CCRMP. The DEIR is very clear on its relationship with the OCMP program EIR. The environmental impact analysis and development of mitigation measures presented in this DEIR are contingent on approval of the OCMP and CCRMP, their implementing ordinances, and the environmental analysis presented in the EIR reports for each of these two program-level projects. The EIRs for the OCMP and CCRMP were certified on 30 July 1996 and 20 August 1996, respectively, and the Plans were adopted on those dates as well.

Response to Comment 5-2:

The direction of the Board of Supervisors is generally consistent with this comment. The subject application will not be considered until 13 and 14 November 1996. The plans and ordinances are "in place" as of 30 July 1996 and 20 August 1996.

Response to Comment 5-3:

The commentor is correct that adoption of the OCMP resulted in changes to the Yolo County Zoning Ordinance that would allow mining of lands under active Williamson Act contract, consistent with state requirements. The legislative intent of the Land Conservation Act of 1965 (the Williamson Act) is to conserve open space lands for agricultural, wildlife habitat, and other compatible open space uses. The Williamson Act requires payment of a large financial penalty if a landowner requests cancellation of the contract, and the County agrees to the cancellation. A request for cancellation of a Williamson Act contract usually occurs when the land is planned for immediate conversion to intensive urban uses such as a residential subdivision.

Under state law, aggregate mining is a compatible open space use, and cancellation of contracts is not required in order to mine agricultural lands, provided certain conditions and findings are met. The most recent legislative amendments to the Williamson Act, which are discussed on page 4.2-8 of the DEIR, specifically allow jurisdictions to find that aggregate mining is a compatible use under the Act. The proposed zoning changes in the

OCMP area would allow mining on contracted lands, consistent with the requirements of State law which requires that mined lands designated as prime farmlands be returned to agricultural production. Mined areas on non-prime farmlands could be returned to open space uses. There is no financial "benefit" that applies to the aggregate industry and not to the agricultural industry. In fact, approved mining operations would be taxed on the full entitlement for mining operations during the mining period, irrespective of any Williamson Act contracts held on the project site. The property taxes would be applied on the basis of the tonnage of gravel entitled for mining. As the entitled tonnage diminishes during the period of mining and land reverts to open space or agricultural use, the property taxes would be adjusted accordingly on an annual basis.

Furthermore, in order to comply with Williamson Act requirements, Solano Concrete has filed Notices of Nonrenewal for all parcels within the project site. These contracts will expire before mining begins (except for Kaupke which will be returned to agricultural production). Once the contracts expire, property will be taxed at its full assessment.

Response to Comment 5-4:

The intent of the County and the aggregate applicants is to negotiate a development agreement for each separate long-term mining and reclamation plan that is approved. The development agreement will contain financial and other commitments between the County and the applicant, based on the mitigation measures that are adopted from the EIR and the conditions of approval that are attached to the approved use permit. Under State law enabling local jurisdictions to adopt development agreements, one public hearing on the development agreement must be held at the Board of Supervisors. Action by the Planning Commission to approve, or recommend approval of, the development agreement is not required, although the County's newly enacted ordinance does so require. Regarding the Solano project, a draft development agreement will be considered by the Planning Commission at their November 13, 1996 meeting, after the election. The Board of Supervisors will hear the development agreement on November 26, 1996. Please also refer to Text Change # 9.

Response to Comment 5-5:

The comments regarding the lack of time for the public to review the proposed "generic" development agreement ordinance are noted. As has been explained, the County has <u>not</u> adopted any development agreements, generic or otherwise. The County did adopt an enabling ordinance on 30 July 1996. As the agreements are formulated, they will not contain any actions that have not been proposed by the project, required by the OCMP or CCRMP, or required by the environmental impact mitigation measures presented in the EIRs prepared for the individual long-term mining applications. Therefore, development agreements will rely on environmental analysis presented in the EIRs prepared for the individual long-term mining applications, as allowed under CEQA.

Response to Comment 5-6:

Please see Responses to Comments 5-4 and 5-5, above. The development agreement is a contract between the County and the applicant, and does not require approval by the California Departments of Fish and Game or Conservation.

Response to Comment 5-7:

The "net gains" that are proposed as part of the Solano Concrete long-term mining application are discussed in the DEIR Project Description, Chapter 3, under the heading "Net Gain." As the decision-making body for this project, it is unclear how the Board of Supervisors can have "too much discretion." Please also refer to Response to Comment 5-5.

Response to Comment 5-8:

In addition to the nine alternatives examined in the OCMP EIR and the seven alternatives examined in the CCRMP EIR, the Solano project EIR examines five project-level alternatives. Two of those are shallow mining alternatives, one expanded area and the other decreased volume.

The staff believes these alternatives exceed the CEQA standard of a reasonable range of alternatives. The additional impacts associated with allowing an additional 10 feet of depth under Project Alternative 2a or 2b can be extrapolated from the alternative analysis provided. The CEQA goal of fostering meaningful public participation and informed decision making has clearly been met.

Response to Comment 5-9:

Section 5.3 of the DEIR provides an evaluation of the environmental impacts of each alternative presented in the DEIR (including Shallow Mining Alternatives 2a and 2b) and compares the impacts of the alternatives to the impacts identified for the proposed project. The commentor's views in this regard are noted for the record. Threat of contamination and minimizing potential for pit capture are dependent on monitoring, regulation, design, control, and reclamation, none of which is spoken to in the comment. Impacts from "direct release of hazardous materials," accidents on pit slopes, and mosquito breeding would appear to be similar between the project and the described alternative. The potential for pit capture would not be significantly reduced. Continued employment of 14 people would also not be assured under the referenced alternative.

Response to Comment 5-10:

The site-specific physical characteristics of the project site (including topographic information) were used in calculations and impact assessment of the project and each alternative. Site characteristics were determined from maps and other information

provided in the project application, published and unpublished data from other sources, and observations made by the DEIR team at the project site and surrounding areas.

Response to Comment 5-11:

Allocations for the alternatives were based either on the proposed allocation in the permit application or existing allocations. The DEIR does not establish an allocation, but it does analyze the tonnage requested in the application. The commentor is referred to Response to Comment 6-3.

Response to Comment 5-12:

The commentor's opinion is noted for the record. Please refer to the responses to Letter 6 regarding the alternatives analysis.

LETTER #6

JULY 18.1996
Comments On Solano Concrete Long-Term Off-channel Mining Permit DEIR:

This DEIR makes the same error that the program OCMP made. In its' selection of the Environmentally Superior Alternative, this document fails to identify the reasonable array of possibilities, and instead limits itself to a choice (Alt. 3b) that is inherently self-defeating. There was a total lack of consideration of the possibility of analyzing the impacts of extending the mining just ten feet (or so) more-to within one foot of the water table- thereby ignoring an Alternative that might meet the objectives of the Plan far better, and give us the best (for Solano) site-specific plan. When only given a choice of two extremes, we must opt for the opposite extreme of the proposed project. 6-1

From Table 5-2, listing the impacts of the 6 options, it is somewhat possible to extrapolate that between the Project (before mitigation) and Alt 3b. Decreased Mining, there could be a middle ground that would minimize some of the more horrendous, significant/unavoidable impacts. 6-2

Why was this not explored? A big part of the problem is an underlying assumption that the County should approve the doubling of the tonnage allotments. Implicit in some of the Planning Commissioners rejection of the OCMP was the failure to substantiate the need/reason to allow such high tonnage levels. The OCMP was denied partly on this basis. Therefore, it is incorrect for this DEIR to predicate its Project on the approval of 5.5 M tons. Further, how was the figure arrived at for Solano's particular situation? What calculations and factors were used? Alt. 3a and 3b are rejected for failing to meet that tonnage level, but we need to be able to know if a modification of 3a and 3b might generate a more acceptable tonnage. 6-3 6-4

Even if the depth of mining analyzed is only a matter of degree, the two decreased mining alternatives, 3a-reduced-tonnage, and 3b-reduced time, should be joined by 3c, (which might be called more correctly 2c) modified elevation/tonnage. It is stated, p. 5-19, that both 3a and 3b 'would fail to meet the project objective' of harvesting a (questionable) tonnage level, but still states that 'the goals of moving mining to off-channel areas, reclamation to permanent lakes, and continued employment would be met. This is taken further at the summary, 5.4, where it is stated that 3b 'is environmentally superior to the proposed project, since land use, biological, geologic and agricultural impacts would be less than the proposed project'-in other words, a material reduction in environmental impacts. An alternative modified as suggested would provide increased production and maintain the potential of high ag land reclamation. 6-5

A modification in the nature of 2/3c provides all the benefits and reduced impacts as previously stated, plus would eliminate potential mercury and zoonoses impacts of digging into the water table. There is no reason that these benefits would not be equally applicable at approximately 10 more feet, and this needs to be analyzed. The preparers actually postulated a similar scenario, in the OCMP Response to Comments, at 13-40, where they talk about shallow and deep mining areas "for demonstration purposes", but then seem to overlook looking into it further. Your response to our comment at 13-40 should be considered as a possibility. (This also reflects the OCMP's failure to identify a truly Environmentally Superior Alternative). 6-6

Because the DEIR does not explore a more 'real world' best alternative, this EIR must be rejected for its' failure to comply with CEQAs' requirement that a 'reasonable array of alternatives' be explored. If analysis taking into account the specific topographical and hydrological conditions existing at the Solano project site was focused on mining to within one foot of the water table, the decision makers in this process would have more options to choose from. As it stands, the best suited alternative for this project has not been investigated, so there is no truly workable, feasible alternative. 6-7 6-8

Janet Levers

Janet E Levers

Cache Creek Basin Resource Coalition

LETTER 6: JANET LEVERS, CACHE CREEK BASIN RESOURCE COALITION

Response to Comment 6-1:

Thank you for your correspondence. Staff disagrees with the commentor's opinion that the alternatives analysis presented in the DEIR failed to present a reasonable array of project alternatives. In addition to the No Project Alternative, the DEIR developed and evaluated two Shallow Mining Alternatives (Alternatives 2a and 2b) and two Decreased Mining Alternatives (Alternatives 3a and 3b). This range of alternatives was uniformly evaluated in each of the long-term, off-channel mining application EIRs. The consistency of each alternative with the project objectives was analyzed and discussed. The DEIR correctly presents a range of alternatives that evaluate the potential differences between the project and alternate mine design, mining methods, and scales of extraction (including the No Project Alternative).

In an effort to reduce all impacts associated with wet pit mining, staff elected to restrict the mining depth under the Shallow Mining Alternatives to 10 feet above the average seasonal high groundwater level. This choice was made to ensure a reduction in the potential impacts associated with degradation of water quality associated with possible releases of hazardous materials during mining and reclamation and the potential impacts of infiltration of agricultural chemicals from lowered reclamation surfaces.

There are many possible variations to a shallow mining alternative, each of which varies with regard to the availability of aggregate at a specific site, the feasibility of agricultural reclamation, and relative protection of groundwater resources. The commentor's suggestion that mining extend to within one foot of the groundwater table, could present increased risks to groundwater quality relative to the shallow mining alternatives presented in the DEIR. Other impacts would be similar to those described in for the Shallow Mining Alternatives presented in the DEIR. The scale of the impacts related to increased surface area disturbance (increased air emissions, conflicts with adjoining land, temporary loss of agricultural uses, increased potential for disturbance of cultural and biological resources, and other effects) is related to the size of the proposed shallow mining project. The commentor does not specify the size of the proposed additional alternative.

Staff does not agree that the identification of Alternative 3b as the Environmentally Superior Alternative was inappropriate or "self-defeating." Alternative 3b was identified as the Environmentally Superior Alternative on the basis of the comparison of alternatives and the project presented in Section 5.3 (and summarized in Table 5-2) of the DEIR. The alternative is feasible and would result in a reduction in environmental impacts.

See also Response to Comment 5-8.

Response to Comment 6-2:

A range of alternatives were considered in the EIR. The alternative with the least impacts was the No Project Alternative. The alternative with the most impacts was the Shallow

Mining/Expanded Surface Area Alternative (2a). In between these alternatives were the Decreased Mining/Limited Period Alternative (3a), the Decreased Mining/Limited Extraction Alternative (3b), and the Shallow Mining/No Expansion Alternative (2b). Each of the alternatives would reduce some of the impacts associated with the project, although some of the alternatives would also increase some of the impacts associated with the project. This is thoroughly discussed in Chapter 5 of the DEIR and summarized in both Table 5-1 and Section 5.4.

The purpose of the alternatives analysis is to determine whether an alternative exists which would substantially lessen impacts which have been identified in the DEIR as significantly adverse and unavoidable. The alternative identified by the commentor would not substantially lessen such impacts as a whole. Impacts to air quality would be increased because of the larger amount of overburden to excavate and replace. Therefore impacts to PM_{10} would increase. Also, ozone emissions from additional hauling would increase. Cumulative impacts to agricultural land may be somewhat lessened due to increased reclamation to agriculture. Accordingly, the DEIR did not analyze this alternative since it did not present the potential to substantially lessen identified significant, unmitigated impacts.

Response to Comment 6-3:

The OCMP was approved by the Board of Supervisors on 30 July 1996. The project assessed in this DEIR is that proposed by the applicant. It is not the job of the EIR to determine the size of the project. A range of project sizes was explored in the Alternatives section of the DEIR as required by CEQA Section 15126 in order to determine if a project alternative could mitigate or avoid impacts of the project.

Response to Comment 6-4:

Neither Alternative 3a nor 3b were rejected because they did not meet a specified tonnage objective. The DEIR presented an evaluation of the potential environmental impacts for each alternative and a comparison of the impacts of each alternative with the proposed project. A decision regarding acceptable tonnage is not addressed in the DEIR and would not be required by CEQA.

Response to Comment 6-5:

The commentor requests analysis of a variation of the decreased mining alternatives but does not specify the characteristics of this "modified elevation/tonnage" alternative. Staff assumes that the commentor is referring to a mining alternative which would limit the depth of mining to within one foot of the water table. Staff agrees with the commentor's remarks regarding statements cited in the DEIR pertaining to Alternatives 3a and 3b. The commentor's opinion that a mining alternative of this general nature would provide "increased production and maintain the potential of high agricultural land reclamation" cannot be supported by staff without additional details regarding the location (including the required area) of mining. Comparison of the environmental impacts of the shallow mining

alternative proposed by the commentor with the wet pit mining of Alternatives 3a and 3b would require specific analysis.

Response to Comment 6-6:

Staff acknowledges the commentor's preference for including a shallow mining alternative that would avoid excavation below the groundwater table as discussed in Response to Comment 6-1. The commentor is not specific as to the groundwater datum which would define the depth of mining. Excavation to depths not greater than the average seasonal high groundwater would avoid creation of an open water body in the mining during most years. However, one foot of unsaturated zone thickness would not provide sufficient impedance to reduce the potential water quality impact related to releases of hazardous materials to a less than significant level. Part of the rationale in development of Alternative 2a and 2b of the DEIR was to provide adequate separation between the bottom of the mining pits and the average high groundwater level to minimize the potential impact of such releases and infiltration of agricultural chemicals applied to reclaimed surfaces.

Excavation to greater depths (e.g. one foot above the average groundwater level) could result in seasonal lakes in the mining pits. Water quality impacts associated with open pit lakes would be limited to occurring on a seasonal basis but would still be considered significant.

The commentor's focus on the Response to Comment 13-40 in the OCMP EIR Responses to Comments document requires clarification. In that response, the assumption was made that excavation of the shallower mining would extend to below the groundwater table but to a lesser depth than "deep wet pit mining" reference in the comment. The purpose of the response was to demonstrate the additional area required to maximize the mining depth and also allow for reclamation back to an agricultural surface that was five feet above the average groundwater level. This example presents a conservative estimate of the amount of additional area required for mining of a similar amount of aggregate that would be removed for deep wet pit mining. Under both the shallow and deep pit mining scenarios presented in the Response to Comment 13-40 of the OCMP EIR, the potential impacts to water quality associated with open water would be similar during the mining period.

Response to Comment 6-7:

Staff does not agree with the commentor's conclusion that the DEIR does not present a reasonable array of alternatives. The rationale for development of the shallow mining alternatives presented in the DEIR is described in the Response to Comment 6-1. In development of the alternatives and their environmental analysis, staff and the preparers of the DEIR considered the physical conditions at the site and surrounding areas, the practical methods of aggregate mining, and the potential environmental effects of mining. This analysis was, therefore, mindful and respectful of "real world" conditions.

Information on the surface topography and subsurface conditions at the project site were evaluated in providing estimates for the availability of aggregate for each alternative. The restriction of mining to not more than ten feet above the average groundwater level for Alternatives 2a and 2b was included to provide the readers of the DEIR with options which realistically reduced water quality impacts associated with aggregate mining operations to a less-than-significant level. If the requested allocation for aggregate production is to be met, any shallow mining alternative (mining above the average groundwater level) would result in significant increases in impacts related to disturbance of agricultural land, wildlife habitat and cultural resources, air emissions, and noise. Staff does not agree that such an alternative would be "best suited" for the project.

Economically, the shallow mining scenario proposed by the commentor may also be infeasible. The commentor is not specific as to whether the mining would be restricted to the proposed project site or expanded to other areas to meet the requested allocation. The cost of overburden removal would be similar (for the same area) or greatly increase relative to the proposed project. Reclamation would be increased as agricultural reclamation is typically more expensive than reclamation to habitat.

CEQA does not require a presentation of all possible alternatives. The "rule of reason" used by CEQA (Section 15126(d)(5)) requires the EIR to set forth only those alternatives necessary to permit a reasoned choice.

The EIR does not limit the decision makers' choices in policy decisions. The EIR is an informational document, not a rigid set of choices that unduly restricts decision makers. The Planning Commission and Board of Supervisors may still adopt a modified alternative, as urged by the commentor, or other variations that balance environmental, economic, and social concerns.

LETTER #7

July 18, 1996

To: **Dave Morrison & Heidi Tschudin,**
Yolo County Planning Department

Subject: **Comments & Statements of Concern - DEIR - Off Channel Mining Plan Applications.**

JUL 2 2 1996

GRAVEL PIT RECHARGE INFORMATION

The State Department of Conservation has found that the Fundamental Commitments for Gravel Pit Recharge do not exist.

In a series of letters dated Feb. 15, 16, and 20 addressed to the Yolo County Resources Management Coordinator from the California Department of Conservation Office of Land Conservation (OLC) commenting on EIR documents of several gravel mining permit applications, an extremely serious deficiency is pointed out. **The OLC stated that there is no firm commitment by the Yolo County Water Agency to groundwater recharge on any of the Gravel Mining Applications now pending!** 7-1

The permits under consideration are:

Teichert (Esparto) LTOCMP Application SCH# 9600012031

Teichert (Woodland) LTOCMP Application SCH# 96013031

Solano Concrete LTOCMP Application SCH# 96012034

Cache Creek Aggregates LTOCMP Application SCH# 96012035

Syar LTOCMP Application Sch# 960 12030

The OLC comments: "A firm commitment to ground water recharge is not apparent in the reclamation plans. Discussions with the Yolo County Agency are referenced, but no details regarding the substance of these discussions is given."

Firm commitments that would be acceptable to the OLC would necessarily have to be made by the Board of Directors of the YCFC&WCD. This must be a commitment made in perpetuity obligating future Boards of Directors. Failure to honor the commitment at some time in the future would be a violation of the reclamation plan and the miners' agreement with Yolo County. It therefore becomes apparent that no employee or officer of the YCFC&WCD can legally make such a binding commitment. All that they can legally do is have a discussion. It would be a gross misuse of the CEQA process to allow casual informal conversations to become the basis for the most important mitigation measure proposed in the reclamation plan! 7-2

It is noted that no cost-benefit studies have been released to the public on the recharge basin concept and the Corps of Engineers discounts the concept because no detailed investigation and field research has been conducted. All that can be said at this time is that the idea has been publicly presented but no responsible public body has thus far given official approval to a specific plan nor has the financing been officially established. 7-3

In summary, Yolo County residents are being presented with a scheme for the next 30 years that has no assurance by any responsible public body that the groundwater recharge mitigation measure concept will ever become a reality!

The only way that the Planning Staff and its consultants can demonstrate credence for the "recharge mitigations" claimed by the above applicator EIR documents is to produce an official Board Action by the YCFC&WCD documenting that it specifically accepts, approves and will implement the "recharge" mitigation measures in a timely manner so as to comply with the reclamation plan schedule.

Planning Staff must surely recognize that in order for the YCFC&WCD to make such commitments the agency would need to have site specific plans and an economic feasibilty study in hand as well as a schedule for the required construction. Financing arrangements would be the most crucial because by State law the YCFC&WCD is not organized as a philanthropic institution and therefore can only commit funds on projects that have demonstrated economic feasibility. 7-4

The YCFC&WCD came into being as the result of a specific bill passed by the State Legislature to form the district. The YCFC&WCD is therefore subject to the State regulations applicable to all special districts and as such must routinely demonstrate financial accountability.

Bob & Mitzi Speirs
Environmental Issues Committee
Western Yolo Grange #423

Janet Levers
Cache Creek Coalition

Lois Linford
Natural Resources Committee
League of Women Voters,
Woodland

Ian Ekholm
Citizens for Responsible Mining

LETTER 7: ENVIRONMENTAL ISSUES COMMITTEE WESTERN YOLO GRANGE #423, CACHE CREEK COALITION, NATURAL RESOURCES COMMITTEE LEAGUE OF WOMEN VOTERS WOODLAND, CITIZENS FOR RESPONSIBLE MINING

Response to Comment 7-1:

Staff agrees with the commentor that the Yolo County Flood Control and Water Conservation District has made no commitments for using existing or proposed aggregate mining pits as aquifer recharge basins. Impact 4.4-5 of the OCMP EIR provided a lengthy discussion of this issue. A water management plan incorporating recharge basins has not been completed by YCFCWCD. As a result of this analysis, all policies and standards related to groundwater recharge were deleted from the OCMP. Recharge basins are not proposed by the project. The referenced comments were made regarding the Notice of Preparation for this project and have not been mentioned in any subsequent correspondence from the Department of Conservation.

Response to Comment 7-2:

The comment is noted for the record. Staff agrees that "casual informal conversations" should not be the basis for development of mitigation measures. No mitigation measures for the DEIR were developed on this basis. Since there are no mitigation measures in the DEIR for this project that reference groundwater recharge, the commentor's remarks are unclear.

Response to Comment 7-3:

Staff agrees with the commentor's point that complete studies of the potential development of recharge basins have not been prepared or presented. As stated in the Response to Comment 7-1, no recharge basins are proposed by the project under review in this DEIR.

Response to Comment 7-4:

Groundwater recharge is not included in any of the mitigation measures for this DEIR, so no actions by the Yolo County Flood Control and Water Conservation District are required to implement the project. The commentor's opinion regarding the planning process for recharge basins is noted for the record.

LETTER #8

STATE OF CALIFORNIA-BUSINESS, TRANSPORTATION AND HOUSING AGENCY PETE WILSON, Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 3, SACRAMENTO AREA OFFICE * MS 41
P. O. BOX 942874
SACRAMENTO, CA 94274-0001
TDD 916 741-4509
FAX no. 916 323-7669
Telephone 916 324-6642

JUL 19 1996

July 18, 1996

HYOL048
03-YOL-16
Solano Concrete
Long Term Mining Permit
DEIR
SCH#96012034

Mr. David Morrison
Yolo County Community Development Agency
292 West Beamer Street
Woodland, CA 95695

Dear Mr. Morrison:

Thank you for the opportunity to review and comment on the above referenced document.

COMMENTS:

- We concur with the need for Mitigation #4.8-1a (refer to page 4.8-29). The left turn lane construction should be required within two years of this long term mining permit approval. An encroachment permit will be required for the lane construction with improvements built to Caltrans standards. Section 405.2 of the Highway Design Manual describes the left turn channelization design standards. The plans must be reviewed and approved through the permit process. For permit assistance, contact Rich Jones at (916) 741-5374. 8-1

Please provide our office with copies of supplemental information, the FEIR, and staff reports as they are made available. If you have any questions regarding these comments, please contact Ken Champion at (916) 324-6642.

Sincerely,

JEFFREY PULVERMAN
Office of Transportation
Planning - Metropolitan

cc: Antero A. Rivasplata, State Clearinghouse
John Joyce, Yolo County Public Works

LETTER 8: CALIFORNIA DEPARTMENT OF TRANSPORTATION

Response to Comment 8-1:

The timing for the left turn lane is shown in the project level Mitigation Monitoring Plan as "within one year of permit approval."

The second bullet on page 3-20 of the DEIR will be modified as shown in Text Change # 7 regarding the encroachment permit.

It is understood that Caltrans review of the improvement plans is required.

LETTER #9

State of California

GOVERNOR'S OFFICE OF PLANNING AND RESEARCH

1400 TENTH STREET
SACRAMENTO 95814

PETE WILSON
GOVERNOR

LEE GRISSOM
DIRECTOR

July 18, 1996

JUL 22 1996

DAVID MORRISON
YOLO COUNTY
292 WEST BEAMER STREET
WOODLAND, CA 95695

Subject: SOLANO LONG TERM OFF CHANNEL MINING PERMIT EIR SCH #: 96012034

Dear DAVID MORRISON:

The State Clearinghouse submitted the above named environmental document to selected state agencies for review. The review period is closed and none of the state agencies have comments. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. 9-1

Please call Kristen Derscheid at (916) 445-0613 if you have any questions regarding the environmental review process. When contacting the Clearinghouse in this matter, please use the eight-digit State Clearinghouse number so that we may respond promptly.

Sincerely,

Antero A. Rivasplata

ANTERO A. RIVASPLATA
Chief, State Clearinghouse

Notice of Completion *Supplementary Document M*

See NOTE below

SCH # 96012034

Mail to: State Clearinghouse, 1400 Tenth Street, Sacramento, CA 95814 916/445-0613

Project Title: Solano Long-Term off-Channel Mining Permit EIR

Lead Agency: Yolo County — **Contact Person:** David Morrison

Street Address: 292 West Beamer St — **Phone:** 916-666-8041

City: Woodland CA **Zip:** 95695 — **County:** Yolo

Project Location

County: Yolo — **City/Nearest Community:** Madison

Cross Streets: St 16 I-505 — **Zip Code:** _____ — **Total Acres:** 598

Assessor's Parcel No.: _____ — **Section:** _____ **Twp.:** _____ **Range:** _____ **Base:** _____

Within 2 Miles: State Hwy #: 16; 505 — **Waterways:** Cache Creek

Airports: _____ — **Railways:** _____ **Schools:** _____

Document Type

CEQA: ☐ NOP ☐ Early Cons ☐ Neg Dec ☒ Draft EIR ☐ Supplement/Subsequent ☐ EIR (Prior SCH No.) _____ ☐ Other _____

NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI

Other: ☐ Joint Document ☐ Final Document ☐ Other _____

Local Action Type

JAN 3

☐ 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, Parcel Map, Tract Map, etc.)

☐ Annexation ☐ Redevelopment ☐ Coastal Permit ☒ Other Mining Permit

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 _____ Watts _____

☐ Waste Treatment: Type _____

☐ Hazardous Waste: Type _____

☐ Other: _____

Project Issues Discussed in Document

☒ Aesthetic/Visual ☒ Agricultural Land ☒ Air Quality ☒ Archeological/Historical ☐ 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 ☒ Landuse ☐ Cumulative Effects ☐ Other _____

Present Land Use/Zoning/General Plan Use Agriculture + Mining; Agricultural Preserve (AP) and General Agriculture w/ Sand & Gravel overlay; Agriculture

Project Description Commercial mining of sand + gravel on 598 acres south of Cache Creek. Thirty year permit for 1.2 million tons per year. Reclamation to row crops, tree crops, habitat and four lakes.

State Clearinghouse Contact: Ms. Dana Lidster (916) 445-0613

State Review Began: 6.3.96

Dept. Review to Agency: 7.3 11

Agency Rev to SCH: 7.3 16

SCH COMPLIANCE: 7.3 18

Please note SCH Number on all Comments

Please forward late comments directly to the Lead Agency

AQMD/APCD 4D (Resources: #1, 8) 6/8

Project Sent to the following State Agencies

- X Resources
- ___ Boating
- ___ Coastal Comm
- ___ Coastal Consv
- ___ Colorado Rvr Bd
- X Conservation
- X Fish & Game # 2
- ___ Delta Protection Commission
- ___ Forestry
- ___ Parks & Rec/OHP
- ___ Reclamation
- ___ SCDC
- X DWR
- ___ OES
- ___ Bus Transp Hous
- ___ Aeronautics
- X CHP
- X Caltrans # 3
- ___ Trans Planning
- ___ Housing & Devel
- ___ Health & Welfare
- ___ Drinking H20
- ___ Medical Waste

State/Consumer Svcs
- ___ General Services
- ___ Cal/EPA
- X ARB
- ___ CA Waste Mgmt Bd
- ___ SWRCB: Grants
- ___ SWRCB: Delta
- X SWRCB: Wtr Quality
- ___ SWRCB: Wtr Rights
- X Reg. WQCB # 5
- ___ DTSC/CTC esclo

Yth/Adlt Corrections
- ___ Corrections
- ___ Independent Comm
- ___ Energy Comm
- ___ NAHC
- ___ PUC
- ___ Santa Mn Mtns
- X State Lands Comm
- ___ Tahoe Rgl Plan
- ___ Other: _____

LETTER 9: CALIFORNIA GOVERNOR'S OFFICE OF PLANNING AND RESEARCH

Response to Comment 9-1:

This letter acknowledges distribution of the DEIR to state agencies. No response is necessary.

APPENDIX A: REFERENCE TABLE FOR OCMP MITIGATION MEASURES

REFERENCE CHART for LOCATING ADOPTED OCMP MITIGATION MEASURES in the FINAL OCMP and IMPLEMENTING ORDINANCES					
OCMP Mitigation Measure[1]	**OCMP Reference[2]**	**Implementing Ordinance Reference**		**Other**	**Notes**
		Mining Ordinance[3]	**Reclamation Ordinance[4]**		
4.2-1a	Obj. 5.3-1				None required
4.2-2a				Zoning Ord Amendments (Ord 681-164)	
4.2-3a					None required
4.2-4a					See 4.4-2a and 4.4-3b
4.2-5a	Obj. 5.3-1				None required
4.2-6a thru 4.2-9a					None required
4.2-10a	Action 2.4-11				
4.2-11a		Sec. 10-4.435			
4.2-12a					None required
4.3-1a			Secs. 10-5.504 10-5.505, 10-5.512, & 10-5.526		
4.3-2a		Secs. 10-4.406, 10-4.413, & 10-4.431	Secs. 10-5.507, 10-5.508, & 10-5.530		
4.3-2d		Sec. 10-4.411			
4.3-3a	Actions 4.4-1, 4.4-2, & 4.4-5	Secs. 10-4.416 & 10-4.429	Sec. 10-5.506		Std. 4.5-2 deleted
4.3-4a					None required
4.4-1a		Sec. 10-4.502	Sec. 10-5.503		

OCMP Mitigation Measure[1]	OCMP Reference[2]	Implementing Ordinance Reference		Other	Notes
		Mining Ordinance[3]	Reclamation Ordinance[4]		
4.4-2a	Action 3.4-4	Secs. 10-4.113, 10-4.417, 10-4.427, & 10-4.428	Secs. 10-5.507, 10-5.510, 10-5.519, 10-5.524, 10-5.528, & 10-5.530		Action 2.4-11 deleted
4.4-3a			Secs. 10-5.510, 10-5.517, 10-5.519, 10-5.528, 10-5.530, & 10-5.532		See 4.4-2a
4.4-4a			Sec. 10-5.529		
4.4-5a					Obj. 3.3-2; Actions 3.4-2, 3.4-6 thru 3.4-8; and Stds. 3.5-7, 3.5-9, 3.5-14, 3.5-15 deleted
4.4-6a	Action 4.4-7	Sec. 10-4.416			
4.4-7a					None required
4.4-8a			Sec. 10-5.516		
4.5-1a					None required
4.5-2a			Secs. 10-5.525 & 10-5.601		
4.5-3a			Sec. 10-5.522		
4.5-4a		Sec. 10-4.433			
4.5-5a					None required

OCMP Mitigation Measure[1]	OCMP Reference[2]	Implementing Ordinance Reference		Other	Notes
		Mining Ordinance[3]	Reclamation Ordinance[4]		
4.5-6a			Sec. 10-5.511		
4.5-7a					See 4.5-2a
4.6-1a					None required
4.6-2a		Secs. 10-4.440 & 10-4.502			
4.6-3a		Sec. 10-4.440	Sec. 10-5.509		
4.6-4a	Action 6.4-5	Secs. 10-4.418, 10-4.433, & 10-4.440	Secs. 10-5.515 & 10-5.523		
4.6-5a		Sec. 10-4.439	Secs. 10-5.515 & 10-5.523		
4.6-6a	Actions 6.4-1 & 6.4-7		Secs. 10-5.515 & 10-5.527		
4.7-1a		Sec. 10-4.407			
4.7-2a		Secs. 10-4.407 & 10-4.415			
4.7-3a thru 4.7-4a					None available
4.8-1a					None required
4.8-2a		Sec. 10-4.409			
4.8-3a		Sec. 10-4.408			
4.8-4a thru 4.8-15a					See 4.8-3a
4.8-16a					See 4.8-2a

OCMP Mitigation Measure[1]	OCMP Reference[2]	Implementing Ordinance Reference		Other	Notes
		Mining Ordinance[3]	Reclamation Ordinance[4]		
4.9-1a		Sec. 10-4.421			
4.9-2a					None required
4.9-3a		Sec. 10-4.423			
4.9-4a		Sec. 10-4.422			
4.10-1a		Secs. 10-4.404 & 10-4.429			
			Sec. 10-5.502		
4.10-3a thru 4.10-6a					None required
4.11-1a		Sec. 10-4.410			
4.12-1a	Goal 2.2-4; Obj. 2.3-3, 3.3-2; Action 2.4-2, 3.4-3	Sec. 10-4.415			
4.12-2a					None required
4.12-3a	Goals 2.2-4 & 2.3-3	Secs. 10-4.406 & 10-4.431	Secs. 10-5.510 & 10-5.530		
4.12-4a thru 4.13-1a					None required
4.13-2a	Action 2.4-16				None required

[1] Certified by Resolution 96.117A.
[2] Amended into the General Plan by Resolution 96-117.
[3] Ordinance 1190 entitled Off-Channel Surface Mining Ordinance.
[4] Ordinance 1191 entitled Surface Mining Reclamation Ordinance.

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OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Land Use and Planning						
Impact 4.2-1: Consistency with Yolo County General Plan	*Mitigation Measure 4.2-1a* *None required. However, the amendment to draft OCMP Objective 5.3-1 proposed in Mitigation Measure 4.2-5a would reinforce Implementation Strategy #2 of the Capay Valley Area Plan by encouraging the reclamation of land within the Capay Valley Area to agricultural uses (i.e., areas of creek maintenance). This action would enhance the compatibility of the OCMP with the Capay Valley Area Plan.*	Prior to Mining	Planning	Adoption of OCMP	Incorporate into OCMP	
Impact 4.2-2: Consistency with the Yolo County Zoning Ordinance and County Code	*Mitigation Measure 4.2-2a* *The following sections of the Yolo County Zoning Ordinance shall be amended to implement the OCMP and its implementing ordinances: Sections 8-2.404(g), 8-2.404(j), 8-2.604(n), 8-2.2311, 8-2.2312(a), and 8-2.2312(b). New sections shall be added to the Yolo County Zoning Ordinance at Section 8-2.404 (to address land use contracts in the A-P Zone), and at 8-2.23.8 (to address the Special Sand and Gravel Combining Zone [SGR]).*	Prior to Mining	Planning	Add Amendment to Zoning Ordinance	Incorporate into Zoning Ordinance	
Impact 4.2-3: Consistency with the State Mining and Reclamation Act (SMARA) and the State Mining and Geology Board Reclamation Regulations	*None Required.*					
Impact 4.2-4: Consistency with the Regional Water Quality Control Board's Basin Plan	*None Required.*					
Impact 4.2-5: Consistency with the RCD Agriculture Policies	*Mitigation Measure 4.2-5a* *None required. As an improvement measure, however, it is recommended that the following language be added to Objective 5.3-1 of the OCMP:* *Reclamation of agricultural lands to other uses, however, is discouraged, wherever agricultural reclamation is feasible.*	Prior to Mining	Planning	Adoption of OCMP	Incorporate into OCMP	
Impact 4.2-6: Compatibility with Existing and Planned Land Uses	*None required.*					

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.2-7: Change in Land Use Intensity	*None required at the program level.*					
Impact 4.2-8: Land Use Incompatibility Due to Changes in the Creek Boundary	*None required.*					
Impact 4.2-9: Land Disturbance During Mining	*None required.*					
Impact 4.2-10: Potential for Additional Mining Above That Which Is Currently Known	*Mitigation Measure 4.2-10a* *The final OCMP boundaries shall be defined as including only those 2,932 acres (including a 45-acre borrow area) presently under consideration for rezoning.*	Prior to Mining	Planning	Adoption of OCMP	Incorporate into OCMP	
Impact 4.2-11: Potential Impacts from the Future Sale or Transfer of Property Included within a Current Mining/Reclamation Application	*Mitigation Measure 4.2-11a* *The OCMP and its implementing ordinances shall be expanded and clarified to address the issue of transferability of mining permits. The clarification would indicate that if a property is sold or transferred, the tonnage attributed to that property transfers as well. If that tonnage is still processed at the original plant site pursuant to the original permit approval, no additional environmental assessment or permits would be required. If that transferred tonnage is processed elsewhere, additional analysis and approvals would be required.*	Prior to Mining	Planning	Adoption of OCMP	Incorporate into OCMP	
Impact 4.2-12: Compatibility with Watts-Woodland Airport Comprehensive Land Use Plan	*None required at the program level.*					

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Geology and Soils						
Impact 4.3-1: Potential for Damage from Seismic Shaking	*Mitigation Measure 4.3-1a* *The following performance standards shall be added to the Aggregate Resources Element of the OCMP and its implementing ordinances.*					
	Performance Standard 2.5-25: Improvements, including the construction of buildings, roadways or other public facilities proposed for construction in reclaimed mining pits shall require a geotechnical investigation of the stability of fills conducted by a qualified and licensed geotechnical engineer. A report on the results and recommendation of the investigation shall be submitted to the Yolo County Community Development Agency prior to the issuance of building permits. The recommendation of the geotechnical investigation shall be fully implemented by the applicant.	Post-Reclamation	Applicant	Submittal of Geotechnical Report	Require as Permit Condition	
	Performance Standard 2.5-26: Backfilled mining areas and slopes shall be inspected by the Yolo County Community Development Agency following strong seismic shaking events. Observable damage shall be reported to the landowner. If the YCCDA determines that the damage requires repair to meet the intended use of the reclaimed land, the landowner shall perform the required repairs.	Ongoing - Following Strong Seismic Shaking Event	Planning	Inspection	Incorporate into OCMP	
	Performance Standard 2.5-27: The cost of implementing recommendations for repair of reclaimed land caused during earthquakes or other natural events shall be met through application of contingency costs provided for by the project's financial assurances as required by SMARA.	Ongoing - Mining and Reclamation	Applicant	Application of Contingency Costs	Financial Assurances	
	The following performance standard of the OCMP shall be modified as follows:					
	Performance Standard 5.5-3: The operator shall retain a licensed Land Surveyor to resurvey any areas reclaimed to agricultural usage after the first two (2) crop seasons have been completed. Any areas where settling has occurred shall be re-leveled to the field grade specified in the approved reclamation.	Following Completion of 2 Crop Seasons	Planning	Resurvey and Re-leveling	Require as Permit Condition	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.3-2: Potential Impacts Related to Slope Stability, Erosion, and Sedimentation	*Mitigation Measure 4.3-2a* *The following performance standards of the OCMP shall be modified as follows:* *Performance Standard 2.5-4: During mining operations, a series of benches may be excavated in a slope provided that the excavations are made in compliance with the requirements of the state Mine Safety Orders (California Code of Regulations, Title 8, Subchapter 17). The vertical height and slope of benches constructed for permanent reclaimed slopes shall not exceed maximum standards for the specific soil types presented in California Code of Regulations, Title 8, Article 6. In general, vertical cutslopes between benches shall not exceed four (4) feet in height in topsoil and overburden sediments. Benching shall be allowed in cohesive soil (clay, sandy or silty clay, clayey silt) only. Slopes above the elevation of groundwater (determined at the time of excavation by the level of exposed water in the excavation) that exceed the maximum vertical height shall be excavated and maintained at slopes not greater than 2:1. Slopes located five (5) feet or less below the average summer low groundwater level shall not be steeper than 2:1. Slopes located more than five (5) feet below the average summer low groundwater level shall not be steeper than 1:1 (horizontal to vertical).* *Vertical cutslopes in excess of four feet in height may be approved for development of special habitat (e.g. bank swallows) if a site specific slope stability analysis, performed by a licensed engineer, indicates that the slope does not exceed critical height for the on-site soil conditions. Projects proposing such slopes will be required to submit a long-term maintenance plan to ensure that the function of the slopes as habitat is met.*	During Mining	Planning	Submittal of Slope Stability Study	Require as Permit Condition	
	Performance Standard 2.5-16: Except where benches are used, all banks above groundwater level shall be sloped no steeper than 2:1 (horizontal:vertical). Proposed steeper slopes shall be evaluated by a slope stability study, prepared by a qualified engineer. Slopes below the groundwater level shall be no steeper than 1:1 (horizontal:vertical). Slopes located five feet or less below the summer low groundwater level shall not be steeper than 2:1.	Post-Reclamation	Planning	Submittal of Slope Stability Study	Require as Permit Condition	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	Performance Standard 2.5-17: Upon the completion of operations, grading and revegetation shall minimize erosion and convey storm water runoff from reclaimed mining areas to natural outlets or interior basins. The condition of the land shall allow sufficient drainage to prevent water pockets or undue erosion. Natural and storm water drainage shall be designed so as to prevent flooding on surrounding properties and County rights-of-way. *Storm water runoff from mining areas shall be conveyed to lowered areas (detention basins) to provide detention of runoff generated during a 20-year, one-hour storm event. All drainage conveyance channels or pipes (including spillways for detention areas) shall be designed to ensure positive drainage and minimize erosion. The drainage conveyance system and storm water detention areas shall be designed and maintained in accordance with Best Management Practices for the reduction of pollutants associated with runoff from mined areas. The design and maintenance procedures shall be documented in the Storm Water Pollution Prevention Plan required for mining operations. The drainage system shall be inspected annually by a Registered Civil Engineer, Registered Geologist, or Certified Erosion and Sediment Control Specialist to ensure that the drainage system is functioning effectively and that adverse erosion and sedimentation are not occurring. The annual inspection shall be documented in the Annual Mining and Reclamation Report.*	Prior to Reclamation and then Ongoing (Annually)	Planning	Submittal of Storm Water Pollution Prevention Plan/Annual Inspection	Incorporate into Annual Mining and Reclamation Report	
	Performance Standard 2.5-18: All final reclaimed slopes shall have a minimum safety factor equal to or greater than the critical gradient as determined by an engineering analysis of the slope stability. Final slopes less than five (5) feet below the average summer low groundwater level shall be designed in accordance with the reclaimed use and shall not be steeper than 2:1. Reclaimed wet pit slopes located five (5) feet or more below the average summer low groundwater level shall not be steeper than 1:1 (horizontal:vertical), in order to minimize the effects of sedimentation and biological clogging on groundwater flow, to prevent stagnation and to protect the public health.	Prior to Reclamation	Planning	Submittal of Slope Stability Study	Require as Permit Condition	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	The maximum slope angle for all final reclaimed slopes shall be determined by slope stability analysis performed by a licensed and qualified civil or geotechnical engineer and submitted with any mining and reclamation application for review by the Yolo County Community Development Agency (YCCDA). The slope stability analysis shall conform with industry standard methodologies rotational slope failures under static and pseudostatic (seismic) conditions. The minimum factor of safety for all design reclamation slopes located adjacent to levees or below existing structures shall not be less than 1.5 for static and 1.1 for pseudostatic (seismic) conditions. Other reclamation slopes shall meet a minimum factor of safety that is consistent with the post-reclamation use proposed for the mining area.					
	Performance Standard 2.5-21: The grading of final slopes, the replacement soil, and associated erosion control measures shall take place prior to November 1 in areas where mining has been completed. To minimize erosion, the finish grading of mining pit slopes above the average seasonal high groundwater level, with the exception of the location of designated haul roads, shall be performed as soon as practical after the completion of mining of overburden and unsaturated aggregate resources. A drought-tolerant, weed-free mix of native and non-native grass species shall be established on slopes prior to November 1 or alternate erosion control (mulch or netting) shall be placed on exposed soil on the slopes prior to this date. Phasing of mining to minimize the length of exposed mining slopes during the rainy season is encouraged.	During Mining	Planning	Submittal of Mining and Permit Application	Require as Permit Condition	
	Mitigation Measure 4.3-2d *An application for construction shall be filed with the California Division of Safety for Dams and approved prior to start of construction for any new dam that falls under the State jurisdiction for safety.*	Prior to Mining	Planning and California Division of Safety of Dames	Submittal of Application for Construction	Require as Permit Condition	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.3-3: Potential for Erosion from Surface Water Discharge, Including "Pit Capture"	*Mitigation Measure 4.3-3a* *The following text shall be added to Action 4.4-2:* *Action 4.4-2: Designate the streamway influence boundary described in the Technical Studies as part of the Off-Channel Mining Plan. The boundary describes the general area of the creek subject to meandering, as defined by the historical activities of the channel. The streamway influence boundary also defines the area where in-stream and off-channel issues overlap and are addressed in each both plans. Whereas the streamway influence boundary shall be recognized as representative of historical conditions, the current hydraulic conditions of creek shall be considered in decision-making regarding channel and floodplain management.* *Action 4.4-3 of the OCMP shall be replaced by the following action:* *Action 4.4-3: Evaluation of proposed significant modifications to the flood plain, including off-channel mining areas, shall be made with reference to the channel improvement strategy and guidelines presented in the Cache Creek Resource Management Plan. This would ensure a consistent frame of reference and allow consideration of such modifications in the context of an integrated creek management program.* *Action 4.4-6 shall be amended as follows:* *Action 4.4-6: Allow for the design of spillways or other engineered features that provide controlled flooding of off-channel mining pits during flood events which exceed the 100-year flood event.* *Performance Standard 4.5-1 shall be amended as follows:* *Performance Standard 4.5-1: All off-channel surface mining operations shall be provided with a minimum one-hundred (100) year flood protection. Off-channel excavations shall be designed to minimize the possibility of levee breaching and/or pit capture.*	Prior to Mining Prior to Mining Prior to Mining Prior to Mining	Planning Planning Planning Planning	Adoption of OCMP Adoption of OCMP Submittal of Mining and Reclamation Application Submittal of Mining and Reclamation Application	Incorporate into OCMP Incorporate into OCMP Require as Permit Condition Require as Permit Condition	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	Performance Standard 4.5-2 shall be deleted from the OCMP.	Prior to Mining	Planning	Adoption of OCMP	Delete from OCMP	
	Performance Standard 4.5-3 shall be amended as follows:					
	Performance Standard 4.5-3: Proposed off-channel excavations within the streamway influence boundary shall be set back a minimum of seven-hundred (700) feet from the existing channel bank, unless it is demonstrated that a smaller distance would not adversely affect channel stability. Under no circumstances shall the setback be less than two-hundred (200) feet. The evaluation of the potential for adverse effects of bank erosion or failure of the land separating pits located less than 700 feet from the active channel shall include, at minimum, the following analyses: • *The 200-foot setback area shall not include portions of the former historic active floodplain or formerly mined lands separated from the active channel by levees or unmined areas less than 200 feet wide (measured perpendicular to the active channel).* • *Identification of the former historic positions of the Cache Creek channels as delineated in the CCRMP Technical Studies, and determination if proposed project is located within the limits of the historic channel.* • *Description of current channel hydraulic conditions (based on existing or site-specific hydraulic models) for the Cache Creek channel adjacent to the site and extending not less than 1,000 feet upstream and downstream of the site.* • *Determination of erosion potential of stream bank adjacent to the site made on the basis of stream flow velocity and estimated shear stress on bank materials during 100-year flood flows and historic patterns of erosion.* • *Analytical slope stability analysis in conformance with Performance Standards 2.5-16 and 2.5-18. This slope stability analysis of the slopes separating the mining area from the creek channel shall include evaluation of stability conditions during 100-year flood flows in the channel.* • *Future proposed bank stabilization designs, if recommended, shall not conflict with channel design recommendations of the Cache Creek Resource Management Plan unless approved by the Technical Advisory Committee.*	Prior to Mining	Planning	Submittal of Slope Stability Study	Require as Permit Condition	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	The following performance standard shall be added to the OCMP and implementing ordinances: *Performance Standard 4.5-8: Financial assurances for off-channel mining operations which include mining within 700 feet of the active channel of Cache Creek shall include adequate funding for maintenance during the mining and reclamation period of any bank stabilization features approved for the mining permit. Maintenance of the bank stabilization features following the completion of reclamation shall be the responsibility of the property owners under the Cache Creek Resource Management Plan.*	During Mining and Reclamation	Property Owners	Application of Contingency Costs	Financial Assurances	
	The condition of flood protection structures and the integrity of the land within the approved setback zone separating the mining areas and the stream channel shall be inspected annually by a licensed engineer and reported to the Yolo County Community Development Agency. *The annual report shall include recommendations for remedial action for identified erosion problems. Following reclamation, the YCCDA shall inspect the land separating the mining areas and creek channel every five years. Observable damage shall be reported to the property owner. If the YCCDA determines that damage requires repair to meet the intended performance of the separator, the property owner shall perform the required repairs.*	Annually During Mining and Every Five Years Following Reclamation	Property Owners and Planning	Inspection and Report	Incorporate into OCMP and Require as Permit Condition	
Impact 4.3-4: Decreased Availability of Aggregate Resources	*None required.*					

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Hydrology and Water Quality						
Impact 4.4-1: Potential Impacts to Groundwater Levels, Rate of Flow, and Direction of Flow	*Mitigation Measure 4.4-1a* *Performance Standard 3.5-1 included in the OCMP shall be as follows:* *Performance Standard 3.5-1: The area of backfilled off-channel excavations extending below the groundwater table shall be minimized to reduce changes to groundwater levels and flow. Backfilled pits shall be oriented with regard to the direction of groundwater flow to prevent localized obstructions. If a backfilled off-channel excavation is proposed to penetrate either fifty (50) feet or one-half (½) into the saturated thickness of the shallow aquifer, then at least six months prior to the commencement of excavation below average high groundwater level the applicant shall demonstrate in a manner consistent with the Technical Studies, that the pit design would not adversely affect active off-site wells within one-thousand (1,000) feet of the proposed pit boundary. If the application includes a series of backfilled pits, then the applicant shall also demonstrate that the cumulative effects of the multiple backfilled pits would not adversely affect groundwater flow, if there are any active off-site wells within one-thousand (1,000) feet of the pit boundaries.* *The applicant shall demonstrate, using MODFLOW,[1] (or a similar model of equal capability and proven reliability, as approved by the Yolo County Community Development Director) that the proposed pit design will not adversely impact active off-site well within 1,000 feet of the proposed pit boundary or results in well failure. Average, historic low groundwater levels, which represent the condition of maximum threat to water levels in the subject well, shall be used for this simulation. If an adverse impact were identified by the MODFLOW (or other selected model) simulation, the mining and reclamation plan will be modified or the applicant shall submit a written agreement that the well owner has agreed to relocate or redesign the well, or accept the potential impact (at no expense to the County)*	Prior to Mining	Planning	Submittal of Groundwater Flow Simulation	Modification of Mining and Reclamation Plan or Submittal of Written Agreement	

[1]MODFLOW is a three-dimensional finite difference model used to simulate groundwater flow. A three-dimensional model would be necessary since aquifer permeability would vary with depth after reclamation.

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	In addition, the following performance standards shall be added to the OCMP:					
	Performance Standard 3.5-16: Site-specific aquifer testing shall be conducted, if needed, to determine aquifer properties for the required modeling.	Prior to Mining	Environmental Health	Aquifer Testing and Well Survey	Approval of Well Installation	
	Performance Standard 3.5-17: A well survey shall be conducted and all wells within 1,000 feet of the limits of mining plotted on a scaled map. Each property owner owning a parcel(s) within 1,000 feet of the proposed limits of wet pit mining shall be contacted and queried about wells that may be located near the wet pit mining area.	Prior to Mining		Well Survey and Statement from Property Owners	Incorporate into Mining and Reclamation Plan	
Impact 4.4-2: Potential Degradation of Water Quality During Aggregate Mining and Reclamation	*Mitigation Measure 4.4-2a* *Mitigation of potential water quality impacts would be addressed as described in the flowchart presented as Figure 4.4-9. The OCMP and implementing ordinances shall be modified as described below.* *Pollution Prevention*					
	Performance Standard 3.5-6 of the OCMP and the associated ordinance shall both be modified as follows:	As required in Performance Standard	Environmental Health	Submittal of Capture Zone Analysis and Hydrogeologic Report	Require as Permit Condition	
	If any off-channel excavation proposes to extend below the level of seasonal high groundwater , then six months prior to the commencement of excavation below average high groundwater level the applicant shall identify and locate all off-site municipal wells within 1,000 feet and all domestic wells within 500 feet of the proposed wet pit mining boundary If active wells are identified, well characteristics (pumping rate, depth, and locations of screens) shall be determined. If wells are not located within 1,000 feet, the pre-mining impact evaluation would be considered complete.					

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	If wet pit mining is proposed within 1,000 feet of a municipal water supply well or within 500 feet of a domestic water supply well, a capture zone analysis shall be conducted using the U.S. Environmental Protection Agency model WHPA (or a similar model of equal capability and proven reliability, as approved by the Yolo County Community Development Director). The simulation shall assume 30 days of continuous pumping of the water supply well (at its maximum probable yield) under analysis. A mining setback shall be established so that the capture zone and the pit do not coincide. Alternatively, the applicant shall submit a written agreement that the well owner has agreed to relocate or redesign the well (at no expense to the County). The analysis shall be prepared and signed by a Registered Professional Engineer or Certified Hydrogeologist and submitted to the County for review and shall be submitted to, and approved by, the County at least six months prior to commencement of excavation below the seasonal high groundwater level. *Any new drinking water wells proposed for installation within 1,000 feet of a proposed wet pit mining area shall be subject to review by the Yolo County Environmental Health Department. The County shall determine, based on site-specific hydrogeology and available water quality data, whether to approve the proposed well installation.* *The County may retain appropriate staff or a contract consultant to provide third party critical review of all hydrogeologic reports related to mining applications.*					

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	Performance Standard 3.5-3 of the OCMP and the associated ordinance shall be replaced with the following Performance Standard: *Surface water shall be prevented from entering mined areas, through perimeter berms or ditches and grading. Appropriate erosion control measures shall be incorporated into all surface drainage systems. Drainage and detention facilities within the proposed mining areas and vicinity shall be designed to prevent discharges to the wet pits and surface water conveyances (i.e. creeks and sloughs) from the 20 year/1-hour storm or less. For events greater than the 20 year/1 hour storm, runoff from around the perimeter of the mining areas should be directed to surface water conveyances. Runoff from within the lowered mining area shall be directed away from wet pits to detention/infiltration areas. Drainage plans shall not rely solely on ditches and berms to direct runoff away from the wet pit. Without proper maintenance, berms and ditches may deteriorate with time and become ineffective. Drainage plans shall emphasize grading of disturbed areas that results in broad gentle slopes that drain away from the pits. Grading plans shall be reviewed by the County to evaluate compliance with drainage plan objectives prior to project approval.*	Prior to Mining	Planning	Submittal of Grading and Drainage Plans	Require as Permit Condition	
	In addition, a restriction shall be recorded on the deed that requires berms and ditches to be permanently maintained in a condition consistent with the final approval. The deed restriction shall require an inspection easement which allows County staff or other authorized personnel access for inspection of the berms and ditches. If the County determines that evidence of damage to these facilities exists, the County shall require that the owner have an inspection report for the property prepared by a registered geologist or professional engineer. The inspection report including recommendations for corrective action, if needed, shall be submitted to the Yolo County Community Development Agency. The property owner shall be required to implement recommended corrective action, if any.	Prior to Mining	Planning	Submittal of Inspection Report	Deed Restriction	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	Performance Standard 2.5-8 of the OCMP and the associated ordinance shall be modified as follows:					
	Unnecessary personnel shall be excluded from off-channel excavations. Open pits shall be fenced with a 42-inch minimum, four strand barbed wire fence or the equivalent, prior to the commencement of excavation, during excavation, and during reclamation. Fencing may enclose the property of which mining is a part, the mining site, or both. In addition, signs shall be installed at the project site boundaries and access road, indicating that the excavation area is restricted. Additional security (e.g., gates with protected locks and wing fences to prevent drive-arounds) shall be provided at all vehicular access routes. The fencing and gates shall be maintained throughout the mining and reclamation period and after completion of reclamation. A requirement shall be recorded on the deed of the property which requires the landowner to maintain fences and gates.	Ongoing	Applicant	Submittal of Mining and Reclamation Application	Require as Permit Condition	
	Performance Standard 3.5-5 of the OCMP and the associated ordinance shall be modified as follows:					
	At least one toilet shall be provided for each off-channel mining operation. Chemical toilets shall be properly maintained and serviced regularly. Permanent toilets shall be properly engineered and the design approved by both the Yolo County Building Official and the Environmental Health Department prior to installation. All on-site water storage facilities shall be labeled "potable" or "non-potable."	Prior to Mining	Building and Environmental Health	County Approval	Require as Permit Condition	
	The potential for water quality degradation resulting from operation of motorized watercraft is adequately mitigated by Performance Standards 3.5-10 and 2.5-8.	Prior to Mining	Planning	Adoption of OCMP	Incorporate into OCMP	
	The potential for eutrophication of the wet pit lakes would be adequately mitigated by Performance Standards 2.5-18 and 3.5-11 (discussed in Impact 4.4-3).	Prior to Mining	Planning	Adoption of OCMP	Incorporate into OCMP	
	Performance Standard 2.4-11 of the OCMP and associated ordinance shall be deleted.	Prior to Mining	Planning	Adoption of OCMP	Incorporate into OCMP	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	Monitoring *Performance Standard 3.5-4 of the OCMP and the associated ordinance shall be modified as follows:*					
	All surface mining operations that propose off-channel excavations extending below the groundwater table shall develop and maintain a groundwater monitoring program consisting of two components; water level measurements and water quality testing. A groundwater level monitoring program shall be initiated at least six months prior to removal of overburden. At a minimum, the groundwater level monitoring program shall consist of three monitoring wells, with at least one well upgradient of the wet pit and one well downgradient of the wet pit. Monitoring programs for proposed mining areas exceeding 100 acres (total proposed mining area over the life of the project) shall include one additional well for each 100 acres to be mined. Therefore, proposed mining areas of 1 to 99 acres would require 3 wells, 100 to 199 acres would require four wells, 200 to 299 acres would require 5 wells, and so on. These wells shall be distributed through the vicinity of the proposed mining area and used for groundwater level measurements. Groundwater levels shall be collected from the monitoring wells on a quarterly basis for six months prior to mining and for the duration of the mining period. All wellheads shall be surveyed with horizontal and vertical control to allow calculation of groundwater elevations and development of groundwater contour maps. Groundwater levels shall be measured with an accuracy of plus or minus 0.01 foot, at minimum.	Quarterly Beginning Six Months Prior to Mining Through Duration of Mining	Applicant	Submittal of Groundwater Monitoring Program Results	Require as Permit Condition	
	Water quality in the vicinity of each active wet pit mining location would be evaluated by analyzing samples from selected monitoring wells (one upgradient and one downgradient) and wet pit surface water sampling locations. Since mining would be conducted in phases over a relatively long period of time, pit boundaries would change with time. Selection, and installation if necessary, of downgradient monitoring wells, which would be critical to adequately characterize the groundwater quality in the vicinity of the wet pits, would be proposed by the applicant for review and approval by the County. The selected monitoring wells shall be installed and sampled at least six months prior to removal of overburden. The downgradient wells shall be located as near to active wet pit mining areas as is practical. The upgradient wells shall be located an adequate distance from the proposed mining area to ensure that effect of the wet pit on water quality in the well would be negligible. The water samples from the wet pit shall be collected in a manner so as to ensure that they are representative of water quality within the wet pit. The minimum sampling schedule and required analyses are described below.	As required within Performance Standard	Planning and Environmental Health	Submittal of Groundwater Monitoring Program Results	Require as Permit Condition	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	Groundwater level and pit water surface level measurements: *Quarterly in all wells for the duration of mining and reclamation.* *For proposed wet pit mining, sample collection and analysis of physical, chemical, and biological constituents shall be conducted according the following specifications:* • *Prior to removal of overburden- One upgradient and one downgradient well shall be sampled at least six months prior to removal of overburden and again at the start of excavation. The samples shall, at minimum, be analyzed for general minerals, inorganics, nitrates, total petroleum hydrocarbons (TPH) as diesel and motor oil, benzene, toluene, ethylbenzene, and xylenes (BTEX), pesticides (EPA 8140 and 8150), and coliform (with E. coli confirmation).* • *During wet pit mining and active reclamation- The wet pit shall be sampled semi-annually for the duration of mining and active reclamation. The samples shall, at minimum, be analyzed for general minerals, inorganics, nitrates, TPH as diesel and motor oil, BTEX, pesticides (EPA 8140 and 8150), and coliform (with E. coli confirmation).* *One upgradient and one downgradient well shall be analyzed, at minimum, for general minerals, inorganics, nitrates, TPH as diesel and motor oil, BTEX, pesticides (EPA 8140 and 8150), and coliform (with E. coli confirmation). The wells shall be sampled according to the following schedule:* *0-2 years: Semi-annually* *2 years to completion of reclamation: Annually* • *After active reclamation- One year after all heavy equipment work has been completed in the vicinity of the pit, the TPH and BTEX analyses may be discontinued. The wet pit and one upgradient and one downgradient well shall be sampled and analyzed for pH, temperature, nutrients (phosphorus and nitrogen), total dissolved solids, total coliform (with E. coli confirmation), and biological oxygen demand. This monitoring shall be conducted every two years for a ten year period after completion of reclamation.*					

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	A report to the Yolo County Community Development Agency and Department of Environmental Health shall be submitted within 30 days of the required groundwater testing. *If, at the completion of the mining and reclamation period, water quality has not been impacted, all monitoring wells shall be destroyed in accordance with California Department of Water Resources Well Standards (DWR, 1991). If the County or other agency wishes to maintain the wells for future water resources evaluation, selected wells could be preserved for this use.* *The County may retain appropriate staff or a contract consultant to provide third party critical review of all hydrogeologic reports related to monitoring.* *Data Evaluation/Corrective Action* *The following performance standard shall be added to the Water Resources Element of the OCMP and implementing ordinance.* *PS. 3.5-16: Monitoring during the mining and reclamation period shall be a condition of the permit. The applicant shall ensure that monitoring continues for ten years after the completion of reclamation.*	Prior to Mining	Planning	Proof of Performance Bond	Financial Assurances	
	Action 3.4-4 of the OCMP shall be modified as follows: *The Yolo County Community Development Agency shall designate staff and resources to coordinate with City, County, regional, State, and Federal agencies that may wish to receive copies of data generated from the off-channel mining operations, including the towns of Capay, Esparto, Yolo, and Madison, the city of Woodland, and the Yolo County Flood Control and Water Conservation District, the Water Resources Agency, the Central Valley Regional Water Quality Control Board, and the California Department of Water Resources. The data base shall be expanded to include other relevant sources of information, so that it can be used as reference material for regional water planning efforts.*	Ongoing on an As-Needed Basis	Planning	Submittal of Groundwater Database	Incorporate into OCMP	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	Additional tests and analysis shall be required only if a new condition is recognized that may threaten water quality or results of previous tests fall outside allowable ranges. If at any time during the monitoring period, testing results indicate that sampling parameters exceed Maximum Contaminant Levels (MCLs), as reported in the California Code of Regulations, or established background levels, a qualified professional shall evaluate potential sources of the contaminants. The evaluation shall determine the source and process of migration (surface or subsurface) of the contaminants. A report shall be submitted to the regulatory agencies (Yolo County Community Development Agency, the Yolo County Department of Health Services, the Central Valley Regional Water Quality Control Board, and the U.S. EPA) which identifies the source of the detected contaminants and specifies remedial actions to be implemented by the applicant for corrective action. If it is determined that the source of water quality degradation is off- site, and County and RWQCB are in agreement with this conclusion, the applicant shall not be responsible for corrective action. *If corrective action is ineffective or infeasible, the responsible party must provide reparation to affected well owners, either by treatment of water at the wellhead or by procurement of alternate water supply.* *Analysis of environmental impact for projects in the vicinity of the wet pits shall include consideration of potential water quality impacts on the open water bodies.*	During Mining	Planning and CVRWQ CB	Submittal of Testing Results	Require as Permit Condition	
Impact 4.4-3: Potential Degradation of Water Quality after Reclamation of Mined Lands	*Mitigation Measure 4.4-3a* *In addition to the policies included in the OCMP, the following mitigation measures shall be implemented:*					
	The potential for eutrophication and biological degradation of wet pit lakes would be adequately mitigated by Performance Standards 2.5-18 and 3.5-11, and Mitigation Measure 4.4-2a.	Prior to Mining	Planning	Adoption of OCMP	Incorporate into OCMP	
	The potential for illegal discharges to occur would be adequately mitigated by Mitigation Measure 4.4-2a.	Prior to Mining	Planning	Adoption of OCMP	Incorporate into OCMP	
	Performance Standard 3.5-10 of the OCMP shall be modified as follows:	Prior to Mining	Planning	Adoption of OCMP	Incorporate into OCMP	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	Only motorized dredges shall be allowed on the wet pit lakes. All other fuel-powered (gasoline or diesel) watercraft shall not be used on the wet pit lakes. Electric-powered boats would be permissible. *The potential impacts associated with illegal operation of watercraft in the lakes is adequately mitigated by the requirement for fencing and locked gates, discussed above (Performance Standard 2.5-8).* *The potential impacts associated with groundwater quality degradation would be partially mitigated by implementation of the monitoring program described in Mitigation Measure 4.2-2. In addition, the following Performance Standard shall be added to the OCMP and implementing ordinance:* *Overburden and processing fines shall be used whenever possible to support reclamation activities around reclaimed wet pits. These materials may be used in reclamation activities without testing for agricultural chemicals. If topsoil (A-horizon soil), formerly in agricultural production, is proposed for use within the drainage area of a wet pit, the soils must be sampled prior to placement and analyzed for pesticides and herbicides (EPA 8140 and 8150). Samples shall be collected and analyzed in accordance with EPA Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, Third Edition (as updated). Topsoil that contains pesticides or herbicides above the Maximum Contaminant Levels for primary drinking water (California Code or Regulations) shall not be placed in areas that drain to the wet pits.*	During Reclamation	Planning and Environmental Health	Submittal of Soil Samples	Require as Permit Condition	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	The following performance standards shall be added to the Water Resources Element of the OCMP: *Prior to approval of reclamation of aggregate mining areas to permanent lakes, the County shall commission a sampling and analysis program, to be implemented in one existing wet pit mining area within the OCMP planning area, to evaluate the potential for increased methylmercury production associated with wet pit mining and reclamation of mining areas to permanent lakes. The program shall include sampling of water and sediments from the bottom of the existing pit and analysis of the samples for organic content, pH, dissolved oxygen content, dissolved carbon content, and total mercury. In addition, samples of predatory fish (preferably, largemouth bass) shall be collected and analyzed for mercury content. If the initial sampling indicates either of the following conditions, the County shall perform verification sampling:* • *Average concentrations of total mercury in excess of 0.000012 mg/l in the water;* • *Average mercury levels in fish samples in excess of 0.5 mg/kg.* *If verification sampling indicates exceedance of these mercury criteria, the County shall approve reclamation of mining areas to permanent lakes Only if the average level of mercury in fish collected from the existing mining pits is shown to be equal to or less than ambient (background) mercury levels determined from a representative sample of similar species of fish (of similar size) collected in the Cache Creek channel within the planning area. The determination of the ambient mercury level shall be performed by the County prior to the excavation of any net wet pit mine, and at years 10, 20, and 30 in the permit time period, and shall be paid for by the mining permit applicants on a fair-share basis. The County shall evaluate available data to determine any significant change in ambient concentrations of mercury in fish within the Cache Creek channel.*	As Required within Performance Standard	Planning, Environmental Health, RWQCB, CDFG	Submittal of Sampling and Analysis Program and Mitigation Plan as Necessary	Incorporate into OCMP	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	In the event of approval of reclamation of mined areas to permanent lakes, each mining area to be reclaimed to a permanent lake as part of each approved long-range mining plan shall be evaluated annually by the operator for five years after creation of the lake for conditions that could result in significant methylmercury production. An additional ten years of biennial monitoring shall be performed afeter reclamation of the lake has been completed. The evaluations shall be conducted by a qualified aquatic biologist or limnologist acceptable to the County and shall include the following analyses: • *Lake condition profiling during the period June through September, including measurements of pH, eH (or redox potential), temperature, dissolved oxygen, and total dissolved carbon.* • *Collection of a representative sample of fish specimens (including minimum of five predator fish if available) and analysis of the specimens for mercury and content. Sampling and analysis shall be conducted using methodologies which are consistent with the California State Water Resources Control Board Toxic Substances Monitoring Program procedures, or more stringent procedures. Prior to monitoring, the operator shall stock the lake with representative numbers of fish species similar to those found in Cache Creek including predator fish. The operator shall consult with a qualified biologist or limnologist to determine the appropriate numbers and types of fish to be used in stocking the lake.* • *The results of the evaluation shall be summarized in a report and submitted to the County. The report shall include a comparison of the site specific data to available data on the background concentrations of mercury in fish within the Cache Creek watershed. The County shall be responsible for submitting the data on mercury levels in fish to the California Department of Fish and Game and the Office of Environmental Health Hazard Assessment for a determination of whether a fish advisory should be issued.* • *If a fish advisory is issued, the owner/operator shall be required to post warnings on fences surrounding the mining pit lakes which prohibit fishing in the lakes an describe the fish advisory.*					

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	If the average fish specimen mercury content exceeds the statistically verified ambient mercury concentrations for comparable fish species (of similar size) collected within the CCRMP planning area for two consecutive years, wet pit mining on property controlled by the mining operator/owner shall be suspended and the owner/operator shall either: • *Present a revised reclamation plan to the Yolo County Community Development Agency which provides for filling the reclaimed lake to a level five feet above the average seasonal high groundwater level with a suitable backfill material, or* • *Present a mitigation plan to the Yolo County Community Development Agency which provides a feasible and reliable method for reducing methylmercury production or exposure to elevated mercury levels. Potential mitigation could include permanent aeration of bottom levels of the lake, alteration of water chemistry (increasing pH or dissolved organic carbon levels), control of anaerobic bacteria populations, or removal and replacement of affected fish populations. The mitigation plan would require approval by the Regional Water Quality Control Board, Department of Fish and Game, and the Yolo County Department of Environmental Health. (Removal and replacement of fish is not intended to be a long-term solution.)* *The reclamation plan shall be modified to provide mitigation approved for methylmercury reduction shall be applied to all other mining areas proposed for reclamation to permanent lakes within the reclamation plan.*					
Impact 4.4-4: Loss of Water from Aquifer Storage Due to Evaporation	*Mitigation Measure 4.4-4a* *Performance Standard 3.5-12 of the OCMP shall be modified as follows:* *All permanent wet pits shall be reclaimed to include valuable wildlife habitat to offset evaporation losses from wet pits.*	Prior to Mining	Planning	Submittal of Mining and Reclamation Application	Require as Permit Condition	
Impact 4.4-5: Potential Impacts Associated with Groundwater Recharge	*Mitigation Measure 4.4-5a* *The County shall eliminate the following Actions and Performance Standards from the OCMP: Objective 3.3-2, Actions 3.4-2, 3.4-6 through 3.4-8, Performance Standards 3.5-7, 3.5-9, 3.5-14, and 3.5-15.*	Prior to Mining	Planning	Adoption of OCMP	Delete from OCMP	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.4-6: Potential Impacts Resulting from Storm-Related Flooding	*Mitigation Measure 4.4-6a* *The following performance standard shall be added to the OCMP:* *Performance Standard 4.5-8: Flood protection upgrades shall be completed in the vicinity of the mining and processing areas, if necessary, to ensure protection from the 100-year flood event. Flood protection shall be provided from flooding associated with overtopping of the alluvial separators or levees along Cache Creek and all tributaries and drainage channels (including, but not limited to, Willow Slough and Lamb Valley Slough).* *The flood protection upgrades shall be designed and constructed to provide the necessary 100-year protection without exacerbating downstream flooding problems. Downstream flooding could be increased if floodplain storage areas were removed from the drainage system by constructing levees in areas where they did not exist before (or raising levees that are overtopped in floods up to the 100-year event). Alternative flood management design systems (potentially using detention basins, infiltration galleries, and/or floodplain storage in noncritical areas) shall be required as a condition of project approval.* *The following performance standard shall be added to the OCMP:* *Performance Standard 4.5-9: The County Floodplain Administrator shall file for a Letter of Map Revision with FEMA, to update the FIRMs affected by channel maintenance activities and levee improvements with the planning area every ten years.*	Prior to Mining Every 10 Years	Planning Planning and FEMA	Submittal of Mining and Reclamation Application Submittal of Letter of Map Revision	Require as Permit Condition Incorporate into OCMP	
Impact 4.4-7: Potential Impacts from Flooding Related to Dam Failure	*None required.*					

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.4-8: Potential Impacts Associated with Inundation of Dry Pits or Lowered Reclaimed Surfaces by High Groundwater Conditions	*Mitigation Measure 4.4-8a* *The following performance standard shall be added to the OCMP and associated ordinance:* *Performance Standard 3.5-16: The final distance between reclaimed lowered surfaces and average high groundwater shall not be less than five feet. The average high groundwater level shall be established for each proposed mining area. The degree of groundwater level fluctuation varies with location throughout the basin and within relatively small areas (proposed mining sites). The determination of average high groundwater level shall be conducted by a professional engineer or certified hydrogeologist and shall be based on wet season water level elevation data collected at the proposed site or adjacent areas with similar hydrogeological conditions. Water level records prior to 1977 shall not be used since they would reflect conditions prior to installation of the Indian Valley Dam. The dam caused a significant change in hydrology of the basin and data collected before its installation shall not be used in estimation current average high groundwater levels. The wells shall be adequately distributed throughout the proposed mining site to reflect spatial variation in groundwater levels and fluctuations.*	Prior to Mining and Post Reclamation	Planning	Submittal of Mining and Reclamation Application	Require as Permit Condition	
Agriculture						
Impact 4.5-1: Consistency with the California Land Conservation Act of 1965 (Williamson Act) Regulations	*None required.*					
Impact 4.5-2: Potential Impact of Permanent Loss of Agricultural Land Caused by Conversion of Agricultural Land to Other Post-Reclamation Uses	*Mitigation Measure 4.5-2a* *The following performance standards shall be included in OCMP:* *Performance Standard 4.5-8: All proposed mining and reclamation plans shall provide information in permit applications to allow identification of portions of the proposed mined lands that meet the definition of "prime farmlands" as defined under the Williamson Act.*	Prior to Mining	Planning	Submittal of Mining and Reclamation Application	Require as Permit Condition	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	Performance Standard 4.5-9: All mining permit applications that include "prime farmlands" as defined by the provisions of the Williamson Act shall identify the location and acreage of "prime farmlands" which, as a result of reclamation, would be permanently converted to non-agricultural uses. For each acre of "prime farmland" that would be converted to non-agricultural use, the reclamation plan shall present provisions to offset (at a 1:1 ratio) the conversion of these lands. The potential offsets can include, but not be limited to one or more of the following options: • *Identification of improvements by a qualified soil scientist to the agricultural capability of non-prime lands within or outside the project site that convert non-prime to prime agricultural conditions. These improvements can include permanent improvement of soil capability though soil amendments, reduction of soil limitations (such as excessive levels of toxins), or improvements in drainage for areas limited by flooding or low permeability soils.* • *Placement of conservation easements on lands meeting Williamson Act definition of "prime farmland". The operator shall be encouraged to target property "at risk" of conversion to non-agricultural uses in selecting areas for the offset. Prior to approval of the conservation easement, the operator shall consult with the County and/or an appropriate non-profit agency to determine the relative risk of conversion, to which the property might otherwise be subject.* • *Demonstration of the ability to provide irrigation to non-prime lands limited only by lack of irrigation water supply. The identified water supply cannot be made at the expense of "prime farmlands" currently using the same water supply.*	Prior to Mining	Planning	Submittal of Mining and Reclamation Application	Require as Permit Condition	
Impact 4.5-3: Potential Impacts of the Temporary Loss of Agricultural Productivity Due to Disturbance by Mining	*Mitigation Measure 4.5-3a* *The following performance standard shall be added to OCMP:* *Performance Standard 5.5-3: All proposed mining and reclamation plans shall present a phasing plan for mining and reclamation activities. The phasing plan shall be structured to minimize the area of disturbed agricultural lands during each mining phase, and encourage the early completion of reclamation of agricultural land.*	Prior to Mining	Planning	Submittal of Phasing Plan	Require as Permit Condition	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.5-4: Permanent Loss of Agricultural Soils Due to Wind or Water Erosion	*Mitigation Measure 4.5-4a* *OCMP Action 5.5-2 shall be amended as follows :* *Action 5.5-2: Topsoil, subsoil, and subgrade materials in stockpiles shall not exceed (40) feet in height, with slopes no steeper than 2:1 (horizontal:vertical). Stockpiles, other than aggregate stockpiles, shall be seeded with a vegetative cover to prevent erosion and leaching. The use of topsoil for purposes other than reclamation shall not be allowed without the prior approval of the Yolo County Community Development Director.*	Ongoing	Planning	Submittal of Mining and Reclamation Application	Require as Permit Condition	
Impact 4.5-5: Potential Impacts on Agricultural Capability Caused by Soil Management During Removal, Stockpiling, and Reuse	*None required.*					
Impact 4.5-6: Potential Impacts on Agricultural Production Related to Lowered Reclaimed Surfaces	*Mitigation Measure 4.5-6a* *The OCMP and implementing ordinances shall be augmented with the following standard:* *Performance Standard 5.5-5: Reclaimed agricultural surfaces shall be graded to provide adequate field gradients to allow surface/furrow irrigation of crops and allow for adequate storm water drainage.*	Post-Reclamation	Planning	Submittal of Mining and Reclamation Application	Require as Permit Condition	
Impact 4.5-7: Potential Cumulative Loss of Productive Agricultural Land Within Yolo County	*Mitigation Measure 4.5-7a* *Implementation of Mitigation Measure 4.5-2a would reduce the cumulative impact of permanent conversion of agricultural land to non-agricultural uses but not to a less-than-significant level.*	See Mitigation Measure 4.5-2a				
Biological Resources						
Impact 4.6-1: Impact on Existing Vegetative Cover	*None required.*					

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.6-2: Impact on Sensitive Natural Community Types	*Mitigation Measure 4.6-2a* *Section 10-4.502(b)(1) of the Off-Channel Surface Mining Ordinance shall be revised as follows:* *...The analysis shall propose appropriate measures to reduce any potential adverse impacts to species of concern, sensitive natural communities, or significant habitat.*	Prior to Mining	Planning	Submittal of Mining and Reclamation Application	Require as Permit Condition	
	The following revisions shall be made to Performance Standard 6.5-2 of the OCMP: *6.5-2. Avoid disturbance of riparian vegetation, including identified off-channel vegetation. Replacement habitat shall be established where complete avoidance is not possible according to a habitat restoration plan prepared by a qualified biologist, consistent with the goals of this plan.*	Ongoing	Planning	Submittal of Habitat Restoration Plan	Require as Permit Condition	
	The following shall be included as an additional performance standard in Chapter 6 of the OCMP: *6.4-12. Avoid disturbance of oak woodland vegetation and mature oaks Replacement habitat and plantings shall be established where complete avoidance is not possible according to a habitat restoration plan prepared by a qualified biologist, consistent with the goals of this plan.*	Ongoing	Planning	Submittal of Habitat Restoration Plan	Require as Permit Condition	
Impact 4.6-3: Disturbance to Wildlife Habitat and Disruption of Movement Corridors	*Mitigation Measure 4.6-3a* *The following shall be incorporated as an additional action policy in Chapter 6 of the OCMP:* *6.4-13. Where fence row or field margin habitat previously existed, reestablish similar habitat as part of reclamation to agricultural use to replace and improve the wildlife habitat value of agricultural lands, allowing for reestablishment of scattered native trees, shrubs, and ground covers along the margins of reclaimed fields. Reestablished habitat can be in locations other than where occurred originally. Restoration plans shall specify ultimate fence row or field margin locations, identify planting densities for trees and shrubs, and include provisions for monitoring and maintenance to ensure establishment.*	During Reclamation	Planning	Submittal of Habitat Restoration Plan	Require as Permit Condition	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	The following shall be incorporated as an additional action policy in Chapters 6 and 7 of the OCMP: *6.4-14 and 7.4-9. Avoid disturbance to important wildlife habitat features such as nest trees, colonial breeding locations, elderberry host plants for VELB, and essential cover associated with riparian forest and oak woodland habitat. This shall include sensitive siting of haul roads, trails, and recreational facilities away from these features.*	Ongoing	Planning	Submittal of Mining and Reclamation Application	Require as Permit Condition	
Impact 4.6-4: Impact on Special-Status Species	*Mitigation Measure 4.6-4a* *The following shall be included as additional action policies in Chapter 6 of the OCMP:* *6.4-15. Essential habitat for special-status species shall be protected and enhanced, or replaced as part of mitigation plans prepared by a qualified biologist.*	Ongoing	Planning	Submittal of Habitat Restoration or Mitigation Plan	Require as Permit Condition	
	6.4-16. Restoration components of reclamation plans shall include provisions to enhance habitat for special-status species, where feasible. *Performance Standard 6.5-3 of the OCMP shall be replaced with the following:*	Prior to Mining	Planning	Submittal of Habitat Restoration or Mitigation Plan	Require as Permit Condition	
	6.5-3. Slopes on stockpiled soils shall be graded to 2:1 for long-term storage to prevent use by bank swallows. At no time during the active breeding season (1 May through 31 July) shall slopes on stockpiles exceed 1:1, even on a temporary basis. Stockpiles shall be graded to a minimum 1:1 slope at the end of each work day where stockpiles have been disturbed during the active breeding season. *Performance Standard 6.5-7 of the OCMP shall be revised as follows:*	Ongoing	Planning	Submittal of Mining and Reclamation Plan	Require as Permit Condition	
	6.5-7. Proposed habitat restoration or mitigation plans shall be sent to the California Department of Fish and Game, U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers for review and comment to ensure that the projects do not conflict with other existing habitat enhancement efforts.	Prior to Mining	Planning	Submittal of Habitat Restoration Plan	Incorporate into OCMP	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	Performance Standard 6.5-8 of the OCMP shall be revised as follows: *6.5-8 All surface mining operations and reclamation plans shall complement the preservation and enhancement measures in the Yolo County Habitat Conservation Plan. Mining operators with lands designated as having a moderate to high potential for use as mitigation areas in the HCP shall be encouraged to participate in the Developer HCP Participation Options, including use of lands as mitigation sites.*	Prior to Mining	Planning	Submittal of Habitat Restoration or Mitigation Plan	Require as Permit Condition	
Impact 4.6-5: Modifications to Jurisdictional Wetlands or Other Waters	*Mitigation Measure 4.6-5a* *The following shall be included as an additional action policy in Chapter 6 of the OCMP:* *6.4-14. Existing jurisdictional wetlands shall be retained to the extent possible. Replacement wetlands shall be provided where complete avoidance is not possible according to a habitat restoration plan prepared by a qualified wetland specialist and approved by jurisdictional agencies, ensuring no net loss of wetland acreage or habitat value.* *Performance Standard 6.5-7 of the OCMP shall be revised as recommended in Mitigation Measure 4.6-4a.*	Prior to Mining	Planning, CDFG, USFWS, Corps	Submittal of Habitat Restoration Plan	Require as Permit Condition	
Impact 4.6-6: Compatibility and Consistency of Restoration Provisions	*Mitigation Measure 4.6-6a* *Action Policy 6.4-2 of the OCMP shall be revised as follows:* *6.4-2. Coordinate with the California Department of Fish and Game, U.S. Fish and Wildlife Service, and U.S. Army Corps of Engineers to ensure that proposed habitat restoration projects are consistent with or complement the Off-Channel Mining Plan.* *Performance Standard 6.4-10 of the OCMP shall be revised as follows:* *6.4-10. Restore riparian habitat throughout the planning area, wherever appropriate. However, revegetative efforts shall be primarily focussed on implementing recommendations described in the Technical Studies and the subsequent Restoration Recommendations incorporated into the CCRMP.*	Prior to Mining During Reclamation	Planning Planning	Submittal of Habitat Restoration Plan Adoption of OCMP	Incorporate into OCMP Incorporate into OCMP	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	Performance Standard 6.5-9 of the OCMP shall be revised as follows: *6.5-9. If any wet pit is proposed to be reclaimed for recreational uses and/or riparian habitat, the design shall account for fluctuations in the groundwater table.* *Performance Standard 6.5-7 of the OCMP shall be revised as recommended in Mitigation Measure 4.6-4a.*	Prior to Mining See Mitigation Measure 4.6-4a	Planning	Submittal of Habitat Restoration Plan	Require as Permit Condition	
Air Quality						
Impact 4.7-1: Potential Emissions of PM_{10}	*Mitigation Measure 4.7-1a* *The following performance standard shall be added to the OCMP:* *Wherever practical and economically feasible, portable or movable conveyor systems shall be used to transport raw materials and overburden.*	Prior to Mining	Planning	Submittal of Mining and Reclamation Plan	Require as Permit Condition	
Impact 4.7-2: Potential Emissions of Ozone Precursors (ROG and NO_X)	*Mitigation Measure 4.7-2a* *The following performance standard shall be added to the OCMP:* *Wherever practical and economically feasible, portable or movable conveyor systems shall be used to transport raw materials and overburden.* *OCMP Performance Standard 2.5-7 and proposed Off-Channel Surface Mining Ordinance Section 10.4.11 shall be amended as follows:* *All internal combustion engine driven equipment and vehicles shall be kept tuned according to the manufacturer's specifications and properly maintained to minimize the leakage of oils and fuels. No vehicles or equipment shall be left idling longer than 10 minutes.*	See Mitigation Measure 4.7-1a Ongoing	Applicant	Compliance with Manufacturer's Specifications and Proper Maintenance	Require as Permit Condition	
Impact 4.7-3: Cumulative Effects on Attainment of State and Federal Standards	*Mitigation Measure 4.7-3b* *No enforceable mitigation measures are available.*	None available				
Impact 4.7-4: Potential Impacts on Sensitive Receptors	*None required.*					

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Traffic and Circulation						
Impact 4.8-1: Potential Increase in Trips Associated with Recycling	*None required.*					
Impact 4.8-2 Potential for Increase in Vehicle Trips	*Mitigation Measure 4.8-2a* *Performance Standard 2.5-5 of the OCMP and Section 10-4.407 of the Off-Channel Surface Mining Ordinance shall be amended as follows:* *As a condition of approval, the operator shall agree to assume joint pavement maintenance responsibility with the County (or shared with another producer using the same roadway) for all County roads along a designated haul route from the access point of the surface mining operation to the nearest State Highway. The operator shall agree to submit an evaluation of the structural integrity of the identified roadways on or before December 1 of each year in which mining operations are permitted. The report shall be prepared by a registered professional engineer and/or Country staff with expertise in the area of roadway pavement and shall be subject to the approval of the Public Works Department. Based on the results of this annual evaluation, the Public Works Department shall identify the improvements required to maintain safe and efficient traffic operations on the road for the upcoming year. The County agrees to implement maintenance improvements similar to other County roads (i.e., fill cracks and chip seal). The operator agrees to implement the improvements beyond the typical County improvements in a timeframe set forth by the Public Works Department. The operator does not assume the liability for the roadway, except for cases where the operator has not fulfilled its maintenance obligations.* *If a subsequent mining operation utilizes a road previously required to be improved pursuant to this subsection, then the subsequent operator shall be responsible for compliance with the agreements and requirements of the previous operator.*	Annually during Mining	Public Works	Submittal of Roadway Evaluation	Require as Permit Condition	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.8-3: Potential Change in LOS at the State Route 16 / Road 98 / Main Street Intersection	*Mitigation Measure 4.8-3a:* *The following performance standard shall be added to the OCMP and its implementing ordinance:* *Each operator shall pay its fair share toward improvements required to maintain LOS C operations on County roads or LOS D operations on State Highways within the OCMP planning area. Fair share mitigation shall also be required to improve existing operational deficiencies of the transportation system. Specific locations shall be identified through the project-specific environmental review process for each operator's long-term mining permit application. Each operator shall participate in a funding program operated by Yolo County which is designed to ensure that all improvements are made in a timely manner and that a reimbursement mechanism is in place to ensure repayment of any costs contributed in excess of fair share amounts. The program shall be initiated upon the approval of the long-term mining permits and shall be updated biennially by Yolo County to ensure any new or modified impacts or funding sources are being addressed.* *Each operator shall have the option to complete the work at their expense without triggering the competitive bid process, as long as they comply with the applicable legal requirements of the County. If the operator declines the option, the County shall utilize the competitive bid process.*	Biannually upon Approval of Mining	Public Works	Participation in Funding Program	Require as Permit Condition	
Impact 4.8-4: Potential Change in LOS at the State Route 16 / Road 89 Intersection	*Mitigation Measure 4.8-4a* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 3, 5b and 6.*	See Mitigation Measure 4.8-3a				
Impact 4.8-5: Potential Impacts to the Non-Standard Segment of Road 19, West of Interstate 505	*Mitigation Measure 4.8-5a* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 4, 5a, 5b and 6.*	See Mitigation Measure 4.8-3a				
Impact 4.8-6: Potential Impacts to the Non-Standard Segment of State Route 16 Between I-505 and the Entrance to the Solano Concrete Plant	*Mitigation Measure 4.8-6a* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 3, 5b and 6.*	See Mitigation Measure 4.8-3a				

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.8-7: Potential Impacts to the Non-Standard Segment of Road 14, West of Interstate 505	*Mitigation Measure 4.8-7a* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 4, 5a, 5b and 6.*	See Mitigation Measure 4.8-3a				
Impact 4.8-8: Potential Impacts to the Non-Standard Pavement Segment of Road 14, West of Interstate 505	*Mitigation Measure 4.8-8a* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 4, 5a, 5b and 6.*	See Mitigation Measure 4.8-3a				
Impact 4.8-9: Potential Impacts to Two Non-Standard Bridges on Road 89, North of State Route 16	*Mitigation Measure 4.8-9a* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 3, 5b and 6.*	See Mitigation Measure 4.8-3a				
Impact 4.8-10: Potential Impacts to a Non-Standard Bridge on Road 19, West of Interstate 505	*Mitigation Measure 4.8-10a* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 4, 5a, 5b and 6.*	See Mitigation Measure 4.8-3a				
Impact 4.8-11: Potential Impacts to a Non-Standard Bridge on Road 85, North of Road 16A	*Mitigation Measure 4.8-11a* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 4, 5a, 5b and 6.*	See Mitigation Measure 4.8-3a				
Impact 4.8-12: Potential Impacts to a Non-Standard Bridge on Road 14, West of Interstate 505	*Mitigation Measure 4.8-12a* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 4, 5a, 5b and 6.*	See Mitigation Measure 4.8-3a				
Impact 4.8-13: Potential Impacts to the Non-Standard Curve Radii at the Road 85 / Road 14 Intersection	*Mitigation Measure 4.8-13a* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 5a, 5b and 6.*	See Mitigation Measure 4.8-3a				
Impact 4.8-14: Potential Impacts to the Non-Standard Curve Radii at the State Route 16 / Road 89 Intersection	*Mitigation Measure 4.8-14a* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 3, 5b and 6.*	See Mitigation Measure 4.8-3a				

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.8-15: Potential Impacts to the Non-Standard Curve Radii at the Road 20 / Road 96 Intersection	*Mitigation Measure 4.8-15a* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 3, 5b and 6.*	See Mitigation Measure 4.8-3a				
Impact 4.8-16: Potential for Accelerated Pavement Deterioration	*Mitigation Measure 4.8-16a* *Implementation of Mitigation Measure 4.8-2a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 1a, 3, 4, 5a, 5b and 6.*	See Mitigation Measure 4.8-2a				
Noise						
Impact 4.9-1: Exposure to Unacceptable Noise Levels from Mining, Processing, Hauling, Reclamation, and Post-Reclamation Activities On Site	*Mitigation Measure 4.9-1a* *The performance standards in the Off-Channel Surface Mining Ordinance (Section 10-4.418) shall be modified so that the residential noise limit is a CNEL of 60 dB rather than the currently specified L_{eq} of 60 dB. This change shall also be made in the Off-Channel Mining Plan.*	Prior to Mining	Planning	Adoption of OCMP and Ordinances	Incorporate into OCMP	
	Mitigation Measure 4.9-1b *From 6:00 a.m. to 6:00 p.m., noise levels shall not exceed an average noise level equivalent (L_{eq}) of eighty (80) decibels (dBA) measured at the property boundaries of the site. However, noise levels may not exceed an average noise level equivalent (L_{eq}) of sixty (60) decibels for any nearby off-site residences or other noise-sensitive land uses.* *From 6:00 p.m. to 6:00 a.m., noise levels shall not exceed an average noise level equivalent (L_{eq}) of sixty-five (65) decibels (dBA) measured at the property boundaries of the site.* *Noise levels shall not exceed a community noise equivalent level (CNEL) of sixty (60) decibels (dBA) for any nearby off-site residence or other noise-sensitive land uses.*	Prior to Mining	Planning	Submittal of Acoustical Analysis	Require as Permit Condition	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	Mitigation Measure 4.9-1c *The following Performance Standard shall be added to the OCMP:* *Mining activities shall not exceed the noise limit of CNEL 60 dB at existing residences. An existing residence shall be considered the property line of any residentially zoned area or, in the case of agricultural land, any occupied residential structures. Achieving the noise standards could involve setbacks as proposed in the Off-Channel Surface Mining Ordinance (Section 10.4.425), the use of quieter equipment adjacent to residences, or the construction of landscaped berms between mining activities and residences.*	During Mining	Planning	Submittal of Acoustical Analysis	Require as Permit Condition	
Impact 4.9-2: Exposure to Unacceptable Increases in Noise Generated by Off-Site Truck Traffic	*None required.*					
Impact 4.9-3: Contribution to Increase in Cumulative Noise	*Mitigation Measure 4.9-3a* *The following performance standard shall be added to the OCMP and its implementing ordinances:* *Operators shall provide acoustical analysis for future truck and traffic noise associated with the individual operations along County roadways identified as experiencing significant impacts due to increased traffic noise. The study shall identify noise levels at adjacent noise-sensitive receptors and ways to control the noise to the "normally acceptable" goal of a CNEL of 60 dB and reduce the increase over existing conditions to 5 dB or less. Typical measures that can be employed include construction of noise barriers (wood or masonry), earthen berms, or re-routing of truck traffic.*	Prior to Mining	Planning	Submittal of Acoustical Analysis	Require as Permit Condition	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.9-4: Generation of Vibration or Nuisance Noise	*Mitigation Measure 4.9-4a* *The following performance standard shall be added to the OCMP:* *If mining occurs within 1500 feet of residences, equipment used during nighttime activities shall be equipped with non-sonic warning devices consistent with OSHA regulations, which may include fencing of the area to avoid pedestrian traffic, adequate lighting of the area, and placing an observer in clear view of the equipment operator to direct backing operations. Prior to commencement of operations without sonic warning devices, operators shall file a variance request with the Cal OSHA Standards Board showing that the proposed operation would provide equivalent safety to adopted safety procedures, including sonic devices.*	During Mining	Planning and CalOSHA Standards Board	Adoption of Safety Procedures or Submittal of Variance Request	Require as Permit Condition	
Aesthetics						
Impact 4.10-1: Effects on Existing Views or Vistas During Mining	*Mitigation Measure 4.10-1a* *In conjunction with the environmental review of individual projects permitted under the OCMP, means of minimizing the visibility of mining operations, facilities and landform alterations from public viewpoints shall be assessed based on site-specific visual characteristics and viewing conditions. The use of berms, vegetative screens, seeding, special plant materials and contouring the sides and top surfaces of modified landforms, or other measures, shall be incorporated into the individual mine and reclamation plans as appropriate.*	During Mining	Planning	Submittal of Mining and Reclamation Application	Require as Permit Condition	
	Mitigation Measure 4.10-1b *Where mining occurs within 1,000 feet of a public right-of-way, the operators shall phase mining such that no more than 50 acres of the area that lies within 1,000 feet of the right-of-way would be actively disturbed at any time except where operations are adequately screened from public view. Where adequate screening exists in the form of mature vegetation and/or constructed berms that effectively block public view, the area of active disturbance within 1,000 feet of the right-of-way shall not exceed the area that is screened by more than 50 acres at any time. Actively disturbed areas are defined as those on which mining operations of any kind, or the implementation of reclamation such as grading, seeding or installation of plant material are taking place.*	During Mining	Planning	Submittal of Phasing Plan	Require as Permit Condition	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.10-2: Effects on Views or Vistas Following Reclamation	*Mitigation Measure 4.10-2a* *None required. However, the following condition would further reduce impacts:* *In conjunction with the environmental review of individual projects permitted under the OCMP, further means of improving the appearance of the landscape after reclamation shall be assessed based on site-specific visual characteristics, site lines and view corridors. The use and placement of berms, vegetative screens, special plant materials, grading slopes and contouring the sides and top surfaces of modified landforms to mimic surrounding landforms, or other measures, shall be incorporated into the mine reclamation plans as appropriate.*	Prior to Mining	Planning	Submittal of Mining and Reclamation Application	Require as Permit Condition	
Impact 4.10-3: Potential for Visual Incompatibility with Surrounding Land Uses	*None required.*					
Impact 4.10-4: Introduction of Light and Glare	*None required.*					
Impact 4.10-5: Consistency with Yolo County General Plan Policies	*None required.*					
Issue 4.10-6: Contribution to Cumulative Visual Impacts	*None required.*					

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Cultural Resources						
Impact 4.11-1: Potential Impacts to Cultural Resources	*Mitigation Measure 4.11-1a* *The following performance standard shall be added to the OCMP:*					
	All resource records shall be checked for the presence of and the potential for prehistoric and historic sites. Damaging effects on cultural resources shall be avoided whenever possible. If avoidance is not feasible, the importance of the site shall be evaluated by a qualified professional prior to commencement of mining operations. If a cultural resource is determined not to be important, both the resource and the effect on it shall be reported to the County, and the resource need not be considered further. If avoidance of an important cultural resource is not feasible, a mitigation plan shall be prepared and implemented. The mitigation plan shall explain the importance of the resource, describe the proposed approach to mitigate destruction or damage to the site, and demonstrate how the proposed mitigation would serve the public interest.	Prior to Mining	Planning	Submittal of Mitigation Plan	Require as Permit Condition	
	In addition, Performance Standard 2.5-3 of the OCMP shall be modified as follows: *If human skeletal remains are encountered during excavation, all work within seventy-five (75) feet shall immediately stop, and the County Coroner shall be notified within twenty-four (24) hours. If remains are of Native American origin, the appropriate Native American community identified by the Native American Heritage Commission shall be contacted, and an agreement for treating or disposing of, with appropriate dignity, the remains and associated grave goods shall be developed. If any cultural resources such as chipped or ground stone, historical debris, building foundations, or paleontological materials are encountered during excavation, then all work within seventy-five (75) feet shall immediately stop and the Director shall be notified at once. Any cultural resources found on the site shall be recorded by a qualified archaeologist and the information shall be submitted to the County.*	During Mining	Applicant and County Coroner	Adoption of OCMP	Require as Permit Condition	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Hazards						
Impact 4.12-1: Potential Human Health And/Or Environmental Impacts from the Accidental Release of Petroleum Products and Other Chemicals Used During Mining and Reclamation And/Or at Processing Plants	*Mitigation Measure 4.12-1a* *Goal 2.2-4 shall be revised as follows:* *Eliminate or minimize hazards to the public health and safety that are associated with surface mining operations and reclamation.*	Prior to Mining	Planning	Adoption of OCMP	Incorporate into OCMP	
	Objective 2.3-3 shall be revised as follows: *Provide standards and procedures for regulating surface mining operations and reclamation so that hazards are eliminated or minimized and potential adverse environmental effects are reduced or prevented.*	Prior to Mining	Planning	Adoption of OCMP	Incorporate into OCMP	
	Action 2.4-2 shall be revised as follows: *Hazardous materials business plans must be submitted biannually as required by the Health and Safety Code, unless the types of hazardous materials used change, in which case revised business plans must be submitted within 30 days of the change.*	Biannually During Mining	Planning	Submittal of Materials Business Plan	Require as Permit Condition	
	The following performance standard shall be added to the Aggregate Resources Element of the OCMP: *PS 4.5-9: Fueling and maintenance activities of heavy equipment (except draglines and floating suction dredges) are prohibited within 100 feet of open bodies of water during mining and reclamation. All Storm Water Pollution Prevention Plans shall include provisions for releases of fuels during fueling activities for draglines and floating suction dredges.*	During Mining and Reclamation	Planning	Submittal of SWPPP	Require as Permit Condition	
	Objective 3.3-3 and Action 3.4-3 shall be revised as follows: *Objective 3.3-3: Ensure that off-channel surface mines are operated such that surface and groundwater supplies are not adversely affected by erosion, lowering of the water table, and/or contamination during mining and reclamation.*	During Mining and Reclamation	Planning	Submittal of Groundwater Monitoring Program	Require as Permit Condition	
	Action 3.4-3: Include a groundwater monitoring program as a condition of approval for any surface mining and reclamation operation that proposes off-channel excavations that extend below the groundwater level. The monitoring program shall require regular groundwater level data, as well as a water quality monitoring program based on a set of developed standards.	During Mining and Reclamation	Planning	Submittal of Groundwater Monitoring Program	Require as Permit Condition	

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.12-2: Historic Pesticide Use May Affect the Health and Safety of Workers Engaged in Mining or Reclamation Activities	*None required.*					
Impact 4.12-3: Steep Pit Slopes May Present a Drowning Hazard to the Public	*Mitigation Measure 4.12-3a* *Goals 2.2-4 and 2.3-3 shall be revised to include references to reclamation. Refer to Mitigation Measure 4.12-1a.* *Performance Standards 2.5-4, 2.5-16, and 2.5-18 shall be revised as required by Mitigation Measure 4.3-2a to require that slopes shall not be steeper than 2:1 five feet below the average summer low groundwater level.* *Performance Standard 2.5-8 shall be revised to include signage and fencing requirements during and after reclamation. These changes have been included in Mitigation Measure 4.4-2a in the Hydrology section.*	See Mitigation Measure 4.12-1a See Mitigation Measure 4.3-2a See Mitigation Measure 4.4-2a				
Impact 4.12-4: Open Bodies of Water May Become Breeding Areas for Mosquitoes. An Increase in the Mosquito Population Could Adversely Affect the Public Health	*None required.*					

OCMP MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirement**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Public Services and Utilities						
Impact 4.13-1: Potential for Long-Term Impacts to Open Space and Recreational Opportunities in the Lower Cache Creek Area	*None required.*					
Impact 4.13-2: Potential Increase in Demand for Public Services	*Mitigation Measure 4.13-2a* *None required; however, the following is recommended:* *The County shall identify the costs of implementing the policies contained in the OCMP, and determine a fair-share cost program for reimbursement by gravel operators and any other affected parties.*	Prior to Mining	Planning	Preparation of Fair-Share Cost Program	Incorporate into OCMP	

APPENDIX B: REVISED SUMMARY TABLE

Table 2-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES					
Environmental Impact	**Level of Significance Before Mitigation**		**Mitigation Measures**	**Level of Significance After Mitigation**	
	LS	**S**		**LS**	**SU**
Land Use and Planning					
Impact 4.2-1: The project as proposed is inconsistent with some of the policies of the OCMP.		•	*Mitigation Measure 4.2-1a* *Implementation of Mitigation Measures 4.4-3a, 4.4-4a, and 4.4-7a will reduce this impact to a less than significant level.*	•	
Impact 4.2-2: The proposed project would be consistent with policies of the Yolo County General Plan.	•		*Mitigation Measure 4.2-2a* *None required.*	•	
Impact 4.2-3: The proposed project may be inconsistent with the Yolo County Zoning Ordinance and the Williamson Act.		•	*Mitigation Measure 4.2-3a* *The project mining schedule or reclamation plan shall be modified to ensure that if Phase III lands are to be mined before the Williamson Act contracts expire, then reclamation shall be to prime agricultural uses only. Alternatively, if mining in Phase III does not begin until after 2006, no change to the proposed reclamation plan would be required.*	•	
Impact 4.2-4: The proposed project would be consistent with the State Mining and Reclamation Act (SMARA) and Regulations.	•		*Mitigation Measure 4.2-4a* *None required.*	•	
Impact 4.2-5: The proposed project would be consistent with the draft Yolo County Habitat Conservation Plan.	•		*Mitigation Measure 4.2-5a* *None required.*	•	
Impact 4.2-6: The proposed project would be consistent with the Regional Water Quality Control Board Basin Plan.	•		*Mitigation Measure 4.2-6a* *None required.*	•	
Impact 4.2-7: The proposed project is inconsistent with agricultural policies adopted by the Yolo County Resource Conservation District.		•	*Mitigation Measure 4.2-7a* *None available. This is a significant, unavoidable impact of the project.*		•
Impact 4.2-8: The proposed project may be incompatible with some existing and planned land uses.		•	*Mitigation Measure 4.2-8a* *The County shall determine whether the applicant's offer to dedicate reclaimed lands in Phase V and VI for the proposed Recreation Node would fulfill the policy of the CCRMP. The County and the applicant should enter into discussions to resolve how public access to the future recreation facility can be accommodated. If determined to be feasible, the project plans should be modified to include a public access road along the eastern boundary of the site.*	•	

Key: LS = less than significant
S = significant
SU = significant and unavoidable

Table 2-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES (*continued*)					
Environmental Impact	**Level of Significance Before Mitigation**		**Mitigation Measures**	**Level of Significance After Mitigation**	
	LS	**S**		**LS**	**SU**
Impact 4.2-9: During the mining phases, the proposed project would result in an intensification of land use for the mining sites.	•		*Mitigation Measure 4.2-9a* *None required.*	•	
Geology and Soils					
Impact 4.3-1: Expected seismic shaking at the project could result in ground failures and damage to reclamation features.		•	*Mitigation Measure 4.3-1a* *Implement performance standards presented in Mitigation Measure 4.3-1a of the OCMP Program EIR.*	•	
Impact 4.3-2: Potential failure and/or erosion of slopes could result in unstable slope conditions or adverse sedimentation of open water bodies.		•	*Mitigation Measure 4.3-2a* *Compliance with Mitigation Measure 4.3-2a of the OCMP Program EIR.*	•	
Impact 4.3-3: Aggregate extraction proposed by the project would result in the decreased availability of aggregate resources.	•		*Mitigation Measure 4.3-3a* *None required.*	•	
Impact 4.3-4: Erosion, failure, or overtopping of the channel bank separating the proposed mining areas from the active channel of Cache Creek could result in flooding of the pits and potential permanent inundation of the mining or reclaimed lower agricultural fields.		•	*Mitigation Measure 4.3-4a* *The County shall revise the CCRMP channel boundary in the vicinity of the site to reflect the Cunningham Engineering (1995) 100-year floodplain boundary. The hydraulic model used to determine the boundary assumes replacement of the Capay bridge with a three-span bridge. If this assumption changes, additional HEC-2 modeling will be required to establish the revised CCRMP boundary. If this boundary changes significantly upon modeling, additional review may be required.* *Mitigation Measure 4.3-4b* *Portions of the northern margin of the proposed Mining Areas II, III, V, VI, and VII shall be redesigned to provide a minimum 200-foot setback from the existing Cache Creek stream bank, in conformance with the requirements of Performance Standard 4.5-3 and all other pertinent performance standards in the OCMP. The revised project design shall be submitted prior to commencement of mining within Phase 3 and be consistent with the recommended slope design presented in the current application. If the redesigned project results in changes in any other mining area boundaries, additional CEQA review may be required.* *Mitigation Measure 4.3-4c* *Obtain an exception to Performance Standard 4.5-3 for the northeastern portions of Mining Areas III, V, and VI. Such approval shall require submittal and approval of engineering design for controlled flow inlet channels for each of the former mining areas. The design of the inlets shall be prepared by an experienced, licensed engineer. Inlet channels shall be designed and constructed to concentrate and control flow into the former mining areas. The design shall provide channel materials which will not erode during inundation events. Design shall be approved and work completed prior to commencement of mining within affected phases.*	•	

			Alternatively, the portions of the levee in these areas could be raised to provide 100-year flood protection for these areas ~~with a minimum of three feet of freeboard~~. Prior to raising the levee, if that is the selected alternative, a hydraulic analysis prepared and signed by a licensed engineer, demonstrated that off-site flooding impacts would not be created, must be submitted to the County for review. This mitigation measure would be consistent with the proposed project and the requirements of the OCMP. Any levee work performed shall be completed prior to commencement of mining within the affected phases. *Mitigation Measure 4.3-4d* *Implement Mitigation Measure 4.3-3a of the OCMP EIR. Specifically, the applicant shall conduct annual monitoring and maintenance of the channel banks and levees at the northern margin of the project site during the mining and reclamation period. The monitoring shall be conducted by a licensed engineer and shall minimally include visual inspection of channel banks and levees for evidence of erosion or slope instability. Evidence of erosion shall include, but not be limited to, the existence of oversteepened banks and loss of vegetation. Evidence of slope instability shall include formation tension cracks, arcuate scarps, or unexcavated benches.* *The annual report of channel bank and levee conditions shall be submitted to the Yolo County Community Development Agency with the Annual Mining and Reclamation Report. The report shall include the identification of the location (on scaled maps and photographs), estimated area and volume of eroded materials or slope failure, a determine of the cause(s) of erosion or slope failure, and recommendations for remedial action. Recommended remedial actions shall be implemented prior to November 1.* *Mitigation Measure 4.3-4e* *Following reclamation, the YCCDA shall determine, on the basis of inspection of the performance of the channel banks and levees during the mining and reclamation period, the need for continued channel bank and levee monitoring and reporting. The landowner shall be responsible for continuing monitoring and maintenance. A restriction shall be place on the deed for the underlying property requiring continued inspection and maintenance of channel banks and levees, and allowing access by the County for same.* *Mitigation Measure 4.3-4f* *The proposed project design shall be revised to provide a biotechnical bank protection design to replace the proposed placement of rip rap on that section of the south bank of Cache Creek extending 1,500 feet downstream from the I-505 bridge unless engineering evaluations demonstrate that riprap must be used to control erosion. The proposed ~~biotechnical~~ bank protection shall be submitted to the Yolo County Community Development Agency and Caltrans for approval prior to the commencement of mining in Mining Area VII.*		

Key: LS = less than significant
S = significant
SU = significant and unavoidable

Table 2-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES (*continued*)

Environmental Impact	Level of Significance Before Mitigation		Mitigation Measures	Level of Significance After Mitigation	
	LS	S		LS	SU
			Mitigation Measure 4.3-4g *Mining within Mining Area VII shall not be conducted within 700 feet of the existing stream bank until stream bank stabilization is provided for that portion of the south bank of Cache Creek upstream from the I-505 bridge. The bank protection shall be performed in accordance with the guidelines presented in the Cache Creek Resource Management Plan and Cache Creek Improvements Program. The proposed ~~biotechnical~~ bank protection design shall be submitted to the Yolo County Community Development Agency for approval prior to the commencement of mining in Mining Area VII.* *Mitigation Measure 4.3-4h* *Recommendations of the geotechnical report for stabilization of the south bank of Cache Creek shall be implemented within one year after the commencement of mining. Prior to the construction of the improvements, detailed plans identifying the type of stream bank protection shall be submitted to the Technical Advisory Committee (TAC) for review and approval. The bank protection plans shall incorporate biotechnical methods of bank stabilization ~~when appropriate for erosion control~~.* *Mitigation Measure 4.3-4i* *The applicant shall enter into a legally-binding agreement with the County that commits the applicant to participate in implementation of the Cache Creek Improvements Program. Participation shall include, but not be limited to, contribution of equipment and labor for channel widening projects and channel maintenance mining recommended by the County ~~and channel modification at the Esparto bridge~~.* *Mitigation Measure 4.3-4j* *Prior to the commencement of mining below the groundwater level, the applicant shall contact the California Division of Safety of Dams (DSD) for a determination on whether the alluvial separators that would be created by the project fall under DSD jurisdiction.*		
Hydrology and Water Quality					
Impact 4.4-1: Flooding at the site could cause property damage and injury to on-site workers.		•	~~*Mitigation Measure 4.4-1a*~~ ~~*Prior to initiation of mining proposed in this application, the applicant shall increase levee heights to provide three feet of freeboard above 100-year flood elevations in the vicinity of the project site, except as discussed in Mitigation Measure 4.3-4c.*~~ *Mitigation Measure 4.4-1~~b~~a* *The applicant must apply for, and receive, a floodplain development permit from Yolo County prior to mining activities within U.S. Department of Housing and Urban Development designated 100-year floodplains.*	•	

Impact 4.4-2: Evaporation from a wet pit water surface would represent a loss of water from groundwater storage.	•		*Mitigation Measure 4.4-2a* *None required.*	•	
Impact 4.4-3: Creation of wet pit lakes exposes surface and groundwater to potential degradation of water quality during the mining and reclamation period.		•	*Mitigation Measure 4.4-3a* *Implement Mitigation Measure 4.4-2a of the OCMP Program EIR.*	•	
Impact 4.4-4: Creation of wet pit lakes exposes surface and groundwater to potential degradation of water quality during the post-reclamation period.		•	*Mitigation Measure 4.4-4a* *Implement Mitigation Measures 4.4-2a and 4.4-3a of the OCMP Program EIR.*	•	
Impact 4.4-5: Creation of wet pit lakes and the subsequent backfilling with fine-grained sediments (processing fines and overburden) could cause impacts to groundwater levels, rate of flow and direction of flow.	•		*Mitigation Measure 4.4-5a* *None required.*	•	
Impact 4.4-6: Mining of aggregate and subsequent reclamation of the mined areas would result in alteration of the topography and drainage patterns at the site.	•		*Mitigation Measure 4.4-6a* *None required.*	•	
Impact 4.4-7: Reclaimed lowered agricultural surfaces could be inundated during parts of the year by high groundwater conditions, adversely impacting productivity.		•	*Mitigation Measure 4.4-7a* *All reclaimed lowered agricultural surfaces shall be, at minimum, five feet above average high groundwater. The reclamation plan for the Solano West mining area shall be modified to meet this requirement.*	•	
Impact 4.4-8: Increased pumping of groundwater at the processing plant to support the proposed increase in aggregate extraction and processing could adversely affect water supply wells in the vicinity.	•		*Mitigation Measure 4.4-8a* *None required.*	•	
Agriculture					
Impact 4.5-1: The proposed project would result in the temporary loss of agricultural production during mining and reclamation.	•		*Mitigation Measure 4.5-1a* *None required.*	•	
Impact 4.5-2: The proposed project would result in permanent conversion of 252 acres of prime farmland to nonagricultural uses.		•	*Mitigation Measure 4.5-2a* *Compliance of the project with Mitigation Measure 4.5-2a of the OCMP Program EIR would reduce the impact of the permanent loss of agricultural land. Compliance with the mitigation may be phased to track with the phasing of the mining. Compliance shall be verified by phase.*		•

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Table 2-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES (*continued*)

Environmental Impact	Level of Significance Before Mitigation		Mitigation Measures	Level of Significance After Mitigation	
	LS	S		LS	SU
Impact 4.5-3: Water or wind erosion of stockpiles of agricultural soils at the project site could result in permanent loss of an important agricultural resource.	•		*Mitigation Measure 4.5-3a* *None required.*	•	
Impact 4.5-4: Proposed post-reclamation uses could result in impacts to agricultural lands and operations on- and off-site.	•		*Mitigation Measure 4.5-4a* *None required.*	•	
Impact 4.5-5: Lowering of reclaimed agricultural fields could result in adverse conditions for agricultural production.		•	*Mitigation Measure 4.5-5a* *Compliance with Mitigation Measure 4.4-8a of the OCMP Program EIR would mitigate the potential impacts of high seasonal groundwater on crop productivity. The mitigation requires that all reclaimed agricultural surface are a minimum of five feet above the average seasonal high groundwater level. To meet this standard, the elevation of the reclaimed agricultural fields within Mining Area VII shall be raised two or more feet above the proposed reclaimed surface elevation.*	•	
Impact 4.5-6: The nonrenewal of current Williamson Act contracts for land affected by mining could result in a reduction of land under conservation for agriculture or open space uses.	•		*Mitigation Measure 4.5-6a* *None required. However, permanent conservation of the project site for agricultural and open space use would be better assured if all parcels within the site were re-enrolled in Williamson contracts upon completion of mining.*	•	
Impact 4.5-7: Proposed reclamation of portions of mined areas to tree crop agriculture could potentially conflict with adjacent agricultural uses.	•		*Mitigation Measure 4.5-7* *None required.*	•	
Impact 4.5-8: Implementation of the proposed project would contribute to the cumulative loss of agricultural land.		•	*Mitigation Measure 4.5-8a* *Implementation of Mitigation Measure 4.5-2a would reduce the impact of the cumulative loss of agricultural land in Yolo County.*		•
Biological Resources					
Impact 4.6-1: Project implementation would result in approximately 598 acres of primarily agricultural cover, revegetation of disturbed areas, and enhancement of native habitat.	•		*Mitigation Measure 4.6-1a* *None required.*	•	
Impact 4.6-2: Grading in the proposed mining area would result in the loss of mature oaks and could result in inadvertent disturbance to remnant sensitive natural communities along the Cache Creek corridor.		•	*Mitigation Measure 4.6-2a* *Figure 8 of the HRP shall be revised to indicate the location of hedgerow plantings, proposed by the applicant~~, on any side slopes around the perimeter of areas identified as "Integrated Agriculture" (tree crops) and "Reclaimed Agriculture"~~ around the Hutson parcel or as specified as part of habitat enhancement in a Section 2081 permit if required by the CDFG or to mitigate at a 1:1 ratio the actual loss of fence row habitat.*	•	

			Mitigation Measure 4.6-2b *Mature oak trees at the fringe of proposed mining areas shall be preserved. These shall include: the two oaks at the southwestern corner of the mining area on the Solano West parcel; the two oaks at the southwest corner of the mining area along the boundary between the Farnham West and Hutson parcels; and the single oak at the southeastern edge of the mining area on the Snyder West parcel. Stockpiling of topsoil and overburden proposed in the vicinity of these five trees shall be restricted to beyond the tree driplines. As required by Performance Standard 6.5-1 of the OCMP, temporary fencing shall be provided around the dripline of these trees to prevent possible construction-related damage. Fencing shall remain in place until stockpiles are removed and the surrounding lands are returned to agricultural production.* *Mitigation Measure 4.6-2c* *As required by Performance Standard 6.5-1 of the OCMP, temporary fencing shall be installed at the boundary of the habitat restoration area along the Cache Creek corridor, prior to initiation of any mining activity for each phase of the project. The fencing shall remain in place throughout the duration of active mining until reclamation has been completed for each project phase.* *Mitigation Measure 4.6-2d* *Proposed levee and channel stabilization improvements shall be designed to avoid impacts to riparian habitat on the site. Levee improvements on the Snyder East and West parcels shall be set back from the edge of the upper terrace to eliminate fill slopes which would extend into the riparian habitat. The proposed project design shall be revised to provide a biotechnical bank protection design to replace the proposed placement of rip rap on that section of the south bank of Cache Creek extending 1,500 feet downstream from the I-505 bridge, unless engineering evaluations demonstrate that riprap must be used at certain locations to control severe erosion.* *Mitigation Measure 4.6-2e* *The proposed HRP shall be revised to include provisions to remove tamarisk and giant reed from the site as part of the creek restoration effort and to modify restoration plans for the depression on the Snyder East parcel to enhance the existing riparian woodland rather than establishing seasonal marsh at this location.*		
Impact 4.6-3: Mining and reclamation activities would disturb existing wildlife habitat and components of the proposed HRP would be of limited habitat value.		•	*Mitigation Measure 4.6-3a* *At least one permanent island shall be created on ~~each~~ one of the proposed lakes to improve their wildlife habitat value. ~~The permanent islands would replace the proposed artificial islands. The~~ artificial islands and submerged peninsulas proposed in the HRP should be retained on all lakes. Characteristics of the permanent island shall include the following:* • *The elevation of the islands shall extend a minimum of five feet above the average high groundwater level (approximately 125-foot elevation) to prevent complete inundation during the winter months. Slopes of the island shall not exceed 3:1 above the average low groundwater level.*	•	

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Table 2-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES (*continued*)

Environmental Impact	Level of Significance Before Mitigation		Mitigation Measures	Level of Significance After Mitigation	
	LS	S		LS	SU
			• *The channel of water separating the island from the mainland shall have a minimum distance of 20 feet and a depth reaching at least 5 feet during the average summer low groundwater level to prevent predators from wading to the island during the summer months. A temporary levee to permit vehicle access and maintenance of restoration plantings on the island shall be included in the design, but the levee shall be removed following completion of the minimum five year monitoring program for the restoration effort.* • *~~Each~~ The island shall be revegetated according to the HRP, with perennial marsh at the lowest elevations and low terrace riparian species up to the average high groundwater level, with a cover of grassland and scattered shrubs provided over the top of the island.* • *Each island shall be revegetated according to the HRP, with perennial marsh at the lowest elevations and low terrace riparian species up to the average high groundwater level, with a cover of grassland and scattered shrubs provided over the top of the island.* *Mitigation Measure 4.6-3b* *The unique bluff habitat between the upper terrace and the existing haul road on the Snyder East parcel shall be preserved. Mitigation Measure 4.3-4a in the Geology section provides appropriate mitigation for this impact.*		
Impact 4.6-4: Mining activities and aspects of the proposed reclamation would result in the loss of suitable foraging habitat for Swainson's hawk.		•	*Mitigation Measure 4.6-4a* *~~As required by Action 6.4-4 of the OCMP, a~~ A CDFG Code Section 2081 authorization, or the posting of a reclamation bond or letter of credit naming CDFG as the beneficiary, or other alternative mechanism acceptable to CDFG, shall be executed prior to ~~project approval~~ commencement of mining.*	•	
Impact 4.6-5: Mining activities would affect suitable habitat for special-status species, such as valley elderberry longhorn beetle, bank swallow, and other species of concern.		•	*Mitigation Measure 4.6-5a* *The proposed HRP shall be revised to include specific provisions to ensure compliance with the USFWS "General Compensation Guidelines for the Valley Elderberry Longhorn Beetle". This shall include measures to: protect all elderberry shrubs to be retained; transplanting shrubs that cannot be avoided; planting replacement elderberry seedlings and associated riparian vegetation at appropriate ratios; and defining short and long-term maintenance, monitoring, and protection methods for the designated mitigation areas. A preconstruction survey for elderberry shrubs shall be performed by a qualified biologist prior to each phase of mining. The survey shall serve to confirm previous mapping of elderberry locations and determine whether any new shrubs have become established within the new mining area for which protection or replacement should be provided. The results of the survey shall be submitted to the USFWS as a report summarizing the purpose, findings, and recommendations consistent with the provisions of the revised HRP. All elderberry shrubs to be retained shall be flagged and fencing provided where necessary to preclude possible damage or loss of shrubs.* *Mitigation Measure 4.6-5b* *Implement Mitigation Measure 4.6-4a of the OCMP Program EIR to prevent inadvertent take of bank swallows.*	•	

			Mitigation Measure 4.6-5c *The proposed HRP shall be revised to include specific provisions to replace the artificial bank swallow nesting habitat created by past mining activities on the Hutson parcel. These provisions shall include design, construction, and maintenance activities necessary to implement one or more of the following options: establishing suitable nesting habitat on designated side slopes of the permanent lakes, replicating the conditions on the Hutson parcel at a new location; restoring the vertical bluffs above the mining-related riparian habitat in the northern portion of the Snyder East parcel; and/or creating and perpetuating a vertical bank along a designated segment of the active channel of Cache Creek.* *Mitigation Measure 4.6-5d* *A pre-construction raptor survey shall be conducted by a qualified wildlife biologist prior to initiation of each phase of mining to determine the presence or absence of active raptor nests which could be disturbed or lost within the new mining area. The results of the survey shall be submitted to the CDFG as a report summarizing the purpose, findings, recommendations, and status of any nests encountered. Elements of the required pre-construction nesting survey and construction restrictions shall include the following:* • *Conduct the survey 30 days prior to any grading or other habitat modifications if proposed during the breeding season for tree nesting raptors (from March 1 through August 15). Confirmation surveys on presence or absence of burrowing owl ground nesting colonies shall be required prior to initiation of a particular phase of mining at any time of the year to ensure absence of any resident owls.* • *If an active raptor nest is encountered, establish an appropriate buffer around the nest location, as determined in consultation with representatives of CDFG. The perimeter of the buffer zone shall be flagged in the field at 50-foot intervals, and all construction activities, including grading, tree removal, equipment storage, and stockpiling of soils, shall be prohibited within this buffer zone.* • *Prohibit construction activities within the designated buffer zone until the consulting wildlife biologist has determined that breeding was unsuccessful, that the young have fledged from the nest, or that a CDFG-approved relocation plan has been successfully implemented.* • *Prohibit construction activities, including removal of any nest tree or burrow, within the designated buffer zone unless written confirmation from the wildlife biologist on the status of nesting activity has been submitted in writing to CDFG.*		
Impact 4.6-6: Proposed mining and reclamation activities would affect jurisdictional wetlands or other waters of the United States.		•	*Mitigation Measure 4.6-6a* *Proposed channel bank modifications shall be coordinated with the Corps and California Department of Fish and Game. If required by jurisdictional agencies, appropriate authorization to modify jurisdictional habitat shall be obtained prior to grading or other modifications. ~~Consistent with Action 4.4-1 of the CCHMP, u~~Use of biotechnical bank protection design methods shall be encouraged where bank stabilization is required, such as the segment of active erosion on the Kaupke parcel.*	•	

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S = significant
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Table 2-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES (*continued*)

Environmental Impact	Level of Significance Before Mitigation		Mitigation Measures	Level of Significance After Mitigation	
	LS	S		LS	SU
Air Quality					
Impact 4.7-1: The proposed project would result in increases in PM_{10} emissions.		•	*Mitigation Measure 4.7-1a* *Implement Mitigation Measure 4.7-1a of the OCMP Program EIR.*		•
Impact 4.7-2: The project would result in an increase in emissions of ozone precursors.		•	*Mitigation Measure 4.7-2a* *Implement Mitigation Measure 4.7-2a of the OCMP Program EIR.*		•
Impact 4.7-3: The project would affect the attainment of local or regional air quality goals.		•	*Mitigation Measure 4.7-3a* *See Mitigation Measures 4.7-1 and 4.7-2. No additional measures are available to reduce the impact to a less-than-significant level.*		•
Impact 4.7-4: The project could generate vehicle trips that cause a CO hot spot.	•		*Mitigation Measure 4.7-4a* *None required.*	•	
Impact 4.7-5: Emissions from the proposed project could affect sensitive air quality receptors.	•		*Mitigation Measure 4.7-5a* *None required.*	•	
Impact 4.7-6: The project could create or subject sensitive air quality receptors to an objectionable odor.	•		Mitigation Measure 4.7-6a *None required.*	•	
Traffic and Circulation					
Impact 4.8-1: The proposed project would result in additional truck traffic on the nonstandard segment of SR 16 between I-505 and the entrance to the Solano Concrete Plant.		•	*Mitigation Measure 4.8-1a* *The applicant shall construct a left-turn lane for eastbound movements into the Solano Concrete Plant.*	•	
Impact 4.8-2: The proposed project would exacerbate unacceptable operations at the SR 16/County Road 98/Main Street intersection in the city of Woodland.		•	*Mitigation Measure 4.8-2a* *The applicant shall pay its fair share toward the construction of left-turn lanes on each approach, and the installation of a traffic signal, at the SR 16/County Road 98/Main Street intersection to maintain acceptable levels of service.*	•	
Noise					
Impact 4.9-1: The proposed project may result in an increase in ambient noise levels. This is considered to be a significant impact.		•	*Mitigation Measure 4.9-1a* *Daytime noise levels at the property boundary shall not exceed 80 dBA L_{eq} during mining and reclamation of the site. If earth moving operations are conducted at grade within less than 58 feet from the property boundary, the applicant shall ensure that no more than one scraper is used at any one time.* *Mitigation Measure 4.9-1b* *Implement Mitigation Measures 4.9-1b and 4.9-1c of the OCMP Program EIR.*	•	

Impact 4.9-2: Project activities may result in exposure of sensitive receptors to increased noise levels.		•	*Mitigation Measure 4.9-2a* *Implement OCMP policies as modified in Mitigation Measure 4.9-1c of the OCMP Program EIR.*	•	
Impact 4.9-3: Proposed project may create vibration or nuisance noise on adjoining properties.		•	*Mitigation Measure 4.9-3a* *Implement OCMP Program EIR Mitigation Measure 4.9-4a.*	•	
Aesthetics					
Impact 4.10-1: Mining and reclamation activities could adversely impact public views and vistas.		•	*Mitigation Measure 4.10-1a* *Implement Mitigation Measure 4.10-1b of the OCMP Program EIR.*	•	
Impact 4.10-2: Changes to the site's original character and topography following reclamation activities may result in long-term changes to public views and vistas.	•		*Mitigation Measure 4.10-2a* *None required.*	•	
Impact 4.10-3 Mining, reclamation, and post-reclamation activities may result in visual incompatibility with surrounding land uses.	•		*Mitigation Measure 4.10-3a* *None required.*	•	
Impact 4.10-4: Light and glare may be created from nighttime mining operations.	•		*Mitigation Measure 4.10-4a* *None required.*	•	
Cultural Resources					
Impact 4.11-1: Proposed mining activities could disturb paleontofogical resources.		•	*Mitigation Measure 4.11-1a* *Implement Mitigation Measure 4.11-1a of the OCMP Program EIR.* *Mitigation Measure 4.11-1b* *The applicant shall implement a training program that alerts project employees involved with earth-moving as to the nature of paleontological and archaeological resources in the region, the laws that protect the resources, and responsibilities for reporting potential findings to appropriate authorities. This program shall be developed by a qualified cultural resource professional.*	•	
Impact 4.11-2: Proposed mining activities would disturb archaeological resources.		•	*Mitigation Measure 4.11-2a* *No mining within the Snyder west parcel (phases IV and VI) shall be conducted until an accurate mapping of Yol-69 is completed, and the site is evaluated by an archaeologist to determine its significance and uniqueness. The following tasks shall be performed:*		•

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S = significant
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Table 2-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES (*continued*)

Environmental Impact	Level of Significance Before Mitigation		Mitigation Measures	Level of Significance After Mitigation	
	LS	S		LS	SU
			• *Contract a surveyor to accurately map the cultural resource site on a topographic map, based on information, preliminary map, and recommendations contained in the Yol-69 mechanical subsurface testing report (Holman & Associates, 1996). Upon completion of mechanical testing, the borders of the deposits shall be staked by the archaeologist.* • *Mapping of the resource shall be completed prior to commencement of mining in mining areas that include the resources.* • *Register the information obtained, including a map of the Yol-69 site, on State of California Archaeological Site Survey forms for filing at the State Historical Preservation Regional Office located at Sonoma State University. Prepare a professional report with all cultural resources information obtained and submit it for approval to the Northwest Information Center. A copy shall also be sent to Yolo County.* • *~~After mapping~~ Before mining begins on Yol-69, an archaeologist shall be contracted to evaluate the Yol-69 site and determine its significance and uniqueness as defined in Appendix K of CEQA. A program of in-field evaluation testing shall be undertaken inside the newly recorded borders of Yol-69 to determine its significance. The evaluation of this site shall be extensive enough to guide the development of a mitigation program if the site is found to be significant. If the site is not found to be significant or unique, no archaeological mitigation program, such as in-field data retrieval through hand excavation and recording of findings, will be required. However, an archaeologist must be present during the excavation of this site to monitor for indications of human skeletal remains.* • *If it is determined that the site contains significant cultural resources, an appropriate mitigation program shall be developed, before mining begins on Yol-69, based on the information obtained during the site evaluation. This mitigation program shall include an extensive in-field data retrieval through hand excavation. This program of data retrieval must be conducted by an archaeologist and could include but not be limited to professional in-field excavation of a percent of the area to be destroyed by the project to record the artifacts encountered and other data that might contribute to the scientific understanding of the culture and the way of life of the prehistoric people who lived in the region. In addition, an archaeologist must be present during the mining of the portion of the site that was not hand excavated to monitor for any indication of human skeletal remains.* *Mitigation Measure 4.11-2b* *Implement Mitigation Measure 4.11-1b.* *Mitigation Measure 4.11-2c* *Implement Mitigation Measure 4.11-1a of the OCMP Program EIR.*		
Impact 4.11-3: Proposed mining activities could disturb or destroy historical resources.	•		*Mitigation Measure 4.11-3a* *None required.*	•	

Hazards					
Impact 4.12-1: Accidental releases of fuels and related compounds could affect public health and the environment.		•	*Mitigation Measure 4.12-1a* *Implement OCMP Program EIR Mitigation Measure 4.12-1a.*	•	
Impact 4.12-2: Workers may be exposed to agricultural chemicals during mining and reclamation activities.	•		*Mitigation Measure 4.12-2a* *None required.*	•	
Impact 4.12-3: Open pits have the potential to be attractive nuisance hazards.		•	*Mitigation Measure 4.12-3a* *Implement OCMP Program EIR Mitigation Measure 4.12-3a.*	•	
Impact 4.12-4: Mosquito populations may increase due to expanded open bodies of water.	•		*Mitigation Measure 4.12-4a* *None required.*	•	

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APPENDIX C: MITIGATION MONITORING PLAN

MITIGATION MONITORING PLAN

ENVIRONMENTAL IMPACT REPORT for

SOLANO LONG-TERM OFF-CHANNEL MINING PERMIT APPLICATION

SCH #96012034

Yolo County

September 16, 1996

INTRODUCTION

The California Environmental Quality Act requires public agencies to report on and monitor measures adopted as part of the environmental review process (PRC Section 21081.6). This Mitigation Monitoring Plan (MMP) is designed to ensure that the measures identified in this EIR are fully implemented. The MMP describes the actions that must take place as a part of each measure, the timing of these actions, who is responsible for implementation, and the agency responsible for enforcing each action.

For most of the mitigation measures noted in this MMP, the County has ultimate responsibility for implementation. Therefore, it is recommended that the Resources Management Coordinator of the Community Development Agency be assigned chief monitor and be responsible for assigning monitoring actions to responsible agencies. The Resources Management Coordinator would track the overall progress of each action.

If another agency or entity is responsible for implementation, it is recommended that the Resources Management Coordinator contact these agencies or entities and request detailed information to be appended to this Plan, in order to ensure coordination in monitoring and reporting.

As required by Section 21081.6 of the PRC, the Yolo County Community Development Agency is the "custodian of documents and other material" which constitute the "record of proceedings" upon which a decision to approve the proposed project was based. Inquiries should be directed to:

David Morrison, Resources Management Coordinator,
Yolo County Community Development Agency
(916) 666-8041

The location of this information is:

Yolo County Community Development Agency
292 West Beamer Street
Woodland, California 95695

In order to assist implementation of the EIR mitigation measures, the Plan has been formatted as a table with the following information:

- Impacts - listed verbatim in order of the EIR;
- Mitigation Measures - listed verbatim in order of the EIR;
- Reporting/Monitoring Requirement - applicable milestones;
- Responsibility for Compliance - applicable entity;
- Method of Compliance - how actions will be implemented;
- Enforcement - how implementation of action will be assured; and
- Checkoff - verification of implementation.

SOLANO PROJECT EIR MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirements**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Land Use and Planning						
Impact 4.2-1: The project as proposed is inconsistent with some of the policies of the OCMP.	*Mitigation Measure 4.2-1a* *Implementation of Mitigation Measures 4.4-3a, 4.4-4a, and 4.4-7a will reduce this impact to a less than significant level.*	See Mitigation Measures 4.4-3a, 4.4-4a, and 4.4-7a	Planning	Implementation of Mitigation Measures 4.4-3a, 4.4-4a, and 4.4-7a	Require as permit condition	
Impact 4.2-2: The proposed project would be consistent with policies of the Yolo County General Plan.	*Mitigation Measure 4.2-2a* *None required.*	--	--	--	--	
Impact 4.2-3: The proposed project may be inconsistent with the Yolo County Zoning Ordinance and the Williamson Act.	*Mitigation Measure 4.2-3a* *The project mining schedule or reclamation plan shall be modified to ensure that if Phase III lands are to be mined before the Williamson Act contracts expire, then reclamation shall be to prime agricultural uses only. Alternatively, if mining in Phase III does not begin until after 2006, no change to the proposed reclamation plan would be required.*	Prior to mining	Planning	Submit revised reclamation plan	Require as permit condition	
Impact 4.2-4: The proposed project would be consistent with the State Mining and Reclamation Act (SMARA) and Regulations.	*Mitigation Measure 4.2-4a* *None required.*	--	--	--	--	
Impact 4.2-5: The proposed project would be consistent with the draft Yolo County Habitat Conservation Plan.	*Mitigation Measure 4.2-5a* *None required.*	--	--	--	--	
Impact 4.2-6: The proposed project would be consistent with the Regional Water Quality Control Board Basin Plan.	*Mitigation Measure 4.2-6a* *None required.*	--	--	--	--	
Impact 4.2-7: The proposed project is inconsistent with agricultural policies adopted by the Yolo County Resource Conservation District.	*Mitigation Measure 4.2-7a* *None available. This is a significant, unavoidable impact of the project.*	--	--	--	--	

SOLANO PROJECT EIR MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirements**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.2-8: The proposed project may be incompatible with some existing and planned land uses.	*Mitigation Measure 4.2-8a* *The County shall determine whether the applicant's offer to dedicate reclaimed lands in Phase V and VI for the proposed Recreation Node would fulfill the policy of the CCRMP. The County and the applicant should enter into discussions to resolve how public access to the future recreation facility can be accommodated. If determined to be feasible, the project plans should be modified to include a public access road along the eastern boundary of the site.*	Prior to mining	Planning	Develop agreement with County	Letter of agreement with County, if applicable	
Impact 4.2-9: During the mining phases, the proposed project would result in an intensification of land use for the mining sites.	*Mitigation Measure 4.2-9a* *None required.*	--	--	--	--	
Geology and Soils						
Impact 4.3-1: Expected seismic shaking at the project could result in ground failures and damage to reclamation features.	*Mitigation Measure 4.3-1a* *Implement performance standards presented in Mitigation Measure 4.3-1a of the OCMP Program EIR.*	Post Reclamation	Applicant	Submit geotechnical report for improvements	Require as condition of approval	
		Ongoing	Planning	Inspect site following earthquakes		
		Ongoing	Applicant	Apply contingency funds to earthquake damage		
		Post-Reclamation	Planning	Resurvey and relevel		

SOLANO PROJECT EIR MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirements**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.3-2: Potential failure and/or erosion of slopes could result in unstable slope conditions or adverse sedimentation of open water bodies.	*Mitigation Measure 4.3-2a* *Compliance with Mitigation Measure 4.3-2a of the OCMP Program EIR.*	During Mining	Applicant/ Planning	Implement erosion control by November 1 and document in annual report submitted to County	Require as permit condition	
		Prior to Mining	Applicant/ Planning	Submit application for construction to California Division of Safety of Dams, if required		
Impact 4.3-3: Aggregate extraction proposed by the project would result in the decreased availability of aggregate resources.	*Mitigation Measure 4.3-3a* *None required.*	--	--	--	--	
Impact 4.3-4: Erosion, failure, or overtopping of the channel bank separating the proposed mining areas from the active channel of Cache Creek could result in flooding of the pits and potential permanent inundation of the mining or reclaimed lower agricultural fields.	*Mitigation Measure 4.3-4a* *The County shall revise the CCRMP channel boundary in the vicinity of the site to reflect the Cunningham Engineering (1995) 100-year floodplain boundary. The hydraulic model used to determine the boundary assumes replacement of the Capay bridge with a three-span bridge. If this assumption changes, additional HEC-2 modeling will be required to establish the revised CCRMP boundary. If this boundary changes significantly upon modeling, additional review may be required.*	Prior to mining	Planning	Revise CCRMP	Adopt revision of CCRMP	
	Mitigation Measure 4.3-4b *Portions of the northern margin of the proposed Mining Areas II, III, V, VI, and VII shall be redesigned to provide a minimum 200-foot setback from the existing Cache Creek stream bank, in conformance with the requirements of Performance Standard 4.5-3 and all other pertinent performance standards in the OCMP. The revised project design shall be submitted prior to commencement of mining within Phase 3 and be consistent with the recommended slope design presented in the current application. If the redesigned project results in changes in any other mining area boundaries, additional CEQA review may be required.*	Prior to Phase 3 Mining	Applicant/ Planning	Submit revised mining plan for County approval	Require as permit condition	

SOLANO PROJECT EIR MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirements**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	Mitigation Measure 4.3-4c *Obtain an exception to Performance Standard 4.5-3 for the northeastern portions of Mining Areas III, V, and VI. Such approval shall require submittal and approval of engineering design for controlled flow inlet channels for each of the former mining areas. The design of the inlets shall be prepared by an experienced, licensed engineer. Inlet channels shall be designed and constructed to concentrate and control flow into the former mining areas. The design shall provide channel materials which will not erode during inundation events. Design shall be approved and work completed prior to commencement of mining within affected phases.* *Alternatively, the portions of the levee in these areas could be raised to provide 100-year flood protection for these areas. Prior to raising the levee, if that is the selected alternative, a hydraulic analysis prepared and signed by a licensed engineer, demonstrating that off-site flooding impacts would not be created, must be submitted to the County for review. This mitigation measure would be consistent with the proposed project and the requirements of the OCMP. Any levee work performed shall be completed prior to commencement of mining within the affected phases.*	Prior to mining in Mining Areas III, V, and VI	Applicant/ Planning	Submit engineering design for County approval	Require as permit condition	
	Mitigation Measure 4.3-4d *Implement Mitigation Measure 4.3-3a of the OCMP EIR. Specifically, the applicant shall conduct annual monitoring and maintenance of the channel banks and levees at the northern margin of the project site during the mining and reclamation period. The monitoring shall be conducted by a licensed engineer and shall minimally include visual inspection of channel banks and levees for evidence of erosion or slope instability. Evidence of erosion shall include, but not be limited to, the existence of oversteepened banks and loss of vegetation. Evidence of slope instability shall include formation tension cracks, arcuate scarps, or unexcavated benches.* *The annual report of channel bank and levee conditions shall be submitted to the Yolo County Community Development Agency with the Annual Mining and Reclamation Report. The report shall include the identification of the location (on scaled maps and photographs), estimated area and volume of eroded materials or slope failure, a determine of the cause(s) of erosion or slope failure, and recommendations for remedial action. Recommended remedial actions shall be implemented prior to November 1.*	During Mining	Applicant/ Planning	Submit annual report for County approval	Require as permit condition	

SOLANO PROJECT EIR MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirements**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	Mitigation Measure 4.3-4e *Following reclamation, the YCCDA shall determine, on the basis of inspection of the performance of the channel banks and levees during the mining and reclamation period, the need for continued channel bank and levee monitoring and reporting. The landowner shall be responsible for continuing monitoring and maintenance. A restriction shall be placed on the deed for the underlying property requiring continued inspection and maintenance of channel banks and levees, and allowing access by the County for same.*	Post reclamation	Planning Applicant	Determine maintenance needs for channel banks and levees Submit copy of deed restriction to County	Require as permit condition	
	Mitigation Measure 4.3-4f *The proposed project design shall be revised to provide a biotechnical bank protection design to replace the proposed placement of rip rap on that section of the south bank of Cache Creek extending 1,500 feet downstream from the I-505 bridge unless engineering evaluations demonstrate that riprap must be used to control erosion. The proposed bank protection shall be submitted to the Yolo County Community Development Agency and Caltrans for approval prior to the commencement of mining in Mining Area VII.*	Prior to mining in Mining Area VII	Applicant/ Planning	Submit bank protection design to County and Caltrans for approval	Require as permit condition	
	Mitigation Measure 4.3-4g *Mining within Mining Area VII shall not be conducted within 700 feet of the existing stream bank until stream bank stabilization is provided for that portion of the south bank of Cache Creek upstream from the I-505 bridge. The bank protection shall be performed in accordance with the guidelines presented in the Cache Creek Resource Management Plan and Cache Creek Improvements Program. The proposed bank protection design shall be submitted to the Yolo County Community Development Agency for approval prior to the commencement of mining in Mining Area VII.*	Prior to mining in Mining Area VII	Applicant/ Planning	Submit bank stabilization plan to County and Caltrans for approval	Require as permit condition	
	Mitigation Measure 4.3-4h *Recommendations of the geotechnical report for stabilization of the south bank of Cache Creek shall be implemented within one year after the commencement of mining. Prior to the construction of the improvements, detailed plans identifying the type of stream bank protection shall be submitted to the Technical Advisory Committee (TAC) for review and approval. The bank protection plans shall incorporate biotechnical methods of bank stabilization when appropriate for erosion control.*	Within one year of mining	Applicant/ Planning	Submit bank stabilization plan to TAC for approval	Require as permit condition	

SOLANO PROJECT EIR MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirements**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	Mitigation Measure 4.3-4i *The applicant shall enter into a legally-binding agreement with the County that commits the applicant to participate in implementation of the Cache Creek Improvements Program. Participation shall include, but not be limited to, contribution of equipment and labor for channel widening projects and channel maintenance mining recommended by the County.*	Prior to mining	Applicant/ Planning	Sign agreement with County	Require as permit condition	
	Mitigation Measure 4.3-4j *Prior to the commencement of mining below the groundwater level, the applicant shall contact the California Division of Safety of Dams (DSD) for a determination on whether the alluvial separators that would be created by the project fall under DSD jurisdiction.*	Prior to mining below groundwater	Applicant/ Planning	Submit DSD determination to County	Require as permit condition	
Hydrology and Water Quality						
Impact 4.4-1: Flooding at the site could cause property damage and injury to on-site workers.	*Mitigation Measure 4.4-1a* *The applicant must apply for, and receive, a floodplain development permit from Yolo County prior to mining activities within U.S. Department of Housing and Urban Development designated 100-year floodplains, as required by the County General Plan and Flood Ordinance.*	Prior to mining	Applicant/ Planning	Submittal of copy of permit	Require as permit condition	
Impact 4.4-2: Evaporation from a wet pit water surface would represent a loss of water from groundwater storage.	*Mitigation Measure 4.4-2a* *None required.*	--	--	--	--	

SOLANO PROJECT EIR MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirements**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.4-3: Creation of wet pit lakes exposes surface and groundwater to potential degradation of water quality during the mining and reclamation period.	*Mitigation Measure 4.4-3a* *Implement Mitigation Measure 4.4-2a of the OCMP Program EIR.*	Prior to mining Prior to and during mining	Applicant/ Planning Applicant/ Planning	Submit grading and drainage plans for County approval Perform water monitoring in compliance with Off-Channel Surface Mining Ordinance (Section 10-4.417) and submit reports for County approval	Require as permit condition	
Impact 4.4-4: Creation of wet pit lakes exposes surface and groundwater to potential degradation of water quality during the post-reclamation period.	*Mitigation Measure 4.4-4a* *Implement Mitigation Measures 4.4-2a and 4.4-3a of the OCMP Program EIR.*	During reclamation During mining and reclamation	Applicant/ Planning Applicant/ Planning	Test agricultural soils for use in reclamation, if required Conduct analysis of water quality and fish in compliance with Surface Mining Reclamation Ordinance	Require as permit condition	
Impact 4.4-5: Creation of wet pit lakes and the subsequent backfilling with fine-grained sediments (processing fines and overburden) could cause impacts to groundwater levels, rate of flow and direction of flow.	*Mitigation Measure 4.4-5a* *None required.*	--	--	--	--	

SOLANO PROJECT EIR MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirements**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.4-6: Mining of aggregate and subsequent reclamation of the mined areas would result in alteration of the topography and drainage patterns at the site.	*Mitigation Measure 4.4-6a* *None required.*	--	--	--	--	
Impact 4.4-7: Reclaimed lowered agricultural surfaces could be inundated during parts of the year by high groundwater conditions, adversely impacting productivity.	*Mitigation Measure 4.4-7a* *All reclaimed lowered agricultural surfaces shall be, at minimum, five feet above average high groundwater. The reclamation plan for the Solano West mining area shall be modified to meet this requirement.*	Prior to mining	Planning	Submit revised reclamation plan	Require as permit condition	
Impact 4.4-8: Increased pumping of groundwater at the processing plant to support the proposed increase in aggregate extraction and processing could adversely affect water supply wells in the vicinity.	*Mitigation Measure 4.4-8a* *None required.*	--	--	--	--	
Agriculture						
Impact 4.5-1: The proposed project would result in the temporary loss of agricultural production during mining and reclamation.	*Mitigation Measure 4.5-1a* *None required.*	--	--	--	--	
Impact 4.5-2: The proposed project would result in permanent conversion of 252 acres of prime farmland to nonagricultural uses.	*Mitigation Measure 4.5-2a* *Compliance of the project with Mitigation Measure 4.5-2a of the OCMP Program EIR would reduce the impact of the permanent loss of agricultural land. Compliance with the mitigation may be phased to track with the phasing of the mining. Compliance shall be verified by phase.*	Prior to mining	Planning	Document and offset loss of "prime farmland"	Require as permit condition	
Impact 4.5-3: Water or wind erosion of stockpiles of agricultural soils at the project site could result in permanent loss of an important agricultural resource.	*Mitigation Measure 4.5-3a* *None required.*	--	--	--	--	

SOLANO PROJECT EIR MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirements**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.5-4: Proposed post-reclamation uses could result in impacts to agricultural lands and operations on- and off-site.	*Mitigation Measure 4.5-4a* *None required.*	--	--	--	--	
Impact 4.5-5: Lowering of reclaimed agricultural fields could result in adverse conditions for agricultural production.	*Mitigation Measure 4.5-5a* *Compliance with Mitigation Measure 4.4-8a of the OCMP Program EIR would mitigate the potential impacts of high seasonal groundwater on crop productivity. The mitigation requires that all reclaimed agricultural surface are a minimum of five feet above the average seasonal high groundwater level. To meet this standard, the elevation of the reclaimed agricultural fields within Mining Area VII shall be raised two or more feet above the proposed reclaimed surface elevation.*	Prior to mining and during reclamation	Applicant/ Planning	Submit revised grading plan for County approval	Require as permit condition	
Impact 4.5-6: The nonrenewal of current Williamson Act contracts for land affected by mining could result in a reduction of land under conservation for agriculture or open space uses.	*Mitigation Measure 4.5-6a* *None required. However, permanent conservation of the project site for agricultural and open space use would be better assured if all parcels within the site were re-enrolled in Williamson contracts upon completion of mining.*	--	--	--	--	
Impact 4.5-7: Proposed reclamation of portions of mined areas to tree crop agriculture could potentially conflict with adjacent agricultural uses.	*Mitigation Measure 4.5-7* *None required.*	--	--	--	--	
Impact 4.5-8: Implementation of the proposed project would contribute to the cumulative loss of agricultural land.	*Mitigation Measure 4.5-8a* *Implementation of Mitigation Measure 4.5-2a would reduce the impact of the cumulative loss of agricultural land in Yolo County.*	See Mitigation Measure 4.5-2a				
Biological Resources						
Impact 4.6-1: Project implementation would result in approximately 598 acres of primarily agricultural cover, revegetation of disturbed areas, and enhancement of native habitat.	*Mitigation Measure 4.6-1a* *None required.*	--	--	--	--	

SOLANO PROJECT EIR MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirements**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.6-2: Grading in the proposed mining area would result in the loss of mature oaks and could result in inadvertent disturbance to remnant sensitive natural communities along the Cache Creek corridor.	*Mitigation Measure 4.6-2a* *Figure 8 of the HRP shall be revised to indicate the location of hedgerow plantings, proposed by the applicant, around the Hutson parcel or as specified as part of habitat enhancement in a Section 2081 permit if required by the CDFG or to mitigate at a 1:1 ratio the actual loss of fence row habitat.*	Prior to mining	Planning	Submit revised HRP for County approval	Require as permit condition	
	Mitigation Measure 4.6-2b *Mature oak trees at the fringe of proposed mining areas shall be preserved. These shall include: the two oaks at the southwestern corner of the mining area on the Solano West parcel; the two oaks at the southwest corner of the mining area along the boundary between the Farnham West and Hutson parcels; and the single oak at the southeastern edge of the mining area on the Snyder West parcel. Stockpiling of topsoil and overburden proposed in the vicinity of these five trees shall be restricted to beyond the tree driplines. As required by Performance Standard 6.5-1 of the OCMP, temporary fencing shall be provided around the dripline of these trees to prevent possible construction-related damage. Fencing shall remain in place until stockpiles are removed and the surrounding lands are returned to agricultural production.*	Prior to mining	Planning	Annual County inspections	Require as permit condition	
	Mitigation Measure 4.6-2c *As required by Performance Standard 6.5-1 of the OCMP, temporary fencing shall be installed at the boundary of the habitat restoration area along the Cache Creek corridor, prior to initiation of any mining activity for each phase of the project. The fencing shall remain in place throughout the duration of active mining until reclamation has been completed for each project phase.*	Prior to mining	Planning	Annual County inspections	Require as permit condition	
	Mitigation Measure 4.6-2d *Proposed levee and channel stabilization improvements shall be designed to avoid impacts to riparian habitat on the site. Levee improvements on the Snyder East and West parcels shall be set back from the edge of the upper terrace to eliminate fill slopes which would extend into the riparian habitat. The proposed project design shall be revised to provide a biotechnical bank protection design to replace the proposed placement of rip rap on that section of the south bank of Cache Creek extending 1,500 feet downstream from the I-505 bridge unless engineering evaluations demonstrate that riprap must be used at certain locations to control severe erosion.*	Prior to mining	Applicant/ Planning	Submit revised mining and reclamation plans for County approval	Require as permit condition	

SOLANO PROJECT EIR MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirements**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	Mitigation Measure 4.6-2e *The proposed HRP shall be revised to include provisions to remove tamarisk and giant reed from the site as part of the creek restoration effort and to modify restoration plans for the depression on the Snyder East parcel to enhance the existing riparian woodland rather than establishing seasonal marsh at this location.*	Prior to mining	Applicant/ Planning	Submit revised HRP for County approval	Require as permit condition	
Impact 4.6-3: Mining and reclamation activities would disturb existing wildlife habitat and components of the proposed HRP would be of limited habitat value.	*Mitigation Measure 4.6-3a* *At least one permanent island shall be created on one of the proposed lakes to improve their wildlife habitat value. The artificial islands and submerged peninsulas proposed in the HRP should be retained on all lakes. Characteristics of the permanent island shall include the following:* • *The elevation of the island shall extend a minimum of five feet above the average high groundwater level (approximately 125-foot elevation) to prevent complete inundation during the winter months. Slopes of the island shall not exceed 3:1 above the average low groundwater level.* • *The channel of water separating the island from the mainland shall have a minimum distance of 20 feet and a depth reaching at least 5 feet during the average summer low groundwater level to prevent predators from wading to the island during the summer months. A temporary levee to permit vehicle access and maintenance of restoration plantings on the island shall be included in the design, but the levee shall be removed following completion of the minimum five-year monitoring program for the restoration effort.* • *The island shall be revegetated according to the HRP, with perennial marsh at the lowest elevations and low terrace riparian species up to the average high groundwater level, with a cover of grassland and scattered shrubs provided over the top of the island.* • *Each island shall be revegetated according to the HRP, with perennial marsh at the lowest elevations and low terrace riparian species up to the average high groundwater level, with a cover of grassland and scattered shrubs provided over the top of the island.* *Mitigation Measure 4.6-3b* *The unique bluff habitat between the upper terrace and the existing haul road on the Snyder East parcel shall be preserved. Mitigation Measure 4.3-4a in the Geology section provides appropriate mitigation for this impact.*	Prior to mining See Mitigation Measure 4.3-4a	Applicant/ Planning	Submit revised reclamation plan for County approval	Require as permit condition	

SOLANO PROJECT EIR MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirements**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.6-4: Mining activities and aspects of the proposed reclamation would result in the loss of suitable foraging habitat for Swainson's hawk.	*Mitigation Measure 4.6-4a* *A CDFG Code Section 2081 authorization, or the posting of a reclamation bond or letter of credit naming CDFG as the beneficiary or other alternative mechanism acceptable to CDFG, shall be executed prior to commencement of mining.*	Prior to mining	Planning and CDFG	Submit copy of CDFG approval letter to Planning	Require as permit condition	
Impact 4.6-5: Mining activities would affect suitable habitat for special-status species, such as valley elderberry longhorn beetle, bank swallow, and other species of concern.	*Mitigation Measure 4.6-5a* *The proposed HRP shall be revised to include specific provisions to ensure compliance with the USFWS "General Compensation Guidelines for the Valley Elderberry Longhorn Beetle". This shall include measures to: protect all elderberry shrubs to be retained; transplanting shrubs that cannot be avoided; planting replacement elderberry seedlings and associated riparian vegetation at appropriate ratios; and defining short and long-term maintenance, monitoring, and protection methods for the designated mitigation areas. A preconstruction survey for elderberry shrubs shall be performed by a qualified biologist prior to each phase of mining. The survey shall serve to confirm previous mapping of elderberry locations and determine whether any new shrubs have become established within the new mining area for which protection or replacement should be provided. The results of the survey shall be submitted to the USFWS as a report summarizing the purpose, findings, and recommendations consistent with the provisions of the revised HRP. All elderberry shrubs to be retained shall be flagged and fencing provided where necessary to preclude possible damage or loss of shrubs.*	Prior to mining in individual mining phases	Applicant/ Planning/ USFWS	Submit revised HRP for County approval Conduct preconstruction survey Submit preconstruction survey to USFWS and copy of approval letter to Planning	Require as permit condition	
	Mitigation Measure 4.6-5b *Implement Mitigation Measure 4.6-4a of the OCMP Program EIR to prevent inadvertent take of bank swallows.*	During mining and reclamation	Applicant/ Planning	Manage soil piles in compliance with Off-Channel Surface Mining Ordinance (Sec. 10-4.433)	Require as permit condition	
	Mitigation Measure 4.6-5c *The proposed HRP shall be revised to include specific provisions to replace the artificial bank swallow nesting habitat created by past mining activities on the Hutson parcel. These provisions shall include design, construction, and maintenance activities necessary to implement one or more of the following options: establishing suitable nesting habitat on designated side slopes of the permanent lakes, replicating the conditions on the Hutson parcel at a new location; restoring the vertical bluffs above the mining-related riparian habitat in the northern portion of the Snyder East parcel; and/or creating and perpetuating a vertical bank along a designated segment of the active channel of Cache Creek.*	Prior to mining	Applicant/ Planning	Submit revised HRP for County approval	Require as permit condition	

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Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirements**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	Mitigation Measure 4.6-5d *A pre-construction raptor survey shall be conducted by a qualified wildlife biologist prior to initiation of each phase of mining to determine the presence or absence of active raptor nests which could be disturbed or lost within the new mining area. The results of the survey shall be submitted to the CDFG as a report summarizing the purpose, findings, recommendations, and status of any nests encountered. Elements of the required pre-construction nesting survey and construction restrictions shall include the following:* • *Conduct the survey 30 days prior to any grading or other habitat modifications if proposed during the breeding season for tree nesting raptors (from March 1 through August 15). Confirmation surveys on presence or absence of burrowing owl ground nesting colonies shall be required prior to initiation of a particular phase of mining at any time of the year to ensure absence of any resident owls.* • *If an active raptor nest is encountered, establish an appropriate buffer around the nest location, as determined in consultation with representatives of CDFG. The perimeter of the buffer zone shall be flagged in the field at 50-foot intervals, and all construction activities, including grading, tree removal, equipment storage, and stockpiling of soils, shall be prohibited within this buffer zone.* • *Prohibit construction activities within the designated buffer zone until the consulting wildlife biologist has determined that breeding was unsuccessful, that the young have fledged from the nest, or that a CDFG-approved relocation plan has been successfully implemented.* • *Prohibit construction activities, including removal of any nest tree or burrow, within the designated buffer zone unless written confirmation from the wildlife biologist on the status of nesting activity has been submitted in writing to CDFG.*	Prior to mining in individual phases	Applicant/ Planning and CDFG	Conduct preconstruction survey and submit survey to CDFG and copy of approval letter to Planning	Require as permit condition	
Impact 4.6-6: Proposed mining and reclamation activities would affect jurisdictional wetlands or other waters of the United States.	*Mitigation Measure 4.6-6a* *Proposed channel bank modifications shall be coordinated with the Corps and California Department of Fish and Game. If required by jurisdictional agencies, appropriate authorization to modify jurisdictional habitat shall be obtained prior to grading or other modifications. Use of biotechnical bank protection design methods shall be encouraged where bank stabilization is required, such as the segment of active erosion on the Kaupke parcel.*	Prior to construction	Applicant/ Planning, COE, and CDFG	Submit authorization from COE and CDFG to County	Require as permit condition	

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Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirements**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Air Quality						
Impact 4.7-1: The proposed project would result in increases in PM_{10} emissions.	*Mitigation Measure 4.7-1a* *Implement Mitigation Measure 4.7-1a of the OCMP Program EIR.*	During mining	Applicant/ Planning	Install conveyors when feasible	Require as permit condition	
Impact 4.7-2: The project would result in an increase in emissions of ozone precursors.	*Mitigation Measure 4.7-2a* *Implement Mitigation Measure 4.7-2a of the OCMP Program EIR.*	During mining	Applicant	Compliance with manufacturers' specifications and proper maintenance of equipment	Require as permit condition	
Impact 4.7-3: The project would affect the attainment of local or regional air quality goals.	*Mitigation Measure 4.7-3a* *See Mitigation Measures 4.7-1a and 4.7-2a. No additional measures are available to reduce the impact to a less-than-significant level.*	See Mitigation Measures 4.7-1a and 4.7-2a				
Impact 4.7-4: The project could generate vehicle trips that cause a CO hot spot.	*Mitigation Measure 4.7-4a* *None required.*	--	--	--	--	
Impact 4.7-5: Emissions from the proposed project could affect sensitive air quality receptors.	*Mitigation Measure 4.7-5a* *None required.*	--	--	--	--	
Impact 4.7-6: The project could create or subject sensitive air quality receptors to an objectionable odor.	Mitigation Measure 4.7-6a *None required.*	--	--	--	--	

SOLANO PROJECT EIR MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirements**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Traffic and Circulation						
Impact 4.8-1: The proposed project would result in additional truck traffic on the nonstandard segment of SR 16 between I-505 and the entrance to the Solano Concrete Plant.	*Mitigation Measure 4.8-1a* *The applicant shall construct a left-turn lane for eastbound movements into the Solano Concrete Plant.*	Within one year of approval	Applicant/ Planning/ Caltrans	Construct left-turn lane	Require as permit condition	
Impact 4.8-2: The proposed project would exacerbate unacceptable operations at the SR 16/County Road 98/Main Street intersection in the city of Woodland.	*Mitigation Measure 4.8-2a* *The applicant shall pay its fair share toward the construction of left-turn lanes on each approach, and the installation of a traffic signal, at the SR 16/County Road 98/Main Street intersection to maintain acceptable levels of service.*	Prior to mining	Applicant/ Planning/ City of Woodland	Participation in funding program	Require as permit condition	
Noise						
Impact 4.9-1: The proposed project may result in an increase in ambient noise levels. This is considered to be a significant impact.	*Mitigation Measure 4.9-1a* *Daytime noise levels at the property boundary shall not exceed 80 dBA L_{eq} during mining and reclamation of the site. If earth moving operations are conducted at grade within less than 58 feet from the property boundary, the applicant shall ensure that no more than one scraper is used at any one time.*	During mining and reclamation	Planning	Annual County inspection or in response to complaints	Require as permit condition	
	Mitigation Measure 4.9-1b *Implement Mitigation Measures 4.9-1b and 4.9-1c of the OCMP Program EIR.*	During mining and reclamation	Planning	Annual County inspection or in response to complaints	Require as permit condition	
Impact 4.9-2: Project activities may result in exposure of sensitive receptors to increased noise levels.	*Mitigation Measure 4.9-2a* *Implement OCMP policies as modified in Mitigation Measure 4.9-1c of the OCMP Program EIR.*	During mining and reclamation	Planning	Annual County inspection or in response to complaints	Require as permit condition	
Impact 4.9-3: Proposed project may create vibration or nuisance noise on adjoining properties.	*Mitigation Measure 4.9-3a* *Implement OCMP Program EIR Mitigation Measure 4.9-4a.*	During mining and reclamation	Planning	Annual County inspection or in response to complaints	Require as permit condition	

SOLANO PROJECT EIR MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirements**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Aesthetics						
Impact 4.10-1: Mining and reclamation activities could adversely impact public views and vistas.	*Mitigation Measure 4.10-1a* *Implement Mitigation Measure 4.10-1b of the OCMP Program EIR.*	Prior to mining	Applicant/ Planning	Submit mine phasing plan for County approval	Require as permit condition	
Impact 4.10-2: Changes to the site's original character and topography following reclamation activities may result in long-term changes to public views and vistas.	*Mitigation Measure 4.10-2a* *None required.*	--	--	--	--	
Impact 4.10-3 Mining, reclamation, and post-reclamation activities may result in visual incompatibility with surrounding land uses.	*Mitigation Measure 4.10-3a* *None required.*	--	--	--	--	
Impact 4.10-4: Light and glare may be created from nighttime mining operations.	*Mitigation Measure 4.10-4a* *None required.*	--	--	--	--	
Cultural Resources						
Impact 4.11-1: Proposed mining activities could disturb paleontological resources.	*Mitigation Measure 4.11-1a* *Implement Mitigation Measure 4.11-1a of the OCMP Program EIR.*	Prior to mining During Mining	Applicant/ Planning Applicant/ Planning/ Native American Heritage Commission/ County Coroner	Implement Mitigation Measure 4.11-2a Notify coroner and NHC in event of discovery of skeletal remains	Require as permit condition	

SOLANO PROJECT EIR MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirements**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	Mitigation Measure 4.11-1b *The applicant shall implement a training program that alerts project employees involved with earth-moving as to the nature of paleontological and archaeological resources in the region, the laws that protect the resources, and responsibilities for reporting potential findings to appropriate authorities. This program shall be developed by a qualified cultural resource professional.*	Prior to mining	Applicant/ Planning	Submit training program and employee attendance roster to County	Require as permit condition	
Impact 4.11-2: Proposed mining activities would disturb archaeological resources.	*Mitigation Measure 4.11-2a* *No mining within the Snyder west parcel (phases IV and VI) shall be conducted until an accurate mapping of Yol-69 is completed, and the site is evaluated by an archaeologist to determine its significance and uniqueness. The following tasks shall be performed:* • *Contract a surveyor to accurately map the cultural resource site on a topographic map, based on information, preliminary map, and recommendations contained in the Yol-69 mechanical subsurface testing report (Holman & Associates, 1996). Upon completion of mechanical testing, the borders of the deposits shall be staked by the archaeologist.* • *Mapping of the resource shall be completed prior to commencement of mining in mining areas that include the resources.* • *Register the information obtained, including a map of the Yol-69 site, on State of California Archaeological Site Survey forms for filing at the State Historical Preservation Regional Office located at Sonoma State University. Prepare a professional report with all cultural resources information obtained and submit it for approval to the Northwest Information Center. A copy shall also be sent to Yolo County.* • *Before mining begins on Yol-69, an archaeologist shall be contracted to evaluate the Yol-69 site and determine its significance and uniqueness as defined in Appendix K of CEQA. A program of in-field evaluation testing shall be undertaken inside the newly recorded borders of Yol-69 to determine its significance. The evaluation of this site shall be extensive enough to guide the development of a mitigation program if the site is found to be significant. If the site is not found to be significant or unique, no archaeological mitigation program, such as in-field data retrieval through hand excavation and recording of findings, will be required. However, an archaeologist must be present during the excavation of this site to monitor for indications of human skeletal remains.*	Prior to mining	Applicant/ Planning and Sonoma State University	Submit archeological survey report and mitigation program, if applicable, to County and Sonoma State University	Require as permit condition	

SOLANO PROJECT EIR MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirements**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
	• *If it is determined that the site contains significant cultural resources, an appropriate mitigation program shall be developed, before mining begins on Yol-69, based on the information obtained during the site evaluation. This mitigation program shall include an extensive in-field data retrieval through hand excavation. This program of data retrieval must be conducted by an archaeologist and could include but not be limited to professional in-field excavation of a percent of the area to be destroyed by the project to record the artifacts encountered and other data that might contribute to the scientific understanding of the culture and the way of life of the prehistoric people who lived in the region. In addition, an archaeologist must be present during the mining of the portion of the site that was not hand excavated to monitor for any indication of human skeletal remains.* *Mitigation Measure 4.11-2b* *Implement Mitigation Measure 4.11-1b.* *Mitigation Measure 4.11-2c* *Implement Mitigation Measure 4.11-1a of the OCMP Program EIR.*	

SOLANO PROJECT EIR MITIGATION MONITORING PLAN						
Environmental Impact	**Mitigation Measures**	**Reporting/ Monitoring Requirements**	**Responsibility for Compliance**	**Method for Compliance**	**Enforcement**	**Checkoff Date/Initials**
Impact 4.12-3: Open pits have the potential to be attractive nuisance hazards.	*Mitigation Measure 4.12-3a* *Implement OCMP Program EIR Mitigation Measure 4.12-3a.*	During mining and reclamation	Applicant/ Planning	Implement Mitigation Measures 4.3-2a, 4.4-3a, and 4.12-1a	Require as permit condition	
Impact 4.12-4: Mosquito populations may increase due to expanded open bodies of water.	*Mitigation Measure 4.12-4a* *None required.*	--	--	--	--	

DRAFT ENVIRONMENTAL IMPACT REPORT for

SOLANO LONG-TERM OFF-CHANNEL MINING PERMIT APPLICATION

SCH #96012034

Yolo County

June 3, 1996

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1.0 INTRODUCTION

CHAPTER 1.0 INTRODUCTION

1.1 BACKGROUND AND NATURE OF PROJECT

The proposed project consists of an application for a long-term off-channel mining permit for an area near Cache Creek in Yolo County. Solano Concrete Company proposes to mine approximately 598 acres of a 1,828-acre site and reclaim the land to agriculture, wildlife habitat, and lakes. It is proposed that up to 1,445,783 tons of aggregate be mined per year and processed at an existing plant over a 30-year period.

The proposed project is located within the Off-Channel Mining Plan (OCMP) boundary. The OCMP is a planning document governing mining and reclamation activities near, but outside, the Cache Creek channel. A Program EIR has been prepared for the OCMP; that Program EIR evaluates the potential impacts associated with long-term mining and reclamation activities from off-channel operators, including Solano Concrete.

1.2 PURPOSE AND SCOPE OF THE EIR

This Draft Environmental Impact Report (DEIR) is a project EIR tiering off the OCMP Program EIR in accordance with the provisions in Section 15168 of the California Environmental Quality Act (CEQA) Guidelines. The CEQA Guidelines allow that Program EIRs can:

> "Provide the basis in an Initial Study for determining whether the later activity may have any significant effects.
>
> "Be incorporated by reference to deal with regional influences, secondary effects, cumulative impacts, broad alternatives, and other factors that apply to the program as a whole.
>
> "Focus an EIR for subsequent projects to permit discussion solely of new effects which had not been considered before."

An Initial Study (Appendix 7.1) was prepared and circulated for the proposed long-term application from Solano Concrete to assess the need for either a Negative Declaration or an EIR and to focus the ensuing environmental review of the project. Yolo County determined that an EIR should be prepared for this project after completion of the Initial Study.

This DEIR has been prepared pursuant to the California Environmental Quality Act (CEQA), as amended, the State CEQA Guidelines issued by the Governor's Office of Planning and Research, and the Yolo County Environmental Guidelines. Yolo County is the lead agency for the project evaluated in this DEIR.

This DEIR would be considered by various jurisdictions prior to the issuances of permits/approvals. The following permits/approvals could be required for the proposed project:

Agency	Permit/Approvals
Yolo County	Mining Permit Reclamation Plan Amendment to Hutson Parcel Reclamation Plan Amendment to Farnham West Reclamation Plan Rezoning Floodplain Development Permit
Yolo-Solano Air Quality Management District	Amendment to existing permit
Caltrans	Encroachment Permit
Regional Water Quality Control Board	Storm Water Pollution Prevention Plan modification Waste Discharge Requirements modification Spill Prevention, Control, and Countermeasure Plan
California Department of Fish and Game	Streambed Alteration Agreement 2081 Agreement
U.S. Army Corps of Engineers	404 Permit
U.S. Fish and Wildlife Service	Incidental Take Permit

The purpose of this DEIR is to identify: 1) the potential significant impacts of the proposed project on the environment and to indicate the manner in which those significant effects can be mitigated or avoided; 2) any unavoidable adverse impacts that cannot be mitigated; and 3) alternatives to the proposed project. The environmental analyses tier off analyses presented in the OCMP Program EIR when the impacts and mitigation measures are applicable for the project-level analyses. Therefore, some mitigation measures recommended for specific impacts may defer to mitigation measures in the OCMP Program EIR or may provide additional mitigation applicable to the project-level impacts.

1.3 ENVIRONMENTAL IMPACT REPORT REVIEW PROCESS

NOTICE OF PREPARATION

The Initial Study and Notice of Preparation (NOP) (Appendix 7.1) were prepared by the Yolo County Community Development Agency and distributed to local, regional, and State agencies and other interested parties. The 30-day period of public review and comment was from January 19, 1996 through February 19, 1996. Letters received in response to the NOP are also included in Appendix 7.2.

DRAFT EIR REVIEW AND PREPARATION OF FINAL EIR

This DEIR was publicly circulated on June 3, 1996 for a 45-day period of review and comment by the public and other interested parties, agencies, and organizations. A special Planning Commission hearing on the DEIR will be held on Wednesday, June 26, 1996 at the Planning Commission Chambers at 292 West Beamer Street in Woodland, CA 95695, for the purpose of obtaining public comments on this EIR and other EIRs on long-term, off-channel mining permit applications. The public review period for the Draft EIR concludes on July 17, 1996. All comments or questions about the EIR should be addressed to:

Mr. David Morrison, Resource Management Coordinator
Yolo County Community Development Agency
292 West Beamer Street
Woodland, CA 95695
Tel. (916) 666-8041; Fax: (916) 666-8156

Following receipt of comments on the DEIR, responses will be prepared and made available for public review a minimum of ten days prior to consideration for final action. The Yolo County Planning Commission will make a recommendation to the Board of Supervisors regarding the certification of the EIR as adequate and action on the project application.

FINAL ACTION ON THE PROJECT

The Board of Supervisors will make the final decision regarding certification of the Final EIR. Upon review and consideration of the Final EIR (FEIR), the Board of Supervisors will determine whether to approve or reject the proposed project.

Approval of the project, as proposed or revised, would be accompanied by written findings for each significant environmental impact identified in the FEIR. Findings must be accompanied by a brief explanation of the rationale for each finding and will indicate that: 1) mitigation measures to reduce significant impacts to less-than-significant levels have been adopted; 2) mitigation measures to reduce significant impacts to less-than-significant levels are within the jurisdiction of another public agency and either have been or should be adopted by that public agency; or 3) specific effects are unavoidable and substantially

unmitigable, but are considered acceptable because overriding considerations indicate that the benefits of the project outweigh adverse effects.

1.4 MITIGATION MONITORING

This DEIR presents mitigation measures for environmental impacts associated with the proposed project that are identified as significant. CEQA requires that, when a public agency makes findings based on an EIR, the public agency must adopt a report or monitoring plan for those measures that is has adopted or made a condition of approval to mitigate or avoid significant effects on the environment (Public Resources Code Section 21081.6). A Mitigation Monitoring Program for the Solano Concrete Company, Inc. Long-Term Off-Channel Mining Permit will be prepared in conjunction with Responses to Comments on this DEIR and provided to the County Planning Commission and Board of Supervisors for their decision making. The Mitigation Monitoring Program will specify the party responsible for implementation and monitoring of each mitigation measure.

1.5 ORGANIZATION OF THE DOCUMENT

This DEIR consists of seven chapters. A summary of each chapter is provided below:

- Chapter 1 provides an introduction and overview describing the intended use of the DEIR and the review and certification process.
- Chapter 2 summarizes the DEIR findings, identifying potential impacts and proposed mitigation measures.
- Chapter 3 provides a description of the project, its location, a site history, the applicant's objectives in proposing the project, and required approvals.
- Chapter 4 presents a full discussion of the environmental effects of the project. Each section (e.g., land use, hydrology, geology) describes the environmental setting, evaluates potential impacts resulting from implementation of the proposed project, and recommends feasible mitigation measures for the significant impacts.
- Chapter 5 discusses three alternatives to the project. Each alternative is described, and impacts associated with each alternative are compared to impacts of the proposed project. Chapter 5 also provides CEQA-required discussions regarding cumulative impacts and growth-inducing impacts.
- Chapter 6 lists the authors of the DEIR and references and persons consulted during DEIR preparation.
- Chapter 7 includes technical information and appendices to the document.

1.6 SUMMARY OF INITIAL STUDY/NOP CONCLUSIONS/EFFECTS FOUND NOT TO BE SIGNIFICANT

An Initial Study was prepared to identify environmental issues that would not be affected by implementation of the proposed project. The Initial Study and accompanying Notice of Preparation (NOP) are included in Appendix 7.1 of the EIR. The NOP was distributed to responsible agencies and interested parties for a period of 30 days. Comments on the NOP/Initial Study were received and are included in Appendix 7.2. Effects found not to be significant are as follows:

Population and Housing: The project would not employ a substantial number of employees or create a significant population increase; directly or indirectly induce growth in the area; nor displace any existing housing.

Energy and Mineral Resources: The project does not conflict with any adopted conservation plans nor require the development of new sources of energy. The site falls within an MRZ-2 zone and meets the criteria for sectorization, indicating that the extraction of the resources is not restricted by incompatible land uses. In addition, the proposed reclamation uses would not restrict the future availability of unmined known mineral resources. The potential effects of removal of known aggregate resources are discussed in the analysis of geologic and soils impacts and found not to be significant.

Public Services and Utilities: The proposed project would not increase demand for police and fire protection. The number of employees will be too small to affect demand for schools or for sewer or domestic water service. The project will not generate solid waste to a public waste disposal system. Potential impacts of truck traffic on roadways are discussed in the analysis of traffic and circulation; effects on surface water drainage and water supplies are described in the analysis of hydrology impacts. The proposed project would not result in increased demand for recreational facilities and is located on private property used for commercial agriculture. As such, the project will not affect existing recreational opportunities in the vicinity. However, the proposed project may affect future recreational potential described in the Off-Channel Mining Plan. This effect is described in the evaluation of land use impacts.

2.0 SUMMARY OF IMPACTS AND MITIGATION MEASURES

CHAPTER 2.0 SUMMARY OF IMPACTS AND MITIGATION MEASURES

2.1 PROJECT UNDER REVIEW

This Draft Environmental Impact Report (DEIR) has been prepared in accordance with the requirements of the California Environmental Quality Act (CEQA) for a proposed Long-Term Off-Channel Mining Application from Solano Concrete. The project is located in Yolo County, about seven miles west of Woodland and about 50 miles northwest of Sacramento.

The proposed project consists of the mining of aggregate from 598 acres of land on a 1,828-acre site. The proposed mining would increase annual permitted volumes of aggregate from 772,400 tons mined per year to 1,445,783 million tons per year. All mining would occur outside the active channel of Cache Creek. Topsoil and overburden would be removed from the mining areas in phases and stored on-site for subsequent reclamation. The marketable aggregate would be mined from below the overburden and to depth of up to 70 feet below the existing ground surface; this would result in mining below the groundwater table.

Reclamation for the mined areas is proposed to be a combination of four lakes (161 acres), and row and tree crops (446 acres), slopes and roads (26 acres), and habitat (65 acres). Reclaimed areas include portions of the adjoining Hutson parcel (100 acres) where mining has been completed under a permit approved in 1980 and 35 acres of the Farnham West parcel currently being mined under a three-year permit approved in 1995. In addition, the applicant proposes to restore 35 acres of previously mined and unmined areas to oak woodland habitat as a net gain to the County.

2.2 AREAS OF CONTROVERSY

CEQA Guidelines §15123(b)(2) requires a discussion of areas of controversy known to the lead agency, including issues raised by agencies and the public. The following areas of controversy have been identified and are addressed in Chapter 4.0, Environmental Analysis, of the Draft EIR.

- Impacts to groundwater as a result of accidental releases of hazardous materials (i.e., fuels, oils, etc.) into open bodies of water.

- Potential public safety hazards associated with open bodies of water remaining following reclamation.
- The appropriate period of time for which a mining permit should be granted.
- Proximity of mining excavations to the Cache Creek channel and the potential for stream capture.
- Reclamation of lands used for agriculture to prior to mining to other uses resulting in a permanent loss of agricultural land on-site.
- The appropriate depth of mining.

2.3 ISSUES TO BE RESOLVED

CEQA Guidelines §15123(b)(3) requires a discussion of issues to be resolved including a choice of alternatives and whether or how to mitigate the significant effects of the proposed action. The primary issue to be resolved for this project is adoption of the OCMP and implementing ordinances. An additional issue to be resolved is reclamation of mined agricultural land to hybrid tree crop production or oak woodland habitat on 223 acres of proposed Mining Areas I, III, IV, V, and VI.

2.4 SUMMARY OF REGULATORY/POLICY CONSISTENCY

CEQA Guidelines §15125(b) requires an EIR to discuss any inconsistencies between the proposed action and applicable general plans and regional plans. There are a number of regulations and plans that apply to the proposed action, including the California Surface Mining and Reclamation Act (SMARA), the Williamson Act, the Yolo County General Plan, and the Off-Channel Mining Plan. A discussion of the consistency of the proposed action with applicable regulations and plans is included in Section 4.2 of Chapter 4.0. In general, this project appears to be consistent with the plans and regulation in all areas except agricultural land protection policies of the Yolo County Resource Conservation District.

2.5 SUMMARY OF IMPACTS

This summary provides an overview of the analysis contained in Chapter 4.0, Environmental Analysis. This summary also includes discussions of: 1) effects found not to be significant; 2) mitigation measures to avoid or reduce identified significant impacts; 3) effects found to be significant and avoidable; 4) effects found to be significant and unavoidable; 5) cumulative impacts; and 6) growth-inducing impacts.

EFFECTS FOUND NOT TO BE SIGNIFICANT

An Initial Study was prepared to identify environmental studies that would not be affected by implementation of the proposed project. The Initial Study and accompanying NOP are included in Appendix 7.1 of the EIR. The NOP was distributed to responsible agencies and interested parties for a period of 30 days. Comments on the NOP/Initial Study were received and are included in Appendix 7.2. Effects found not to be significant in the NOP are population and housing, energy and mineral resources, and public services and utilities. In addition, the discussion in Chapter 4.0 of this EIR concludes that several additional areas of potential impact would be less than significant. These are summarized in Table 2-1.

MITIGATION MEASURES TO AVOID OR REDUCE IDENTIFIED SIGNIFICANT IMPACTS

This EIR discusses mitigation measures that could be implemented to reduce project impacts. The mitigation measures presented will form the basis of the Mitigation Monitoring Plan.

EFFECTS FOUND TO BE SIGNIFICANT AND AVOIDABLE

Under CEQA, a significant effect on the environment is defined as a substantial adverse change in any of the physical conditions within the area affected by the project. This includes land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic interest. Implementation of the project would generate environmental impacts in several areas. These impacts and mitigations that will reduce them to less-than-significant levels are discussed in Chapter 4.0 of this EIR and summarized in Table 2-1.

EFFECTS FOUND TO BE SIGNIFICANT AND UNAVOIDABLE

The environmental analysis in this DEIR identifies numerous significant impacts associated with the proposed aggregate extraction and reclamation. Mitigation measures have been recommended in this DEIR for most of the significant impact which would reduce the impacts to a less-than-significant level. Mitigation measures were not available to reduce the following significant impacts to a level of less than significant:

- Permanent conversion of agricultural land to nonagricultural use at the project site (Impact 4.5-2).
- Cumulative loss of agricultural land (Impact 4.5-8).
- Inconsistency with Yolo County Resource Conservation District agricultural policies (Impact 4.2-6).
- Increases in PM_{10} emissions in excess of thresholds (Impact 4.7-1).
- Increases in ozone precursor emissions (Impact 4.7-2).
- Effect on attainment of local and regional air quality goals (Impact 4.7-3).
- Effect on archeological resources (Impact 4.11-2).

SUMMARY OF CUMULATIVE IMPACTS

The OCMP Program EIR identified impacts that cumulatively would be significant in the planning area, and provided mitigation measures for those impacts to reduce them to a level of less than significant.

The OCMP Program EIR also identified numerous impacts that would be unavoidable, should all the cumulative projects be implemented within the planning area. The unavoidable adverse impacts were identified as:

- Permanent loss of agricultural land (OCMP EIR Impact 4.5-2).
- Temporary loss of agricultural productivity (OCMP EIR Impact 4.5-3).
- Cumulative loss of productive agricultural land (OCMP EIR Impact 4.5-7).
- Emissions of PM_{10} (OCMP EIR Impact 4.7-1).
- Emissions of ozone precursors (ROG and NO_x) (OCMP EIR Impact 4.7-2).
- Cumulative impacts to air quality (OCMP EIR Impact 4.7-3).
- Increase in vehicle trips (OCMP EIR Impact 4.8-2)
- Impacts to views or vistas (OCMP EIR Impact 4.10-1).

The Solano project would contribute proportionally to the cumulative impacts and would similarly be responsible for a fair share of the cumulative mitigation measures. These are discussed in this EIR.

SUMMARY OF GROWTH-INDUCING IMPACTS

The OCMP Program EIR evaluated whether mining and reclamation activities in the OCMP planning area would induce growth. That EIR discussed whether the cumulative projects combined would 1) encourage growth, 2) remove obstacles to population growth, or 3) affect existing community facilities. The OCMP Program EIR analysis indicated that the cumulative projects would not induce growth in the planning area. Since the cumulative projects in the OCMP planning area would not be growth-inducing, the proposed project would also not be growth-inducing.

2.6 SUMMARY OF ALTERNATIVES

CEQA Guidelines §15126(d) requires that a Draft EIR contains an evaluation of a reasonable range of alternatives (including an evaluation of the comparative merits of the alternatives) that would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the proposed project. Section 5.3 of the Draft EIR contains an analysis of the alternatives that are summarized here.

This EIR is tiered from the OCMP Program EIR. The following eight alternatives were evaluated in the OCMP Program EIR:

Alternative 1a: No Project (Existing Conditions)
Alternative 1b: No Project (Existing Permits and Regulatory Condition)
Alternative 2: No Mining (Alternative Site)
Alternative 3: Plant Operation Only (Importation)
Alternative 4: Shallow Mining (Alternative Method/Reclamation)
Alternative 5a: Decreased Mining (Restricted Allocation)
Alternative 5b: Decreased Mining (Shorter Mining Period)
Alternative 6: Agricultural Reclamation (with Mining Operation as Proposed)

Five alternatives are evaluated in this project DEIR. The alternatives were selected based on feasibility and conformance with the proposed project objectives. The OCMP and CCRMP considered several alternative plans that would result in no mining or less mining within the respective planning areas. This DEIR evaluates specific alternative mining and reclamation plans that would reduce the amount of aggregate extraction or the area to be mined. The following alternatives were evaluated:

- Alternative 1: No Project Alternative. Under this alternative the mining and reclamation activities under the Solano Concrete's existing short-term permit would be completed. The existing plant would continue to operate, processing aggregate from an unknown off-site source.

- Alternative 2a: Shallow Mining (Expanded Area). Under this alternative, mining would only be permitted to ten feet above the water table, but the same amount of aggregate extraction would be allowed as under the proposed project. This would result in a significantly larger disturbed area than under the proposed project.

- Alternative 2b: Shallow Mining (Decreased Volume). Under this alternative mining would be restricted to a depth of ten feet above the water table, but the areas to be mined would remain the same as for the proposed project; this would result in a significantly lower amount of mined aggregate than under the proposed project.

- Alternative 3a: Decreased Mining (Limited Extraction Rate). Under this alternative, the annual extraction rate at the site would remain the same as for the current permit (772,400 tons) during a 30-year period. The reduced aggregate extraction would result in a 47 percent reduction in the amount of aggregate extracted. Approximately 407 acres of land would be disturbed. Mining would result in the creation of wet pits under this alternative.

- Alternative 3b: Decreased Mining (Limited Extraction Period). Under this alternative mining would occur during a 15-year period at the rate currently proposed (1,445,783 million tons per year). The reduced mining period would result in a 31 percent reduction in total aggregate mined compared to the proposed project and only 374 acres of land would be affected. Mining under this alternative would also result in the creation of wet pits on the site.

The Environmentally Superior Alternative was determined to be Alternative 3b, Decreased Mining (Limited Extraction Period).

2.7 SUMMARY TABLE

The following table (Table 2-1) has been organized to correspond with environmental issues discussed in Chapter 4.0 of this DEIR. The Summary Table is arranged in four columns:

1. Environmental Impacts,
2. Level of Significance before Mitigation,
3. Recommended Mitigation Measures,
4. Level of Significance after Mitigation.

A series of mitigation measures is recommended in some instances; in those cases all mitigation measures would be required to reduce the impact to a level of less than significant, unless otherwise noted. Refer to Chapter 4.0 for a complete impact analysis.

Table 2-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES					
Environmental Impact	**Level of Significance Before Mitigation**		**Mitigation Measures**	**Level of Significance After Mitigation**	
	LS	**S**		**LS**	**SU**
Land Use and Planning					
Impact 4.2-1: The project as proposed is inconsistent with some of the policies of the OCMP.		•	*Mitigation Measure 4.2-1a* *Implementation of Mitigation Measures 4.4-3a, 4.4-4a, and 4.4-7a will reduce this impact to a less than significant level.*	•	
Impact 4.2-2: The proposed project would be consistent with policies of the Yolo County General Plan.	•		*Mitigation Measure 4.2-2a* *None required.*	•	
Impact 4.2-3: The proposed project may be inconsistent with the Yolo County Zoning Ordinance and the Williamson Act.		•	*Mitigation Measure 4.2-3a* *The project mining schedule or reclamation plan shall be modified to ensure that if Phase III lands are to be mined before the Williamson Act contracts expire, then reclamation shall be to prime agricultural uses only. Alternatively, if mining in Phase III does not begin until after 2006, no change to the proposed reclamation plan would be required.*	•	
Impact 4.2-4: The proposed project would be consistent with the State Mining and Reclamation Act (SMARA) and Regulations.	•		*Mitigation Measure 4.2-4a* *None required.*	•	
Impact 4.2-5: The proposed project would be consistent with the draft Yolo County Habitat Conservation Plan.	•		*Mitigation Measure 4.2-5a* *None required.*	•	
Impact 4.2-6: The proposed project would be consistent with the Regional Water Quality Control Board Basin Plan.	•		*Mitigation Measure 4.2-6a* *None required.*	•	
Impact 4.2-7: The proposed project is inconsistent with agricultural policies adopted by the Yolo County Resource Conservation District.		•	*Mitigation Measure 4.2-7a* *None available. This is a significant, unavoidable impact of the project.*		•
Impact 4.2-8: The proposed project may be incompatible with some existing and planned land uses.		•	*Mitigation Measure 4.2-8a* *The County shall determine whether the applicant's offer to dedicate reclaimed lands in Phase V and VI for the proposed Recreation Node would fulfill the policy of the CCRMP. The County and the applicant should enter into discussions to resolve how public access to the future recreation facility can be accommodated. If determined to be feasible, the project plans should be modified to include a public access road along the eastern boundary of the site.*	•	

Key: LS = less than significant
S = significant
SU = significant and unavoidable

Table 2-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES (*continued*)					
Environmental Impact	**Level of Significance Before Mitigation**		**Mitigation Measures**	**Level of Significance After Mitigation**	
	LS	**S**		**LS**	**SU**
Impact 4.2-9: During the mining phases, the proposed project would result in an intensification of land use for the mining sites.	•		*Mitigation Measure 4.2-9a* *None required.*	•	
Geology and Soils					
Impact 4.3-1: Expected seismic shaking at the project could result in ground failures and damage to reclamation features.		•	*Mitigation Measure 4.3-1a* *Implement performance standards presented in Mitigation Measure 4.3-1a of the OCMP Program EIR.*	•	
Impact 4.3-2: Potential failure and/or erosion of slopes could result in unstable slope conditions or adverse sedimentation of open water bodies.		•	*Mitigation Measure 4.3-2a* *Compliance with Mitigation Measure 4.3-2a of the OCMP Program EIR.*	•	
Impact 4.3-3: Aggregate extraction proposed by the project would result in the decreased availability of aggregate resources.	•		*Mitigation Measure 4.3-3a* *None required.*	•	
Impact 4.3-4: Erosion, failure, or overtopping of the channel bank separating the proposed mining areas from the active channel of Cache Creek could result in flooding of the pits and potential permanent inundation of the mining or reclaimed lower agricultural fields.		•	*Mitigation Measure 4.3-4a* *The County shall revise the CCRMP channel boundary in the vicinity of the site to reflect the Cunningham Engineering (1995) 100-year floodplain boundary. The hydraulic model used to determine the boundary assumes replacement of the Capay bridge with a three-span bridge. If this assumption changes, additional HEC-2 modeling will be required to establish the revised CCRMP boundary. If this boundary changes significantly upon modeling, additional review may be required.* *Mitigation Measure 4.3-4b* *Portions of the northern margin of the proposed Mining Areas II, III, V, VI, and VII shall be redesigned to provide a minimum 200-foot setback from the existing Cache Creek stream bank, in conformance with the requirements of Performance Standard 4.5-3 and all other pertinent performance standards in the OCMP. The revised project design shall be submitted prior to commencement of mining within Phase 3 and be consistent with the recommended slope design presented in the current application. If the redesigned project results in changes in any other mining area boundaries, additional CEQA review may be required.* *Mitigation Measure 4.3-4c* *Obtain an exception to Performance Standard 4.5-3 for the northeastern portions of Mining Areas III, V, and VI. Such approval shall require submittal and approval of engineering design for controlled flow inlet channels for each of the former mining areas. The design of the inlets shall be prepared by an experienced, licensed engineer. Inlet channels shall be designed and constructed to concentrate and control flow into the former mining areas. The design shall provide channel materials which will not erode during inundation events. Design shall be approved and work completed prior to commencement of mining within affected phases.*	•	

			Alternatively, the portions of the levee in these areas could be raised to provide 100-year flood protection for these areas with a minimum of three feet of freeboard. This mitigation measure would be consistent with the proposed project and the requirements of the OCMP. Any levee work performed shall be completed prior to commencement of mining within the affected phases. *Mitigation Measure 4.3-4d* *Implement Mitigation Measure 4.3-3a of the OCMP EIR. Specifically, the applicant shall conduct annual monitoring and maintenance of the channel banks and levees at the northern margin of the project site during the mining and reclamation period. The monitoring shall be conducted by a licensed engineer and shall minimally include visual inspection of channel banks and levees for evidence of erosion or slope instability. Evidence of erosion shall include, but not be limited to, the existence of oversteepened banks and loss of vegetation. Evidence of slope instability shall include formation tension cracks, arcuate scarps, or unexcavated benches.* *The annual report of channel bank and levee conditions shall be submitted to the Yolo County Community Development Agency with the Annual Mining and Reclamation Report. The report shall include the identification of the location (on scaled maps and photographs), estimated area and volume of eroded materials or slope failure, a determine of the cause(s) of erosion or slope failure, and recommendations for remedial action. Recommended remedial actions shall be implemented prior to November 1.* *Mitigation Measure 4.3-4e* *Following reclamation, the YCCDA shall determine, on the basis of inspection of the performance of the channel banks and levees during the mining and reclamation period, the need for continued channel bank and levee monitoring and reporting. The landowner shall be responsible for continuing monitoring and maintenance. A restriction shall be place on the deed for the underlying property requiring continued inspection and maintenance of channel banks and levees, and allowing access by the County for same.* *Mitigation Measure 4.3-4f* *The proposed project design shall be revised to provide a biotechnical bank protection design to replace the proposed placement of rip rap on that section of the south bank of Cache Creek extending 1,500 feet downstream from the I-505 bridge. The proposed biotechnical bank protection shall be submitted to the Yolo County Community Development Agency for approval prior to the commencement of mining in Mining Area VII.* *Mitigation Measure 4.3-4g* *Mining within Mining Area VII shall not be conducted within 700 feet of the existing stream bank until stream bank stabilization is provided for that portion of the south bank of Cache Creek upstream from the I-505 bridge. The bank protection shall be performed in accordance with the guidelines presented in the Cache Creek Resource Management Plan and Cache Creek Improvements Program.*		

Key: LS = less than significant
S = significant
SU = significant and unavoidable

Table 2-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES (*continued*)

Environmental Impact	Level of Significance Before Mitigation		Mitigation Measures	Level of Significance After Mitigation	
	LS	S		LS	SU
			Mitigation Measure 4.3-4h *Recommendations of the geotechnical report for stabilization of the south bank of Cache Creek shall be implemented within one year after the commencement of mining. Prior to the construction of the improvements, detailed plans identifying the type of stream bank protection shall be submitted to the Technical Advisory Committee (TAC) for review and approval. The bank protection plans shall incorporate biotechnical methods of bank stabilization.* *Mitigation Measure 4.3-4i* *The applicant shall enter into a legally-binding agreement with the County that commits the applicant to participate in implementation of the Cache Creek Improvements Program. Participation shall include, but not be limited to, contribution of equipment and labor for channel widening projects, channel maintenance mining recommended by the TAC, and channel modification at the Esparto bridge.* *Mitigation Measure 4.3-4j* *Prior to the commencement of mining below the groundwater level, the applicant shall contact the California Division of Safety of Dams (DSD) for a determination on whether the alluvial separators that would be created by the project fall under DSD jurisdiction.*		
Hydrology and Water Quality					
Impact 4.4-1: Flooding at the site could cause property damage and injury to on-site workers.		•	*Mitigation Measure 4.4-1a* *Prior to initiation of mining proposed in this application, the applicant shall increase levee heights to provide three feet of freeboard above 100-year flood elevations in the vicinity of the project site, except as discussed in Mitigation Measure 4.3-4c.* *Mitigation Measure 4.4-1b* *The applicant must apply for, and receive, a floodplain development permit from Yolo County prior to mining activities within U.S. Department of Housing and Urban Development designated 100-year floodplains.*	•	
Impact 4.4-2: Evaporation from a wet pit water surface would represent a loss of water from groundwater storage.	•		*Mitigation Measure 4.4-2a* *None required.*	•	
Impact 4.4-3: Creation of wet pit lakes exposes surface and groundwater to potential degradation of water quality during the mining and reclamation period.		•	*Mitigation Measure 4.4-3a* *Implement Mitigation Measure 4.4-2a of the OCMP Program EIR.*	•	
Impact 4.4-4: Creation of wet pit lakes exposes surface and groundwater to potential degradation of water quality during the post-reclamation period.		•	*Mitigation Measure 4.4-4a* *Implement Mitigation Measures 4.4-2a and 4.4-3a of the OCMP Program EIR.*	•	

Impact 4.4-5: Creation of wet pit lakes and the subsequent backfilling with fine-grained sediments (processing fines and overburden) could cause impacts to groundwater levels, rate of flow and direction of flow.	•		*Mitigation Measure 4.4-5a* *None required.*	•	
Impact 4.4-6: Mining of aggregate and subsequent reclamation of the mined areas would result in alteration of the topography and drainage patterns at the site.	•		*Mitigation Measure 4.4-6a* *None required.*	•	
Impact 4.4-7: Reclaimed lowered agricultural surfaces could be inundated during parts of the year by high groundwater conditions, adversely impacting productivity.		•	*Mitigation Measure 4.4-7a* *All reclaimed lowered agricultural surfaces shall be, at minimum, five feet above average high groundwater. The reclamation plan for the Solano West mining area shall be modified to meet this requirement.*	•	
Impact 4.4-8: Increased pumping of groundwater at the processing plant to support the proposed increase in aggregate extraction and processing could adversely affect water supply wells in the vicinity.	•		*Mitigation Measure 4.4-8a* *None required.*	•	
Agriculture					
Impact 4.5-1: The proposed project would result in the temporary loss of agricultural production during mining and reclamation.	•		*Mitigation Measure 4.5-1a* *None required.*	•	
Impact 4.5-2: The proposed project would result in permanent conversion of 252 acres of prime farmland to nonagricultural uses.		•	*Mitigation Measure 4.5-2a* *Compliance of the project with Mitigation Measure 4.5-2a of the OCMP Program EIR would reduce the impact of the permanent loss of agricultural land. Compliance with the mitigation may be phased to track with the phasing of the mining. Compliance shall be verified by phase.*		•
Impact 4.5-3: Water or wind erosion of stockpiles of agricultural soils at the project site could result in permanent loss of an important agricultural resource.	•		*Mitigation Measure 4.5-3a* *None required.*	•	
Impact 4.5-4: Proposed post-reclamation uses could result in impacts to agricultural lands and operations on- and off-site.	•		*Mitigation Measure 4.5-4a* *None required.*	•	

Key: LS = less than significant
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Table 2-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES (*continued*)

Environmental Impact	Level of Significance Before Mitigation		Mitigation Measures	Level of Significance After Mitigation	
	LS	S		LS	SU
Impact 4.5-5: Lowering of reclaimed agricultural fields could result in adverse conditions for agricultural production.		•	*Mitigation Measure 4.5-5a* *Compliance with Mitigation Measure 4.4-8a of the OCMP Program EIR would mitigate the potential impacts of high seasonal groundwater on crop productivity. The mitigation requires that all reclaimed agricultural surface are a minimum of five feet above the average seasonal high groundwater level. To meet this standard, the elevation of the reclaimed agricultural fields within Mining Area VII shall be raised two or more feet above the proposed reclaimed surface elevation.*	•	
Impact 4.5-6: The nonrenewal of current Williamson Act contracts for land affected by mining could result in a reduction of land under conservation for agriculture or open space uses.	•		*Mitigation Measure 4.5-6a* *None required. However, permanent conservation of the project site for agricultural and open space use would be better assured if all parcels within the site were re-enrolled in Williamson contracts upon completion of mining.*	•	
Impact 4.5-7: Proposed reclamation of portions of mined areas to tree crop agriculture could potentially conflict with adjacent agricultural uses.	•		*Mitigation Measure 4.5-7* *None required.*	•	
Impact 4.5-8: Implementation of the proposed project would contribute to the cumulative loss of agricultural land.		•	*Mitigation Measure 4.5-8a* *Implementation of Mitigation Measure 4.5-2a would reduce the impact of the cumulative loss of agricultural land in Yolo County.*		•
Biological Resources					
Impact 4.6-1: Project implementation would result in approximately 598 acres of primarily agricultural cover, revegetation of disturbed areas, and enhancement of native habitat.	•		*Mitigation Measure 4.6-1a* *None required.*	•	
Impact 4.6-2: Grading in the proposed mining area would result in the loss of mature oaks and could result in inadvertent disturbance to remnant sensitive natural communities along the Cache Creek corridor.		•	*Mitigation Measure 4.6-2a* *Figure 8 of the HRP shall be revised to indicate the location of hedgerow plantings, proposed by the applicant, on any side slopes around the perimeter of areas identified as "Integrated Agriculture" (tree crops) and "Reclaimed Agriculture."* *Mitigation Measure 4.6-2b* *Mature oak trees at the fringe of proposed mining areas shall be preserved. These shall include: the two oaks at the southwestern corner of the mining area on the Solano West parcel; the two oaks at the southwest corner of the mining area along the boundary between the Farnham West and Hutson parcels; and the single oak at the southeastern edge of the mining area on the Snyder West parcel. Stockpiling of topsoil and overburden proposed in the vicinity of these five trees shall be restricted to beyond the tree driplines. As required by Performance Standard 6.5-1 of the OCMP, temporary fencing shall be provided around the dripline of these trees to prevent possible construction-related damage. Fencing shall remain in place until stockpiles are removed and the surrounding lands are returned to agricultural production.*	•	

			Mitigation Measure 4.6-2c *As required by Performance Standard 6.5-1 of the OCMP, temporary fencing shall be installed at the boundary of the habitat restoration area along the Cache Creek corridor, prior to initiation of any mining activity for each phase of the project. The fencing shall remain in place throughout the duration of active mining until reclamation has been completed for each project phase.* *Mitigation Measure 4.6-2d* *Proposed levee and channel stabilization improvements shall be designed to avoid impacts to riparian habitat on the site. Levee improvements on the Snyder East and West parcels shall be set back from the edge of the upper terrace to eliminate fill slopes which would extend into the riparian habitat. The proposed project design shall be revised to provide a biotechnical bank protection design to replace the proposed placement of rip rap on that section of the south bank of Cache Creek extending 1,500 feet downstream from the I-505 bridge.* *Mitigation Measure 4.6-2e* *The proposed HRP shall be revised to include provisions to remove tamarisk and giant reed from the site as part of the creek restoration effort and to modify restoration plans for the depression on the Snyder East parcel to enhance the existing riparian woodland rather than establishing seasonal marsh at this location.*		
Impact 4.6-3: Mining and reclamation activities would disturb existing wildlife habitat and components of the proposed HRP would be of limited habitat value.		•	*Mitigation Measure 4.6-3a* *At least one permanent island shall be created on each of the proposed lakes to improve their wildlife habitat value. The permanent islands would replace the proposed artificial islands. Characteristics of the permanent island shall include the following:* • *The elevation of the islands shall extend a minimum of five feet above the average high groundwater level (approximately 125-foot elevation) to prevent complete inundation during the winter months. Slopes of the island shall not exceed 3:1 above the average low groundwater level.* • *The channel of water separating the island from the mainland shall have a minimum distance of 20 feet and a depth reaching at least 5 feet during the average summer low groundwater level to prevent predators from wading to the island during the summer months.* • *Each island shall be revegetated according to the HRP, with perennial marsh at the lowest elevations and low terrace riparian species up to the average high groundwater level, with a cover of grassland and scattered shrubs provided over the top of the island.* • *Each island shall be revegetated according to the HRP, with perennial marsh at the lowest elevations and low terrace riparian species up to the average high groundwater level, with a cover of grassland and scattered shrubs provided over the top of the island.* *Mitigation Measure 4.6-3b* *The unique bluff habitat between the upper terrace and the existing haul road on the Snyder East parcel shall be preserved. Mitigation Measure 4.3-4a in the Geology section provides appropriate mitigation for this impact.*	•	

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S = significant
SU = significant and unavoidable

Table 2-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES (*continued*)

Environmental Impact	Level of Significance Before Mitigation		Mitigation Measures	Level of Significance After Mitigation	
	LS	S		LS	SU
Impact 4.6-4: Mining activities and aspects of the proposed reclamation would result in the loss of suitable foraging habitat for Swainson's hawk.		•	*Mitigation Measure 4.6-4a* *As required by Action 6.4-4 of the OCMP, a CDFG Code Section 2081 authorization, or the posting of a reclamation bond or letter of credit naming CDFG as the beneficiary, or other alternative measure to CDFG, shall be executed prior to project approval.*	•	
Impact 4.6-5: Mining activities would affect suitable habitat for special-status species, such as valley elderberry longhorn beetle, bank swallow, and other species of concern.		•	*Mitigation Measure 4.6-5a* *The proposed HRP shall be revised to include specific provisions to ensure compliance with the USFWS "General Compensation Guidelines for the Valley Elderberry Longhorn Beetle". This shall include measures to: protect all elderberry shrubs to be retained; transplanting shrubs that cannot be avoided; planting replacement elderberry seedlings and associated riparian vegetation at appropriate ratios; and defining short and long-term maintenance, monitoring, and protection methods for the designated mitigation areas. A preconstruction survey for elderberry shrubs shall be performed by a qualified biologist prior to each phase of mining. The survey shall serve to confirm previous mapping of elderberry locations and determine whether any new shrubs have become established within the new mining area for which protection or replacement should be provided. The results of the survey shall be submitted to the USFWS as a report summarizing the purpose, findings, and recommendations consistent with the provisions of the revised HRP. All elderberry shrubs to be retained shall be flagged and fencing provided where necessary to preclude possible damage or loss of shrubs.* *Mitigation Measure 4.6-5b* *Implement Mitigation Measure 4.6-4a of the OCMP Program EIR to prevent inadvertent take of bank swallows.* *Mitigation Measure 4.6-5c* *The proposed HRP shall be revised to include specific provisions to replace the artificial bank swallow nesting habitat created by past mining activities on the Hutson parcel. These provisions shall include design, construction, and maintenance activities necessary to implement one or more of the following options: establishing suitable nesting habitat on designated side slopes of the permanent lakes, replicating the conditions on the Hutson parcel at a new location; restoring the vertical bluffs above the mining-related riparian habitat in the northern portion of the Snyder East parcel; and/or creating and perpetuating a vertical bank along a designated segment of the active channel of Cache Creek.* *Mitigation Measure 4.6-5d* *A pre-construction raptor survey shall be conducted by a qualified wildlife biologist prior to initiation of each phase of mining to determine the presence or absence of active raptor nests which could be disturbed or lost within the new mining area. The results of the survey shall be submitted to the CDFG as a report summarizing the purpose, findings, recommendations, and status of any nests encountered. Elements of the required pre-construction nesting survey and construction restrictions shall include the following:*	•	

			• *Conduct the survey 30 days prior to any grading or other habitat modifications if proposed during the breeding season for tree nesting raptors (from March 1 through August 15). Confirmation surveys on presence or absence of burrowing owl ground nesting colonies shall be required prior to initiation of a particular phase of mining at any time of the year to ensure absence of any resident owls.* • *If an active raptor nest is encountered, establish an appropriate buffer around the nest location, as determined in consultation with representatives of CDFG. The perimeter of the buffer zone shall be flagged in the field at 50-foot intervals, and all construction activities, including grading, tree removal, equipment storage, and stockpiling of soils, shall be prohibited within this buffer zone.* • *Prohibit construction activities within the designated buffer zone until the consulting wildlife biologist has determined that breeding was unsuccessful, that the young have fledged from the nest, or that a CDFG-approved relocation plan has been successfully implemented.* • *Prohibit construction activities, including removal of any nest tree or burrow, within the designated buffer zone unless written confirmation from the wildlife biologist on the status of nesting activity has been submitted in writing to CDFG.*		
Impact 4.6-6: Proposed mining and reclamation activities would affect jurisdictional wetlands or other waters of the United States.		•	*Mitigation Measure 4.6-6a* *Proposed channel bank modifications shall be coordinated with the Corps and California Department of Fish and Game. If required by jurisdictional agencies, appropriate authorization to modify jurisdictional habitat shall be obtained prior to grading or other modifications. Consistent with Action 4.4-1 of the CCRMP, use of biotechnical bank protection design methods shall be encouraged where bank stabilization is required, such as the segment of active erosion on the Kaupke parcel.*	•	
Air Quality					
Impact 4.7-1: The proposed project would result in increases in PM_{10} emissions.		•	*Mitigation Measure 4.7-1a* *Implement Mitigation Measure 4.7-1a of the OCMP Program EIR.*		•
Impact 4.7-2: The project would result in an increase in emissions of ozone precursors.		•	*Mitigation Measure 4.7-2a* *Implement Mitigation Measure 4.7-2a of the OCMP Program EIR.*		•
Impact 4.7-3: The project would affect the attainment of local or regional air quality goals.		•	*Mitigation Measure 4.7-3a* *See Mitigation Measures 4.7-1 and 4.7-2. No additional measures are available to reduce the impact to a less-than-significant level.*		•
Impact 4.7-4: The project could generate vehicle trips that cause a CO hot spot.	•		*Mitigation Measure 4.7-4a* *None required.*	•	
Impact 4.7-5: Emissions from the proposed project could affect sensitive air quality receptors.	•		*Mitigation Measure 4.7-5a* *None required.*	•	

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Table 2-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES (*continued*)

Environmental Impact	Level of Significance Before Mitigation		Mitigation Measures	Level of Significance After Mitigation	
	LS	S		LS	SU
Impact 4.7-6: The project could create or subject sensitive air quality receptors to an objectionable odor.	•		Mitigation Measure 4.7-6a *None required.*	•	
Traffic and Circulation					
Impact 4.8-1: The proposed project would result in additional truck traffic on the nonstandard segment of SR 16 between I-505 and the entrance to the Solano Concrete Plant.		•	*Mitigation Measure 4.8-1a* *The applicant shall construct a left-turn lane for eastbound movements into the Solano Concrete Plant.*	•	
Impact 4.8-2: The proposed project would exacerbate unacceptable operations at the SR 16/County Road 98/Main Street intersection in the city of Woodland.		•	*Mitigation Measure 4.8-2a* *The applicant shall pay its fair share toward the construction of left-turn lanes on each approach, and the installation of a traffic signal, at the SR 16/County Road 98/Main Street intersection to maintain acceptable levels of service.*	•	
Noise					
Impact 4.9-1: The proposed project may result in an increase in ambient noise levels. This is considered to be a significant impact.		•	*Mitigation Measure 4.9-1a* *Daytime noise levels at the property boundary shall not exceed 80 dBA L_{eq} during mining and reclamation of the site. If earth moving operations are conducted at grade within less than 58 feet from the property boundary, the applicant shall ensure that no more than one scraper is used at any one time.* *Mitigation Measure 4.9-1b* *Implement Mitigation Measures 4.9-1b and 4.9-1c of the OCMP Program EIR.*	•	
Impact 4.9-2: Project activities may result in exposure of sensitive receptors to increased noise levels.		•	*Mitigation Measure 4.9-2a* *Implement OCMP policies as modified in Mitigation Measure 4.9-1c of the OCMP Program EIR.*	•	
Impact 4.9-3: Proposed project may create vibration or nuisance noise on adjoining properties.		•	*Mitigation Measure 4.9-3a* *Implement OCMP Program EIR Mitigation Measure 4.9-4a.*	•	
Aesthetics					
Impact 4.10-1: Mining and reclamation activities could adversely impact public views and vistas.		•	*Mitigation Measure 4.10-1a* *Implement Mitigation Measure 4.10-1b of the OCMP Program EIR.*	•	
Impact 4.10-2: Changes to the site's original character and topography following reclamation activities may result in long-term changes to public views and vistas.	•		*Mitigation Measure 4.10-2a* *None required.*	•	

Impact 4.10-3 Mining, reclamation, and post-reclamation activities may result in visual incompatibility with surrounding land uses.	•		*Mitigation Measure 4.10-3a* *None required.*	•	
Impact 4.10-4: Light and glare may be created from nighttime mining operations.	•		*Mitigation Measure 4.10-4a* *None required.*	•	
Cultural Resources					
Impact 4.11-1: Proposed mining activities could disturb paleontological resources.		•	*Mitigation Measure 4.11-1a* *Implement Mitigation Measure 4.11-1a of the OCMP Program EIR.* *Mitigation Measure 4.11-1b* *The applicant shall implement a training program that alerts project employees involved with earth-moving as to the nature of paleontological and archaeological resources in the region, the laws that protect the resources, and responsibilities for reporting potential findings to appropriate authorities. This program shall be developed by a qualified cultural resource professional.*	•	
Impact 4.11-2: Proposed mining activities would disturb archaeological resources.		•	*Mitigation Measure 4.11-2a* *No mining within the Snyder west parcel (phases IV and VI) shall be conducted until an accurate mapping of Yol-69 is completed, and the site is evaluated by an archaeologist to determine its significance and uniqueness. The following tasks shall be performed:* • *Contract a surveyor to accurately map the cultural resource site on a topographic map, based on information, preliminary map, and recommendations contained in the Yol-69 mechanical subsurface testing report (Holman & Associates, 1996). Upon completion of mechanical testing, the borders of the deposits shall be staked by the archaeologist.* • *Mapping of the resource shall be completed prior to commencement of mining in mining areas that include the resources.* • *Register the information obtained, including a map of the Yol-69 site, on State of California Archaeological Site Survey forms for filing at the State Historical Preservation Regional Office located at Sonoma State University. Prepare a professional report with all cultural resources information obtained and submit it for approval to the Northwest Information Center. A copy shall also be sent to Yolo County.*		•

Key: LS = less than significant
S = significant
SU = significant and unavoidable

Table 2-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES (*continued*)

Environmental Impact	Level of Significance Before Mitigation		Mitigation Measures	Level of Significance After Mitigation	
	LS	S		LS	SU
			• *After mapping, an archaeologist shall be contracted to evaluate the Yol-69 site and determine its significance and uniqueness as defined in Appendix K of CEQA. A program of in-field evaluation testing shall be undertaken inside the newly recorded borders of Yol-69 to determine its significance. The evaluation of this site shall be extensive enough to guide the development of a mitigation program if the site is found to be significant. If the site is not found to be significant or unique, no archaeological mitigation program, such as in-field data retrieval through hand excavation and recording of findings, will be required. However, an archaeologist must be present during the excavation of this site to monitor for indications of human skeletal remains.* • *If it is determined that the site contains significant cultural resources, an appropriate mitigation program shall be developed based on the information obtained during the site evaluation. This mitigation program shall include an extensive in-field data retrieval through hand excavation. This program of data retrieval must be conducted by an archaeologist and could include but not be limited to professional in-field excavation of a percent of the area to be destroyed by the project to record the artifacts encountered and other data that might contribute to the scientific understanding of the culture and the way of life of the prehistoric people who lived in the region. In addition, an archaeologist must be present during the mining of the portion of the site that was not hand excavated to monitor for any indication of human skeletal remains.* *Mitigation Measure 4.11-2b* *Implement Mitigation Measure 4.11-1b.* *Mitigation Measure 4.11-2c* *Implement Mitigation Measure 4.11-1a of the OCMP Program EIR.*		
Impact 4.11-3: Proposed mining activities could disturb or destroy historical resources.	•		*Mitigation Measure 4.11-3a* *None required.*	•	
Hazards					
Impact 4.12-1: Accidental releases of fuels and related compounds could affect public health and the environment.		•	*Mitigation Measure 4.12-1a* *Implement OCMP Program EIR Mitigation Measure 4.12-1a.*	•	
Impact 4.12-2: Workers may be exposed to agricultural chemicals during mining and reclamation activities.	•		*Mitigation Measure 4.12-2a* *None required.*	•	

Impact 4.12-3: Open pits have the potential to be attractive nuisance hazards.		•	*Mitigation Measure 4.12-3a* *Implement OCMP Program EIR Mitigation Measure 4.12-3a.*	•	
Impact 4.12-4: Mosquito populations may increase due to expanded open bodies of water.	•		*Mitigation Measure 4.12-4a* *None required.*	•	

Key: LS = less than significant
S = significant
SU = significant and unavoidable

3.0 PROJECT DESCRIPTION

CHAPTER 3.0 PROJECT DESCRIPTION

3.1 INTRODUCTION

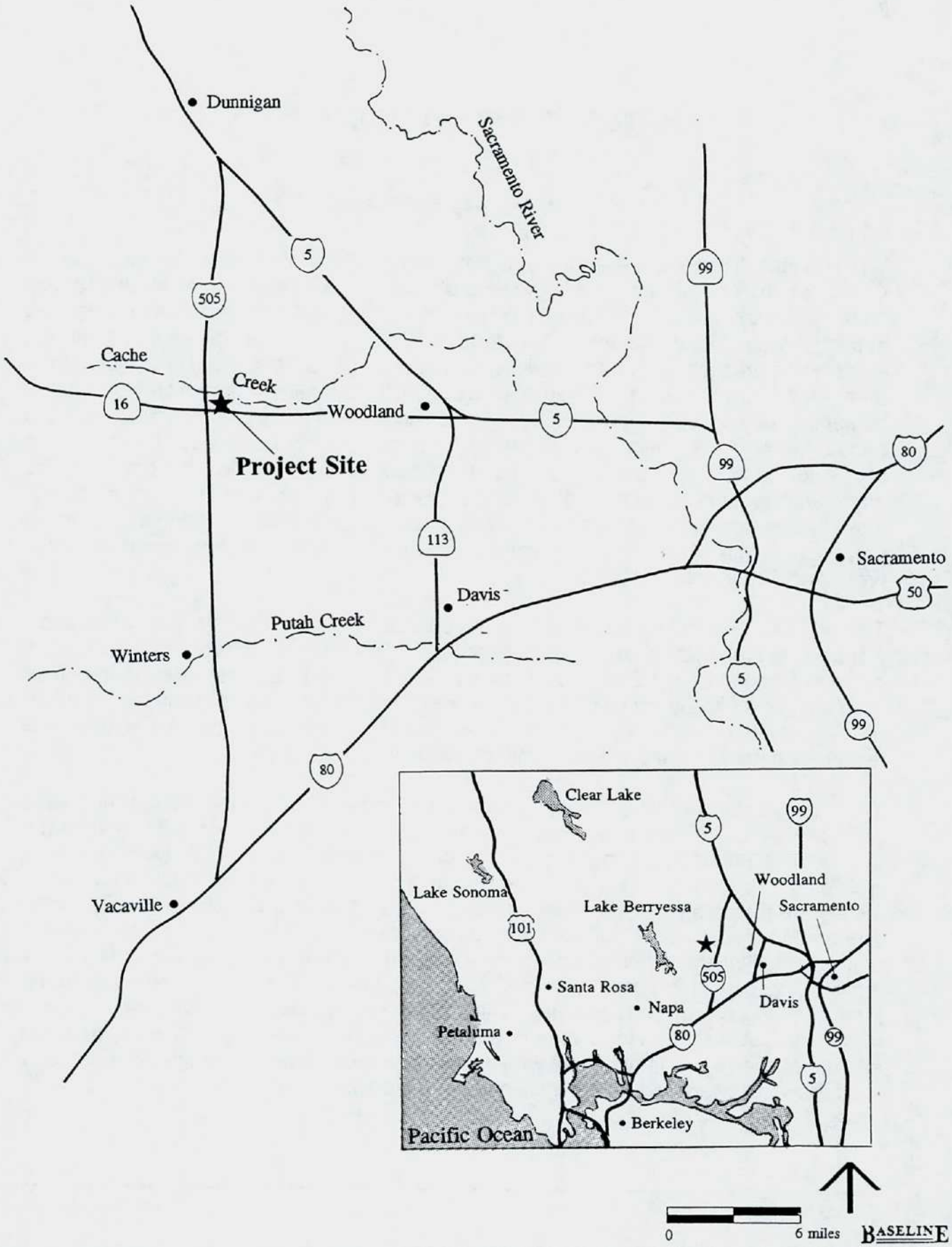
This chapter describes the application from Solano Concrete Company, Inc. (Solano Concrete) to Yolo County for long-term, off-channel extraction of sand and gravel resources and reclamation of mined lands within the Cache Creek aggregate mining area in central Yolo County, California (Figure 3-1). The application proposes mining of 598 acres and extraction of approximately 33,629,800 tons of aggregate. The mining of the area would be phased in over an approximate 30-year period, depending on market demand. As part of the application, Solano Concrete has requested an increase in the annual permitted volumes from 772,400 tons mined per year under their existing use permit to 1,445,783 tons mined (1,200,000 tons sold) per year for this project. The aggregate would be processed at the existing Solano Concrete rock and asphalt plants. This chapter includes information on the project location, site history, pertinent data on the proposed mining and reclamation activities, required permits, and the objectives of the project applicant and the County.

The project consists of various land use applications to the County that would allow extraction of aggregate from 598 acres of open, off-channel mining pits on eight contiguous parcels of land totaling 1,828 acres in area (Figure 3-2). All of the proposed mining areas are located outside the active channel of Cache Creek. The project site includes all mining and reclamation areas, as well as areas that would be unaffected by mining and reclamation activities and would remain in agricultural production.

The mining pits would, with one exception, extend to depths below the groundwater table ("wet pits"), resulting in the creation of open lakes that would be in hydraulic contact with the underlying aquifer. Upon completion of mining, the mining pits would be sequentially reclaimed to a combination of uses. In general, the northern margins of five of the seven mining areas would be converted to permanent lakes bounded by wildlife habitat zones. The areas adjacent and south of the reclaimed lakes would be converted to tree crop production. Remaining portions of mining areas would be reclaimed as agricultural fields for row crop production or to oak woodland. The surface of the tree crop and row crop production areas would be reclaimed at an elevation that is lower than the existing ground surface but above the seasonal high groundwater level. The application presents an alternative to this reclamation that would substitute additional oak woodland for some or all of the areas proposed for reclamation to tree crop production.

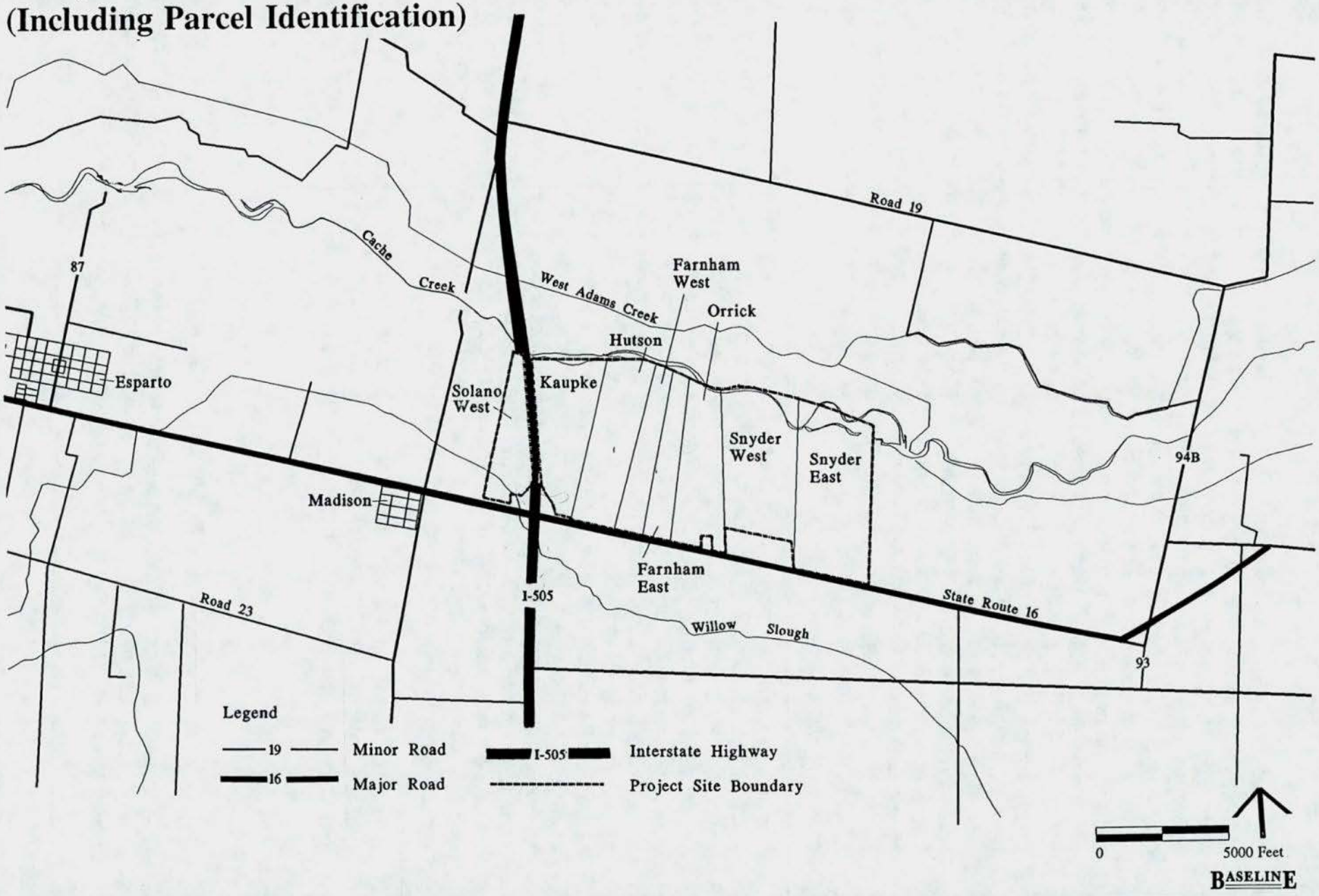
REGIONAL LOCATION

Figure 3-1



PROJECT LOCATION
(Including Parcel Identification)

Figure 3-2



The application also proposes amendment of the reclamation plan approved by the Board of Supervisors in July 1995 for Solano Concrete's short-term off-channel mining permit. The previously approved reclamation plan required reclamation of all mined areas of the previously mined Hutson and currently mined Farnham West parcels (Figure 3-2) to tree crop or row crop production. The current application proposes reclamation of the northern 13 acres of the combined Hutson and Farnham West parcels to permanent lakes. In addition, the proposed reclamation plan would preclude the necessity of borrowing soil from the unmined southern portions of these parcels to complete reclamation to agriculture.

Approximately 558 acres of the 598-acre proposed mining area are currently zoned as Agricultural Preserve (A-P). All of the properties are under Williamson Act contracts except the Hutson and Farnham West parcels (Figure 3-2), which are zoned A-1/S-G. The northernmost portions of the Farnham East and Kaupke parcels are zoned A-1 or A-1/S-G. These areas are within the active channel boundary established by the 1979 In-stream Mining Ordinance. The applicant is requesting rezoning of all A-P zoned parcels in the mining area to A-1/S-G, unless the OCMP includes a zoning text amendment for identified Mineral Resource Zone (MRZ) 2 areas that would allow mining within an A-P zone, consistent with State law.

The applicant is requesting rezoning of all A-P zoned land (approximately 1,439 acres) to A-1/S-G. Under County Code, such a rezoning could not occur if the properties were bound by Williamson Act contract. All of the A-P land in the application is bound by Williamson Act contract. Since this is the case, the request to change the underlying zoning is not possible under the existing regulatory framework. However, the OCMP includes a proposed zoning text amendment for lands within the MRZ-2 areas that would allow commercial mining within the A-P zone, consistent with State law. If this component of the OCMP is adopted, the proposed project would require only an extension of the S-G overlay to the underlying zoning to be considered for approval. If the zoning text is not amended as described above, the proposed project would be inconsistent with the underlying zoning on 579 acres of the total 598-acre proposed mining area and subsequent requests for rezoning would have to be submitted for those properties in 2002 and 2006 when the contracts expire. The applicant has filed notices of nonrenewal for the parcels under Williamson Act contract; these contracts will expire in 2002 and 2006.

In addition to the proposed mining and reclamation described above, the application proposes restoration of 35 acres of previously reclaimed or unmined land within the project site to oak woodland habitat. This restoration is proposed as a "net gain" to Yolo County.

3.2 SETTING

REGIONAL LOCATION

The project site is located near the western margin of the Sacramento Valley in central Yolo County, California (Figure 3-1), approximately 50 miles northwest of Sacramento and seven miles west of Woodland. The regional topography consists of low rolling hills and

broad alluvial plains formed at the base of the eastern flank of the California Coast Range. The predominant land use for the region is agriculture.

PROJECT LOCATION

The mining and reclamation areas proposed by Solano Concrete are located in the southern portion of a relatively flat and wide alluvial valley, Hungry Hollow. The alluvial valley is oriented northwest to southeast. Hungry Hollow is bounded to the east by the Dunnigan Hills and to the west by the Capay Hills. Cache Creek transects the valley, flowing eastward (Figure 3-2).

The project site is located on the alluvial surface (a terrace) south of the active Cache Creek channel. The proposed mining would occur on 734 acres in the northern portions of seven of the eight adjacent parcels, comprising approximately 1,828 acres (Figure 3-2). The proposed mining areas are divided into seven mining areas numbered I through VII (Figure 3-3); the numbering pattern reflects the progressive sequence of the proposed mining. Mining Area I includes the area of completed mining on the Hutson parcel (conducted under a 1980 use permit) and areas of current mining on the Farnham West parcel (permitted under the 1995 short-term mining permit). The project is bounded to the north by Cache Creek, to the west and east by agricultural fields, and to the south by State Route (SR) 16 and rural residential parcels along SR 16. Although only portions of the eight parcels that comprise the project site would be affected by mining and reclamation, the entire parcels are considered part of the project. Interstate 505 (I-505) transects the westernmost portion of the site. The closest town is Madison, located approximately one mile southwest of the western boundary of the site.

The land uses of the area surrounding the project site are dominated by agriculture. However, there are numerous sand and gravel extraction operations within and along Cache Creek. These operations are located within an area identified by the State Geologist as containing significant, marketable aggregate deposits suitable for production of Portland Cement Concrete (PCC) (Dupras, 1988).

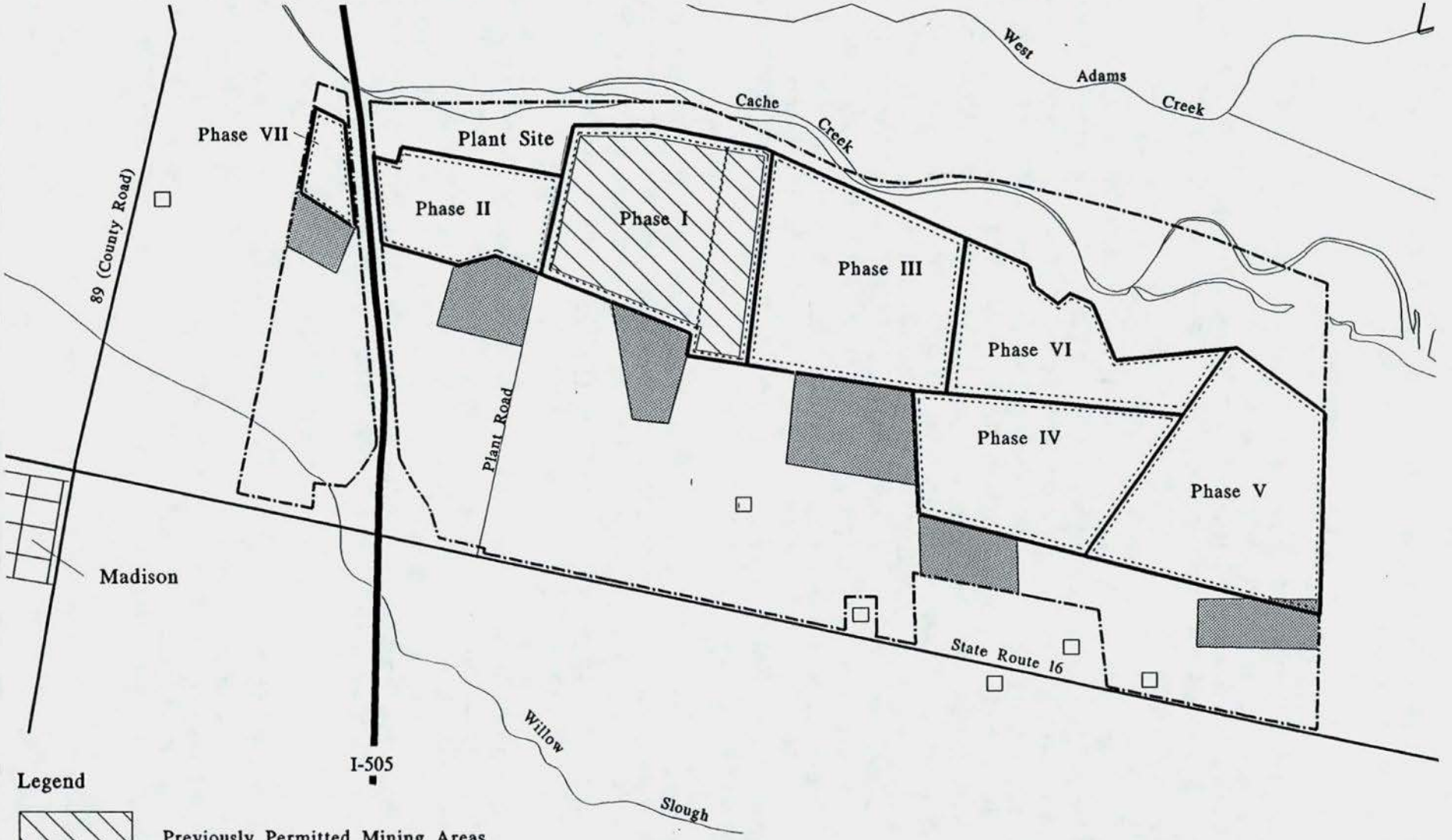
The majority of aggregate extracted from the Cache Creek aggregate mining sectors has historically been excavated from the active channel of the creek. The proposed mining areas are currently used for row crop production and pasture. Five residences are located within 2,000 feet of the southern boundary of the mining areas (Figure 3-3). The two closest of these residences are owned by the applicant. One residence, located on County Road 89, is approximately 2,000 feet southwest of Mining Area VII.

PREVIOUS APPROVALS

In September 1995, Solano Concrete Company, Inc. received approval of the Short-term Off-Channel Mining permit for mining and reclamation of 35 acres of the Farnham West parcel. The approved permit also modified the previously approved reclamation plan for the mining areas on the Hutson parcel. The approved mining and reclamation plan included wet pit mining and reclamation of the mining area (exclusive of perimeter slopes)

GENERALIZED MINING PLAN

Figure 3-3



BASELINE

95263-00.03 3/19/96, Cadd File N(2), 263GMP Solano Long-Term

to agricultural uses (row and tree crop production). The Conditions of Approval for the 1995 Short-term Off-Channel Mining permit are presented in Appendix 7.3.

3.3 PROJECT OBJECTIVES

BACKGROUND AND NEED FOR THE PROJECT

Aggregate mining has occurred in and along Cache Creek since the early 1900s. The focus of the mining from that period to the present has been extraction of sand and gravel from the channel and active floodplain of the creek. It is estimated that in excess of 90 million tons of aggregate may have been mined between 1919 and 1994 (EIP, et al., 1995). Mining occurred prior to 1919; however, these activities were poorly documented. The in-channel and off-channel sand and gravel deposits in the Cache Creek mining area are durable[1] aggregate deposits. Most of the sand and gravel resources are suitable for production of Portland Cement Concrete. This end product requires the highest grade aggregate. In an evaluation of the gravel reserves of the Cache Creek mining area, the California Division of Mines and Geology (Dupras, 1988) estimated the available amount of PCC-grade aggregate for in-channel and off-channel areas to be approximately 838 million tons. The estimated reserves do not include sand and gravel deposits (approximately 111 million tons) located below the theoretical thalweg[2] of Cache Creek. Mining below the theoretical thalweg within the active channel is currently restricted by the Yolo County In-Channel Interim Mining Regulations.[3]

Solano Concrete began gravel extraction and processing in the vicinity of the project site in 1971 following approval of a use permit to mine gravel within the Cache Creek channel and to construct and operate a processing plant. The plant, located north of Mining Area II of the proposed project, is designed and operated to process raw aggregate into various aggregate products and includes an asphalt production unit. In 1979, the County adopted the In-Channel Interim Mining Regulations, which regulate the removal of aggregate reserves from the channel of Cache Creek. Following preparation of an EIR on the in-channel mining impacts (Environ, 1980), use permits allowing extraction were issued to all aggregate operators along Cache Creek, including Solano Concrete. All permitted operations had to comply with the In-Channel Interim Mining Regulations. Operation of existing aggregate processing plants, including the plant operated by Solano Concrete Company, Inc., was not affected by the use permits granted by the County following adoption of the mining ordinances.

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[1]Aggregate is "durable" if it has sufficient strength and compatible chemistry with other components of concrete for production of concrete.

[2]The thalweg of a stream is the deepest portion of the channel. The "theoretical thalweg" is a concept developed for the Yolo County Interim In-Channel Surface Mining Regulations and defines the lowest permissible depth of mining for in-channel mining.

[3]Yolo County Code, Chapter 3, Articles 1 through 13 (adopted 22 February 1979).

From 1971 to 1980, the Solano Concrete plant processed aggregate mined within the channel of Cache Creek. Although in-channel aggregate has continued to be mined and processed at the Solano Concrete plant since 1980, such activities have recently been less frequent and less intensive than in the past.

In 1978, Solano Concrete applied for a permit to excavate gravel from off-channel mining pits excavated in the terrace deposits south of the Cache Creek channel. Following preparation of an EIR (Jones & Stokes Associates, Inc., 1978), the County approved mining and reclamation of gravel pits excavated to depths below the groundwater table (located approximately 20 to 25 below ground surface) in a 100-acre area of the 275-acre Hutson parcel. The permit allowed mining to a maximum depth of 70 feet below the ground surface. Mining of the Hutson parcel, located in Mining Area I of the proposed project (Figure 3-2), was completed in 1995. Approximately 33 acres of the mined portions of the Hutson parcel have been reclaimed to agricultural use. The mining and reclamation activities at the Hutson parcel are required to be conducted in compliance with conditions of approval attached to the conditional use permit granted for that project. Reports on mining and reclamation activities have been submitted annually by Solano Concrete to Yolo County since 1989.

Prompted by concerns over the depletion of aggregate resources and the potentially adverse environmental impacts of aggregate extraction within the Cache Creek mining area, the County started in the mid-1970s to examine ways to comprehensively manage Creek resources. In June 1994, the Board of Supervisors adopted a framework of goals and objectives for a comprehensive management plan. The Board directed the preparation of three baseline reports (Technical Studies) on streamway morphology, groundwater resources, and riparian habitat in the Cache Creek area.

In 1994, the Board of Supervisors also adopted County Resolution 94-73, which approved development of an Off-Channel Mining Ordinance in recognition of the need to accommodate the potential shift of emphasis of aggregate mining from within the Cache Creek channel to terrace pit mining. The Resolution that approved development of the Off-Channel Mining Ordinance also provided for submittal and processing of long-term, off-channel mining permit applications by the aggregate producers. The resolution specified, however, that the long-term applications could not be approved until after adoption of the Off-Channel Mining Ordinance. The County established a one-year interim freeze, effective 6 December 1995, on acceptance of applications for mining and/or rezoning for mining purposes within the Mineral Resource Zones encompassing Cache Creek.

The Board of Supervisors also adopted County Resolution 94-82 to allow submittal and processing of short-term (interim), off-channel mining applications during the period of development of the CCRMP and the Off-Channel Mining Ordinance. The adoption of Resolution 94-82 specified that only aggregate mining operations shown to have limited permitted reserves and the potential for interruption of business during this interim period would be allowed to submit short-term permits. An evaluation of aggregate reserves for three Cache Creek aggregate mining companies prepared for the County (CH2M Hill, 1994) indicated that Solano Concrete's permitted reserves at the Hutson parcel could

supply their processing plant for less than three years, the threshold set by Resolution 94-82. On the basis of this evaluation, Solano Concrete submitted a permit application for an off-channel mining, borrow, and reclamation project on the 113-acre Farnham West parcel. The application included "wet pit" mining to depths ranging from 38 to 70 feet below the ground surface. The approved Reclamation Plan called for reclamation of the mined area to a lowered agricultural field for row and tree crop production. The permit application was evaluated in an Environmental Impact Report (BASELINE, 1995) and approved by the Board of Supervisors in September 1995. Mining of the Farnham West parcel and concurrent reclamation of the mined areas of the Hutson parcel are currently being performed.

In October 1995, the three Technical Studies were released and the County subsequently issued two draft general mining plans.

> *Off-Channel Mining Plan for Lower Cache Creek* (OCMP), Yolo County, 1995. The OCMP is one of two plans prepared by the County for managing the resources of the mining reach of Cache Creek. The OCMP addresses a variety of issues relevant to mining outside the creek channel. The Plan provides for off-channel, deep-pit mining under controlled and monitored circumstances, as an alternative to continued in-channel mining. The OCMP seeks to accept multiple reclamation uses and to develop a future recreation plan to allow for public activities and uses along the creek.
>
> *Cache Creek Resources Management Plan for Lower Cache Creek* (CCRMP), Yolo County, 1995. The CCRMP is the second of two plans prepared by the County for managing the resources of the mining reach of Cache Creek. The CCRMP addresses issues within the creek channel. Following initial shaping, sculpting, and smoothing within the creek as prescribed in the Technical Studies, the Plan would substantially limit the amount of annual mining that would occur within the channel to the amount of sand and gravel deposited during the previous year. Future commercial mining within the creek would be prohibited. Riparian woodland restoration and a continuous riparian habitat corridor are primary goals of the Plan. The CCRMP recommends a Technical Advisory Committee to assist the County in reviewing the annual monitoring data, provide feedback regarding the conditions of the creek, and assist in identification of appropriate "creek improvement projects."

The proposed Solano Concrete long-term mining and reclamation permit application was developed by the applicant and submitted to the Yolo County Community Development Agency in accordance with the provisions of County Resolution 94-73. The application is one of five received by the County for long-term mining and reclamation within the lower Cache Creek Basin. The environmental review of the proposed project parallels the preparation of Program-level Environmental Impact Reports for the Off-Channel Mining Plan (OCMP) and the Cache Creek Resource Management Plan (CCRMP). The concurrent preparation of the EIRs for the individual long-term mining and reclamation projects and the Program-level EIRs for the OCMP and the CCRMP is intended to

synthesize evaluation of the local and regional effects of aggregate extraction with restoration and management of Cache Creek.

OBJECTIVES OF PROJECT SPONSOR

The applicant has expressed the following objectives for the proposed project:

- Continued extraction of aggregate resources for the processing and sale of aggregate products;
- Supply raw aggregate product (33,629,800 tons) to a processing plant in the western portion of project site to provide enough aggregate to maintain mining and processing operations for approximately 30 years;
- Concentrate mining operations in off-channel mining areas, in general support of the recommendations of the OCMP and CCRMP to move mining out of the Cache Creek channel;
- Reclamation of all mined lands in accordance with the proposed reclamation plan that would provide for creation of permanent lakes and wildlife habitat and the establishment of tree crops and conventional intensive agriculture;.
- Continued employment of approximately fourteen mining and processing personnel.

3.4 PROJECT COMPONENTS AND CHARACTERISTICS

ZONING

The proposed mining and reclamation activities would be located within areas designated for agricultural use by the County General Plan. With the exception of the Farnham West (AP 049-070-04) and Hutson (AP 049-070-12) parcels (Figure 3-2), the proposed mining areas are currently zoned Agricultural Preserve (A-P). As noted previously, the northern portions of the Solano West, Kaupke, Farnham West, and Farnham East parcels that are outside of the mining areas are zoned A-1 or A-1/S-G. For all of these lands under Williamson Act contracts, a notice of nonrenewal for each of the contracts has been filed. The contracts for the Solano West (Area VII), Kaupke (Area II), Orrick (portions of Area III), Snyder West (Area IV), and Snyder East (Area V) parcels will expire in 2002; the contract for the Farnham East parcel will expire in 2006. The Hutson and Farnham West parcels are currently zoned General Agriculture (A-1) with a Sand and Gravel (S-G) overlay.

Although notices of nonrenewal have been filed for each of the existing contracts, the contracts will not expire until after the application for rezoning has been considered. Under the County zoning code, the change in zoning from A-P to A-1 could not be made until current Williamson Act contracts on these lands have either expired or been otherwise terminated. It should be noted that the OCMP proposes a zoning text amendment within

MRZ-2 areas to allow mining within the A-P zone, consistent with State law. If this is approved, the applicant's requested operation would be consistent with the underlying zoning and the only necessary action would be extending the S-G overlay. The application requests that, if this OCMP language is not adopted, portions of proposed mining areas I, II, III, IV, V, and VI, which are currently zoned A-P be rezoned to A-1 with an S-G overlay. However, this "conditional" future rezoning is not permissible. If the OCMP is not adopted such that the A-P zone is amended to allow mining, or if the A-1 zone is not amended to allow Williamson Act preserves, the zoning of 558 acres of the project site would be inconsistent with the requested use. This inconsistency would effectively preclude the project from proceeding as proposed. Subsequent requests for rezoning would have to be submitted for land currently under Williamson Act contracts after those contracts expire (2002 and 2006). Additional analysis regarding zoning, Williamson Act contracts, and the OCMP is presented in the Land Use section of this EIR.

MINING

Aggregate resources would be mined from seven mining areas (Figure 3-3); mining would progress in numerical order from Area I through to Area VII. Wet pit mining would occur in all of the proposed mining areas with the exception of Area VII, the westernmost area. The wet pit operations would result in excavation to depths (50 to 70 feet below existing ground surface) below the seasonal low groundwater level. Mining in Area VII would extend to an average depth of 26 feet below the ground surface and would not intersect the seasonal low groundwater level. However, the wet season rise in groundwater levels could result in seasonal flooding of the excavation during the mining period. The proposed mining depth of the southern portion of the Farnham West parcel is 30 feet below the existing ground surface; this mining would also extend to depths below the seasonal high groundwater level but above the seasonal low groundwater level.

The mining activities would be conducted with the same equipment, technology, and haul roads previously used by Solano Concrete to mine the Hutson parcel and currently being used during mining of the Farnham West parcel. The proposed mining plan would also require extension of existing haul roads and construction of new haul roads to serve the extended mining area. Mining is proposed primarily during the daytime hours (6 AM to 3:30 PM) with occasional operations proposed outside those hours.

The aggregate resources from the proposed mining, as well as from the applicant's implementation of the Cache Creek Resources Management Plan, Cache Creek Improvement Program, and aggregate recycling would be processed at the applicant's processing plant.

The mining activities would be initiated in each mining area by the removal of topsoil and finer-grained overbank deposits that overlie the marketable sand and gravel deposits. The thickness of the topsoil and overbank deposits (overburden) is variable, but is estimated by the applicant to generally increase to the south away from the active channel of Cache Creek. The finer-grained deposits comprising the overburden would be removed with two

to three self-loading scrapers aided, occasionally, by a motor grader and bulldozer. Typical mining equipment used at the project site is shown in Table 3-1.

TABLE 3.1: **Typical Mining Equipment**

Type	Size Class	Quantity
Scraper	CAT 633E	1-3
Backhoe	John Deere 710	1
Tractor dozer	CAT D8W Oregon	1
Motor grader	CAT 14G	1
Water truck	5,000 gallon	1
Dragline/Excavator	Drag/Manitowoc 3650E	1
	Exc/CAT S135 or equiv.	1

The upper portion of the deposits, which contain the most organic-rich soil (A-horizon), would be removed first and segregated from the deeper subsoil (B-horizon) and overbank deposits. The applicant proposes that materials excavated from each proposed mining area would be moved, when needed, to areas concurrently being reclaimed. If concurrent reclamation activities do not immediately require topsoil or other overburden sediments, these materials would be stored in stockpiles. The stockpiles would be less than 40 feet in height and would have 2:1 side slopes. The stockpiles would be vegetated to reduce the potential for erosion and support soil fertility.

Following the removal of the topsoil and overbank deposits, sand and gravel deposits above the groundwater table would be excavated with two to three scrapers and one bulldozer. The loaded scrapers would transport the material directly to the existing Solano Concrete processing plant along private, existing, unpaved haul roads. The length of the haul would range from 500 to 10,000 feet depending on the location of mining activities within the project site.

When the mining pit is excavated to the depth of the groundwater table (seasonal high groundwater depth ranging from approximately 16 to 22 feet below existing grade), excavation of saturated deposits (below the groundwater table) would be performed with a crane-mounted dragline or excavator. The excavated materials would be temporarily stockpiled on the excavated bench on which the dragline or excavator is operated. When sufficient material is stockpiled at the mining site, the scrapers would load the material and move it directly to the processing plant along existing haul roads. The application indicates that a conveyor system may be constructed and used during the course of the project to transport excavated material to the plant. Under this scenario, an excavator would load the excavated material directly to a hopper that would feed the conveyor system.

The mining plan proposes variable mining depths for each of the mining areas (summarized in Table 3-2). The slopes above the average seasonal low groundwater level within all mining areas would be excavated at gradients of 2:1 (horizontal to vertical ratio) or less steep. Mining slopes extending below the seasonal low groundwater level would be excavated at a gradient of 1.5:1. The quantity of excavated materials estimated by the

TABLE 3-2. **Project Summary Worksheet.**

Project Elements	MINING AREAS BY PARCEL							TOTAL
	I	II	III	IV	V	VI	VII	
	Hutson: 049-070-12 Farnham West: 049-070-04	Kaupke: 049-070-13	Farnham East: 049-070-05, Orrick: 049-070-10 & 06 Snyder West: 049-070-09	Snyder West: 049-070-09 & 025-450-01	Snyder East: 025-450-01	Snyder West: 025-450-01	Solano West: 049-060-07	
Total Area	389	229	339	245	265	206	155	1,828
Proposed Mining Area (acres)	40	65	133	119	136	90	15	598
Proposed Maximum Mining Depth (feet)	70	70	70	70	70	70	26	
Soil Capability Classification[1]	F. West Only Class II-26 ac. Class III-14 ac.	Class II-32 ac. Class III-33 ac.	Class II-62 ac. Class III-31 ac. Class IV-40 ac.	Class II-84 ac. Class III-25 ac.	Class II-124 ac. Class III-12 ac.	Class IV-90 ac.	Class II-12 ac. Class III-3 ac.	Class II-350 ac. Class III-118 ac. Class IV-130 ac.
Average Existing Elevation (feet)[2]	140	142	134	130	126	130	147	
Groundwater Elevations (feet)								
Average Historical High	118	118	116	113	110	112	125	
Average Historical Low	105	106	103	101	100	101	107	
Average Reclaimed Agricultural Elevation (feet)	127	131	124	118	118	118	128	
Mined Aggregate (tons)[3]	1,495,600	4,018,000	8,871,800	5,335,400	7,984,200	5,566,400	358,400	33,629,800
Reclamation Use (acres)								
Lake	13	0	20	20	47	61	0	161
Row Crops	96	61	56	0	0	0	10	223
Tree Crops	24	0	34	83	67	15	0	223
Agricultural Side Slopes	4	4	3	3	4	3	5	26
Habitat Including Slopes	3	0	20	13	18	11	0	65
Previously or Unmined Area Restored to Habitat (acres)	5	0	11	4	0	15	0	35
Mining Period (years)	1.5	6	7	5	6	4.25	0.5	30.25
Reclamation Period (years)	4	8	6	5	4	3	2	32

[1] Site-specific soil capability classification presented in Appendix A-13 of permit application.
[2] Elevations presented are relative to the 1929 National Geodetic Vertical Datum.
[3] Approximately 1 cubic yard = 1.4 tons.

applicant for each of the mining areas is presented in Table 3-2. The combined total quantity for the proposed project is 24,021,285 cubic yards (33,629,800 tons).[4]

The application proposes a groundwater monitoring program for the mining period. Under the proposed program, groundwater levels in eight existing monitoring wells and seven additional wells would be monitored during the mining and reclamation periods. The new monitoring wells would be installed prior to initiation of mining in the areas for which the individual wells would provide monitoring. The monitoring of groundwater levels would continue the water level measurement initiated in 1990 for monitoring wells within Mining Area I. In addition to water level monitoring, the program proposes water quality monitoring at selected wells and for the mining pits. The details of the groundwater monitoring program are discussed in Section 4.4 of this EIR.

Monitoring would also be performed for areas restored as biological habitat, including oak woodlands, wetlands, hedgerows, and riparian habitat. This monitoring would continue for a minimum of five years until the success criteria for vegetation establishment identified in the proposed Habitat Restoration Plan are met.

RECLAMATION

The Reclamation Plan for the project proposes a combination of reclamation techniques and post-reclamation uses. The reclamation plan would not require importation of soil or overburden from unmined areas, which was required for previously approved reclamation plans for the Hutson and Farnham West parcels. Importation of soil from unmined areas of these two mining areas was necessary to raise the reclaimed surfaces to an elevation sufficiently above the seasonal high groundwater level to promote successful agricultural use. Under the proposed reclamation plan (Figure 3-4) for Solano Concrete's long-term, off-channel mining permit application, four general types of reclamation are proposed: 1) creation of permanent lakes for potential water storage and lakeshore habitat; 2) development of nonagricultural vegetative habitat; 3) reclamation to row crop agricultural production on topographically lowered surfaces; and 4) reclamation to tree crop production on lowered surfaces. Each of these reclamation options is described in more detail below.

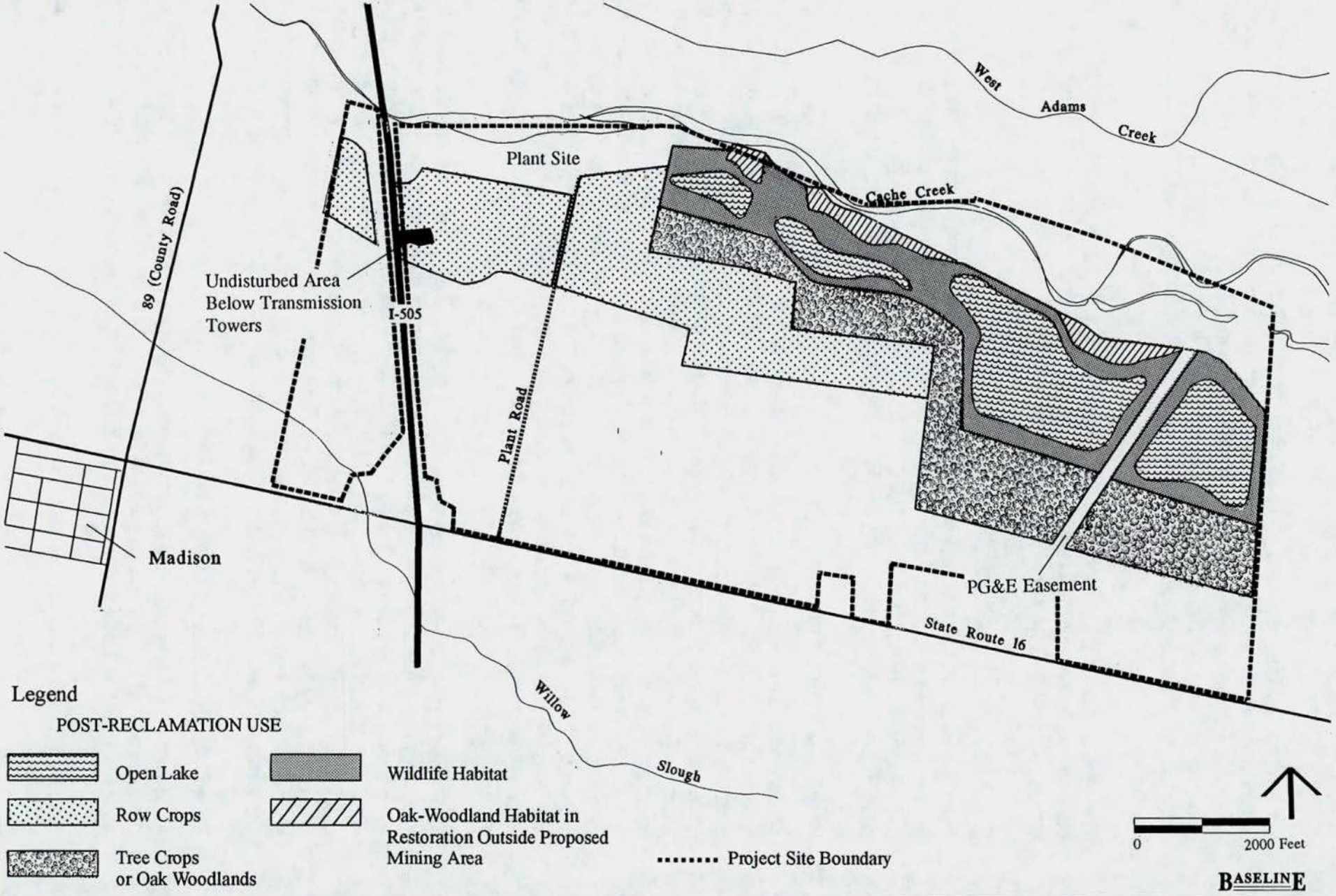
Permanent Lakes

The proposed reclamation plan includes the creation of open lakes in the northern portion of Areas I, II, IV, V, and VI, totaling 161 acres. The margins of the proposed permanent lakes would be developed as a succession of habitat environments progressing outward from the lake edge and upward onto the slopes surrounding the lakes. Areas of the lake shoreline below the seasonal low water level (controlled by seasonal fluctuations in groundwater levels) would be established as perennial marsh. The portions of the lakeside slopes between the seasonal low and seasonal high water levels would be developed as

[4]The conversion factor for volume (cubic yards) to weight (tons) for the extracted aggregate estimated by the applicant for deposits at the project site is 1.4 tons per cubic yard. Although the densities of the sand and gravel deposits at the project site are variable, this estimated conversion factor is based on the average characteristics of previously mined deposits within the area of mining.

GENERALIZED RECLAMATION PLAN

Figure 3-4



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low terrace riparian woodland and seasonal marsh. The seasonal marsh would require a reduced need for sustained (continual) saturated conditions and would be positioned downslope of the riparian woodland. The application indicates that the easternmost lakes and surrounding slopes would be subject to an irrevocable offer of dedication to an appropriate public agency for eventual recreational or habitat uses after reclamation is completed.

The reclamation plan also proposes the development of "floating" islands within some of the permanent lakes. The islands would consist of soil and vegetation supported on a raft structure that would be anchored to the lake bottom.

Nonagricultural Vegetative Habitat

The proposed reclamation plan would include the development of approximately 65 acres of natural vegetation along the upper (higher) portions of the slopes along the margins of the permanent lakes for Areas I, II, IV, V, and VI. These areas would be above the high seasonal groundwater level and would be developed as oak woodland habitat.

Row Crop Agriculture

The proposed reclamation plan includes reclamation of 223 acres of mined lands to row crop production similar to existing agricultural uses. The techniques for reclamation to row crop production would be similar to those previously implemented in Solano Concrete's reclamation of the Hutson parcel and approved for the reclamation of the Farnham West parcel. Reclamation to row crop production is proposed for the mining areas of the southern portion of Areas I and III and all of Areas II and VII (Table 3-2). The application emphasizes row crop agriculture in the western and central portions of the project site to focus this reclamation use in areas of favorable soil conditions and concentrate post-reclamation use in areas of human activities (i.e., the existing aggregate processing plant site, existing roadways, and power transmission areas) that may not be advantageous for habitat restoration. The reclamation plan proposes a total of 223 acres of mined areas reclaimed for row crop agriculture.

The lower depths of the mining areas would be filled with a combination of overburden sediments and processing fines transported by pipe as slurry from the processing plant. Processing fines would be allowed to settle into the mining pits. Overburden sediments would be placed with scrapers and bulldozers at the edges of the mining pits. Following placement of these materials, approximately four feet of B-horizon soils would be placed and overlain by two feet of A-horizon soils. The completed reclaimed row crop agricultural surface would be, on average, five feet or more above the average seasonal high groundwater level. The reclaimed fields would be graded to promote adequate drainage.

Tree Crop Production or Oak Woodland

In addition to the row crop reclamation described above, the proposed reclamation includes development of 223 acres of mined lands to tree crop production. The plan proposes that areas north of reclaimed row crop production in Areas I and III, the southwest portion of

Area VI, and southern portions of Areas IV and V be reclaimed for production of hybrid poplar trees. The mining areas would be filled and capped with four feet of B-horizon soils and overburden sediments. The planted tree crops would be harvested in three to five year cycles to provide biomass fuel, wood pulp, or lumber. Runoff from row crop production areas would be directed into the tree crop production areas to promote assimilation of nutrients and pollutants (including boron) from row crop agriculture tailwater by the tree crops.

The application presents alternative reclamation of the proposed tree crop production areas to oak woodland, if desired by the County. The oak woodland would be developed in the same manner as described for proposed oak woodland restoration areas in unmined areas. However, shallow groundwater conditions and proposed detention of storm water in the lower reclaimed surface would not promote successful woodland development. In addition, reclamation of agricultural land to woodland habitat would increase the loss of agricultural land by 223 acres.

Net Gain

The Solano Concrete permit application proposes restoration of 35 acres of previously mined and unmined portions of the project site to oak woodland habitat. The restoration areas would be located between the active channel of Cache Creek and the CCRMP channel boundary. The restoration areas would be developed north of Area I (five acres) Area III (11 acres), Area IV (four acres), and Area VI (15 acres). The restoration of individual areas would be performed during reclamation activities for the adjacent mining areas. The following are proposed as "net gain" to the County.

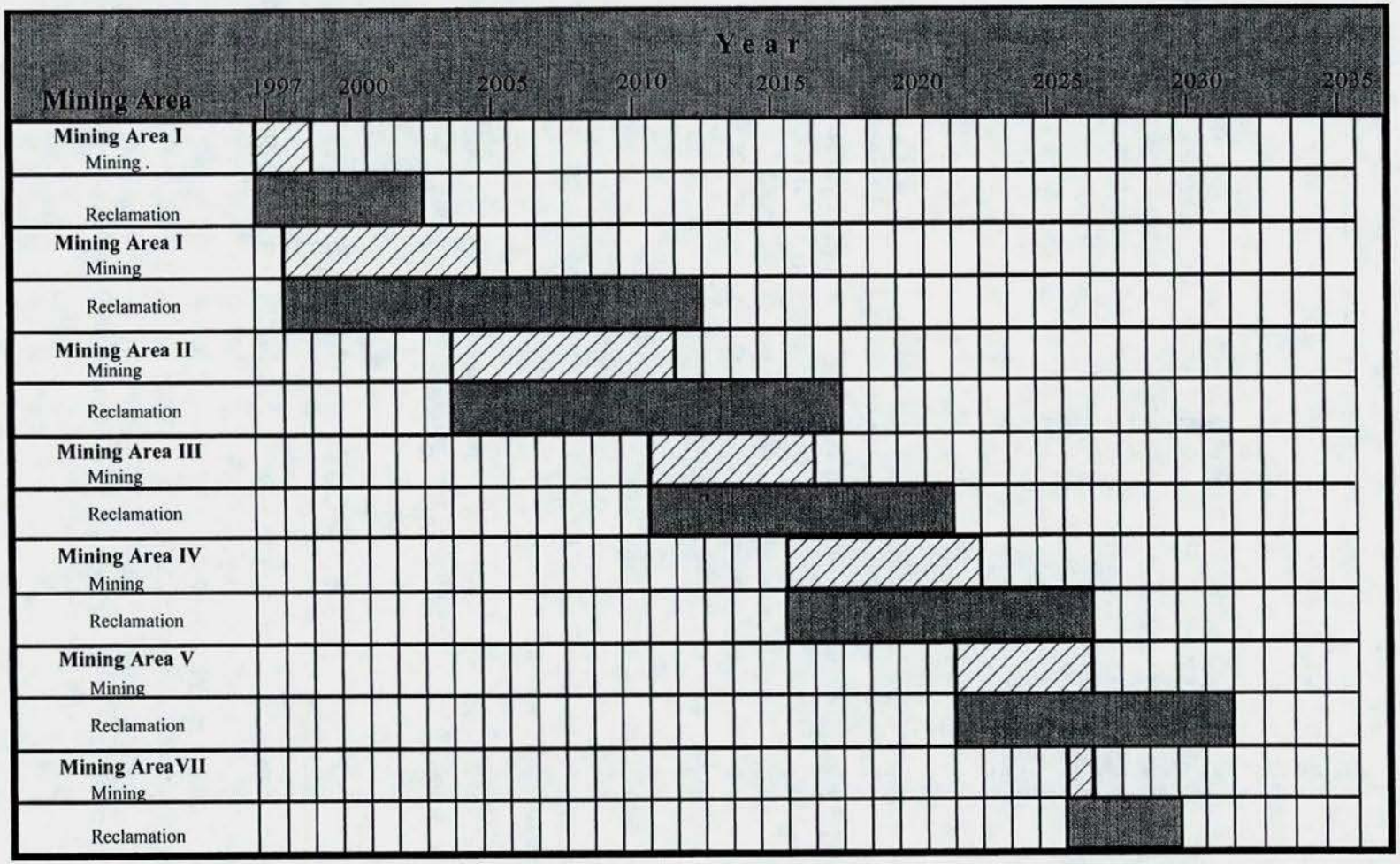
- Restoration consisting of 35 acres to woodland.
- Contributions to the Cache Creek Conservancy to finance restoration projects associated with the creek.
- Dedication of two reclaimed lakes and surrounding reclaimed habitat areas to an appropriate public agency for eventual recreational or habitat uses.

3.5 PROJECT PHASING

The application proposes mining of seven separate phases in the sequence designated by the mining area numbering system (Areas I through VII). The mining will generally proceed without interruption from one mining area to the next. Mining would be occurring concurrently with reclamation activities. The proposed schedule for phasing of mining and reclamation is summarized in Figure 3-5. However, the phasing schedule is tentative and represents mining to meet the requested maximum annual production rate. The actual rate of mining would be controlled by market demand.

PROJECT PHASING SCHEDULE

Figure 3-5



Mining would be initiated in Area I in the central portion of the project site. Area I includes the Hutson and Farnham West parcels, portions of which have been or will be mined under previously approved mining and reclamation plans. No further mining would occur at the Hutson parcel under the proposed project. To the extent possible, soil and overburden removed from new mining operations would be used for reclamation of areas previously mined at the Farnham West or Hutson parcel. Upon completion of mining of Area I, equipment will be moved to Area II, located south of the processing plant. The mining operation would then be moved to Area III and concurrent reclamation of Area II would begin. Following the initiation of mining in Area III, the mining operation would progress eastward through Areas IV, V, and VI. Upon completion of reclamation of Area II, the reclamation activities would shift to Area III and would be integrated with the progressive mining of Areas IV, V, and VI. In the final phase of mining, the mining operation would be moved to Area VII, located west of the I-505 bridge. The reclamation materials for Area VII would be obtained from within that area and from processing fine deposition. Final reclamation of the entire site would be completed approximately 32 years after project initiation and two years after the completion of mining.

3.6 PERMIT REQUIREMENTS

The County requires mining permits for all mining and reclamation activities within its jurisdiction. This EIR provides environmental review under the California Environmental Quality Act for the off-channel Mining Use Permit sought by the project applicant. The permit application includes a request for a Mining Permit, approval of a Reclamation Plan, approval of a change in zoning, amendment of the Reclamation Plan for the mining operation on Farnham West, an amendment of the Reclamation Plan for the mining operation on the Hutson parcel, approval of a Floodplain Development Permit, and approval of financial assurances. The Mining Permit would be conditioned so that mining and reclamation conform with the provisions of the Off-Channel Mining Plan following adoption of the Plan by the County.

The following major elements of the application are the subject of this Environmental Impact Report:

- A long-term, off-channel Mining Permit for excavation of aggregate resources from 598 acres, including portions of Assessor's Parcels 049-060-07, 049-070-04, 049-070-05, 049-070-06, 049-070-09, 049-070-013, and 025-450-01;

- A Reclamation Plan to establish permanent lakes (161 acres), woodland and marsh habitat (65 acres), tree crop production (223 acres), and row crop production (223 acres) adjacent to and west of the Farnham West parcel.

- Amendment of the existing Reclamation Plan for the Hutson parcel to allow reclamation of approximately 11 acres of mined lands in the northern portion of the parcel to open pits for wildlife habitat and water storage instead of currently approved reclamation to agricultural use.

- Amendment of the existing Reclamation Plan for the Farnham West parcel to allow reclamation of approximately 8 acres of mined lands in the northern portion of the parcel to open pits for wildlife habitat and water storage instead of currently approved reclamation to agricultural use.

- Various local encroachment permits.

- Rezoning of 598 acres currently zoned A-1 to attach the sand and gravel (S-G) overlay.

- An increase in annual permitted volumes from 772,400 tons mined per year to 1,445,783 tons mined (1,200,000 tons sold) per year.

- Amendment of the County General Plan to allow for various exceptions to the 200-foot minimum setback required by OCMP Performance Standards 4.5-2 and 4.5-3 as follows:

    - Mining Area III - an exception for approximately 1,625 feet of creek frontage, covering an area of approximately five acres, to allow a setback approximately 40 feet in width

    - Mining Area V - an exception for approximately 750 feet of creek frontage, covering an area of approximately 3 acres, to allow a setback approximately 40 feet in width

    - Mining Area VI - an exception for approximately 2,000 feet of creek frontage, covering an area of approximately 7 acres, to allow a setback approximately 40 feet in width

    - Exception to Section 10-4.424(e) of Chapter 4 of the County Code entitled Off-Channel Surface Mining Ordinance, as per Section 10-4.432

    - Technical correction of CCRMP boundary to correspond with existing channel bank near proposed Mining Area V

- Floodplain Development Permit for earth-moving activities within the FEMA 100-year floodplain.

- Approval of financial assurances.

Aggregate mining and reclamation activities in the State of California are controlled by the California Surface Mining and Reclamation Act (SMARA) of 1975 and its subsequent amendments. The Act and associated regulations stipulate requirements for mining operations, necessary components and objectives for reclamation plans, and performance standards for reclamation. SMARA (Section 2770) requires that a mining project applicant

obtain a permit, approval of a submitted reclamation plan, and approval of financial assurances from the lead agency.[5]

The potential impacts of mining projects, and industrial activity, on surface water quality are controlled under the State General Permit for Storm Water Discharges Associated with Industrial Activities. The General Permit was developed by the State Water Resources Control Board and is implemented by the Regional Water Quality Control Boards. Sponsors of projects regulated under the State's implementation of the Federal National Pollutant Discharge Elimination System (NPDES) are required to submit a Notice of Intent (NOI) to comply with the provisions of the Waste Discharge Requirements. Solano Concrete is currently conducting mining operations on the Farnham West parcel within the project site under an NOI to comply with the General Permit. The required Storm Water Pollution Prevention Plan (SWPPP) for the mining operation would possibly need modification to include the mining and reclamation activities proposed for the expanded mining area. The Waste Discharge Requirements issued by the Central Valley Regional Water Quality Control Board for discharge of wash water from the processing plant to the mining pits could also need modification. The applicant will also be required to have a Spill Prevention, Control, and Countermeasure Plan (SPCC) pursuant to Section 25270, et seq. of the California Health and Safety Code. The requirement for a SPCC is applicable to the handling and storage of fuel.

Installation of the culvert for drainage of runoff from the reclaimed mining areas to Cache Creek will require a Streambed Alteration Agreement with California Department of Fish and Game (CDFG) for necessary construction activities on the stream bank. The disturbance of agricultural land providing foraging habitat for Swainson's hawk will require a 2081 permit from CDFG. Proposed modifications of roadways within the right-of-way of Caltrans would require an encroachment permit from Caltrans.

Depending on the final design of levee improvements, a 404 permit from the Corps of Engineers may be required. Levee improvements located within the FEMA 100-year flood hazard zone will require a Floodplain Development Permit from the Yolo County Community Development Agency. An Incidental Take Permit would also be required for the removal and/or relocation of elderberry shrubs.

The project would not require an Authority to Construct from the Yolo-Solano Air Quality Management District. However, the current air permit for the Solano Concrete processing plant may require amendment to implement the requested increase in production allocation.

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[5]Lead agency is the city, county, or State agency that has principal responsibility for approving a surface mining operation or reclamation plan pursuant to SMARA. The lead agency for this project is Yolo County.

4.0 ENVIRONMENTAL ANALYSIS

4.1 INTRODUCTION TO ENVIRONMENTAL ANALYSIS

CHAPTER 4.0 ENVIRONMENTAL ANALYSIS

4.1 INTRODUCTION TO ENVIRONMENTAL ANALYSIS

This chapter of the DEIR contains an evaluation of the potentially significant impacts of the proposed project in accordance with the requirements of the California Environmental Quality Act and Guidelines, as amended. Each topical section in this chapter discusses those issues that have been identified as potentially affecting the environment in the Initial Study and the Notice of Preparation (NOP) (Appendix 7.1) and that have been brought to the County's attention in responses from agencies and the public (Appendix 7.2).

The analyses in this chapter are closely related to the impact analyses prepared for the Off-Channel Mining Plan (OCMP) Program EIR since the project in this DEIR is located within the planning area for the OCMP Program EIR and the proposed mining and reclamation activities would be governed by the policies of the OCMP, as amended through the mitigation measures of the OCMP Program EIR. The OCMP Program EIR evaluated potential impacts associated with mining and reclamation of about 2,887 acres within a 23,174-acre planning area for the next 50 years. The OCMP planning area constitutes an area 14.5 miles long and about 1.5 miles wide, along Cache Creek from Capay Dam and downstream to an area near the town of Yolo.

The OCMP Program EIR evaluated the potential environmental impacts of mining and reclamation within the entire planning area. Since the OCMP consists of a variety of policies (and not specific projects), the mitigation measures in the OCMP Program EIR consist of changes to the policies to reduce or minimize environmental impacts that could occur from plan implementation.

The policies include objectives, goals, actions, and performance standards. The performance standards in the OCMP are specific performance standards that operators would need to comply with to reduce or eliminate environmental impacts. A great number of potential impacts associated with this project, Solano Concrete's Long-Term application, would be mitigated by complying with the performance standards of the OCMP and the mitigation measures provided in the OCMP Program EIR. The reader of this document will discover the interrelationship between the OCMP Program EIR from which this document tiers and this project-specific DEIR, when reviewing this chapter and subsequent chapters of this DEIR through numerous references to the OCMP Program EIR mitigation measures.

The Impacts and Mitigation Measures from the OCMP Program EIR have been described in each topic section because a number of the project-specific impacts in this DEIR are

mitigated by mitigation measures contained in the OCMP Program EIR. The Summary of Impacts and Mitigation Measures of the OCMP Program EIR is presented in Appendix 7.4. Therefore, a number of project-specific mitigation measures will refer to mitigation measures in the OCMP Program EIR as being sufficient to mitigate a project-specific impact to a less-than-significant level. In other instances, a mitigation measure to an impact may consist of reference to the OCMP Program EIR as well as additional mitigation on the project-specific level; unless otherwise stated in this document, all mitigation measures for a specific impact would need to be implemented to reduce an impact to a less-than-significant level. Within the analysis of some of the topics evaluated in this chapter, the impacts and mitigation measures identified in the Cache Creek Resources Management Plan (CCRMP) Program EIR are discussed. A summary of the impacts and mitigation measures for the CCRMP Program EIR are presented in Appendix 7.5 for ease of reference.

FORMAT OF ISSUE SECTIONS

Sections in this chapter describe the following for each environmental issue area: 1) the focus of the analysis; 2) a summary of the environmental setting as it relates to the specific issue; 3) an evaluation of project-specific impacts and mitigation measures; and 4) a determination of the level of significance after mitigation measures are implemented. Sections are organized in the following way:

Each issue section has three parts: Introduction; Setting; and Impacts and Mitigation Measures.

The Introduction describes the purpose of the section, identifies relevant OCMP EIR discussion, and itemizes main issues of analysis.

The Setting section summarizes from the OCMP EIR the existing conditions at the regional, subregional and local level, and applicable plans, policies, and regulations. Where appropriate, additional setting information relevant to the project is provided.

The Impacts and Mitigation Measures section identifies relevant analysis from the OCMP EIR. An analysis is provided describing how each OCMP EIR mitigation is implemented or is not relevant due to the circumstances of the specific project. A subsection entitled "Project Specific Analysis" is then provided. This analysis focuses on project-specific impacts. Standards for determining project-level impact significance are identified. The pre-mitigation level of significance for each project impact is established. Project-specific mitigation measures and potential impact significance after implementation of the mitigation measures are identified.

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

Impact 4.2-1

The paragraph identifies the potential impact, its cause, and whether or not it is considered significant prior to mitigation.

Mitigation Measure 4.2-1a

Project-specific mitigation is identified that would reduce the impact to the degree possible. In some cases, the measure is cited from the OCMP EIR as sufficient to mitigate the impact.

Explanatory text is included, as necessary, to describe how the mitigation measure would be implemented, or how effective it is expected to be.

A conclusion statement is made identifying the level of significance following mitigation, such as:

> Implementation of these mitigation measures will reduce this impact to a less than significant level.

or, if the impact is less than significant, then the following apply:

Mitigation Measure 4.2-1a

None required.

DETERMINATION OF SIGNIFICANCE

Three categories of impacts are used for the project-specific impacts within this report; less than significant, significant, and significant and unavoidable. Each impact and mitigation measure(s) is numbered consecutively for individual sections of the document.

Less than Significant: The impact would cause no substantial change in the existing or projected future environment, there no mitigation is required. Or, while there may be some associated impact, it is insignificant or acceptable as defined by the applicable thresholds of significance identified in the OCMP Program EIR.

Significant: Under CEQA, a significant impact is defined as a substantial, or potentially substantial, adverse change in the environment (CEQA §21068). CEQA Guidelines §15064 state that this determination is made by the decision-making body and is based on scientific and factual data, to the extent possible. In evaluating the significance of an impact, the lead agency must consider direct and indirect consequences. Because this Draft EIR is tiered from the OCMP Program EIR, standards of significance have been established that will be used to evaluate any future projects within the OCMP planning area, including the Solano Concrete project.

Significant and Unavoidable: An impact is considered to be significant and unavoidable when it results in a substantial effect on the environment for which no mitigation has been identified as feasible to reduce the impact to a less-than-significant level.

4.2 LAND USE AND PLANNING

4.2 LAND USE AND PLANNING

INTRODUCTION

This section examines land use and policy impacts for the proposed project. Agricultural viability issues related to the project's reclamation plan are addressed separately in Section 4.5, Agriculture. This section identifies land use compatibility issues, as well as the consistency of the project with the applicable land use plans and policies, including the Yolo County General Plan, Zoning Ordinance, and other County ordinances; the Yolo County Off-Channel Mining Plan (OCMP) and the Cache Creek Resource Management Plan (CCRMP); the Land Conservation (Williamson) Act; the draft Yolo County Habitat Conservation Plan; and the State Mining and Reclamation Act (SMARA).

SETTING

Description of Regional Environment

The site of the proposed long-term mining operation is within the lower Cache Creek Mineral Resource Zone, an area of approximately 28,130 acres extending along Cache Creek from upstream of the Capay Dam to the town of Yolo (Figure 3-1). The proposed Solano Concrete mining area consists of eight contiguous parcels of relatively level agricultural land, totaling 1,828 acres. Seven of the eight parcels of land are located south of Cache Creek and immediately east of Interstate 505 (I-505). The eighth parcel is located immediately west of I-505 (Figure 3-2 identifies the eight parcels by name).

The site is approximately 1.5 miles east of the farming community of Madison, and approximately eight miles west of Woodland, the governmental center for Yolo County. Several other aggregate mining companies operate in the project vicinity, including Syar Industries, Cache Creek Aggregates, and Teichert Industries-Esparto, which mine property along Cache Creek several miles to the west. Two other aggregate companies, Teichert Industries-Woodland and Schwarzgruber, mine properties along Cache Creek east of the project site.

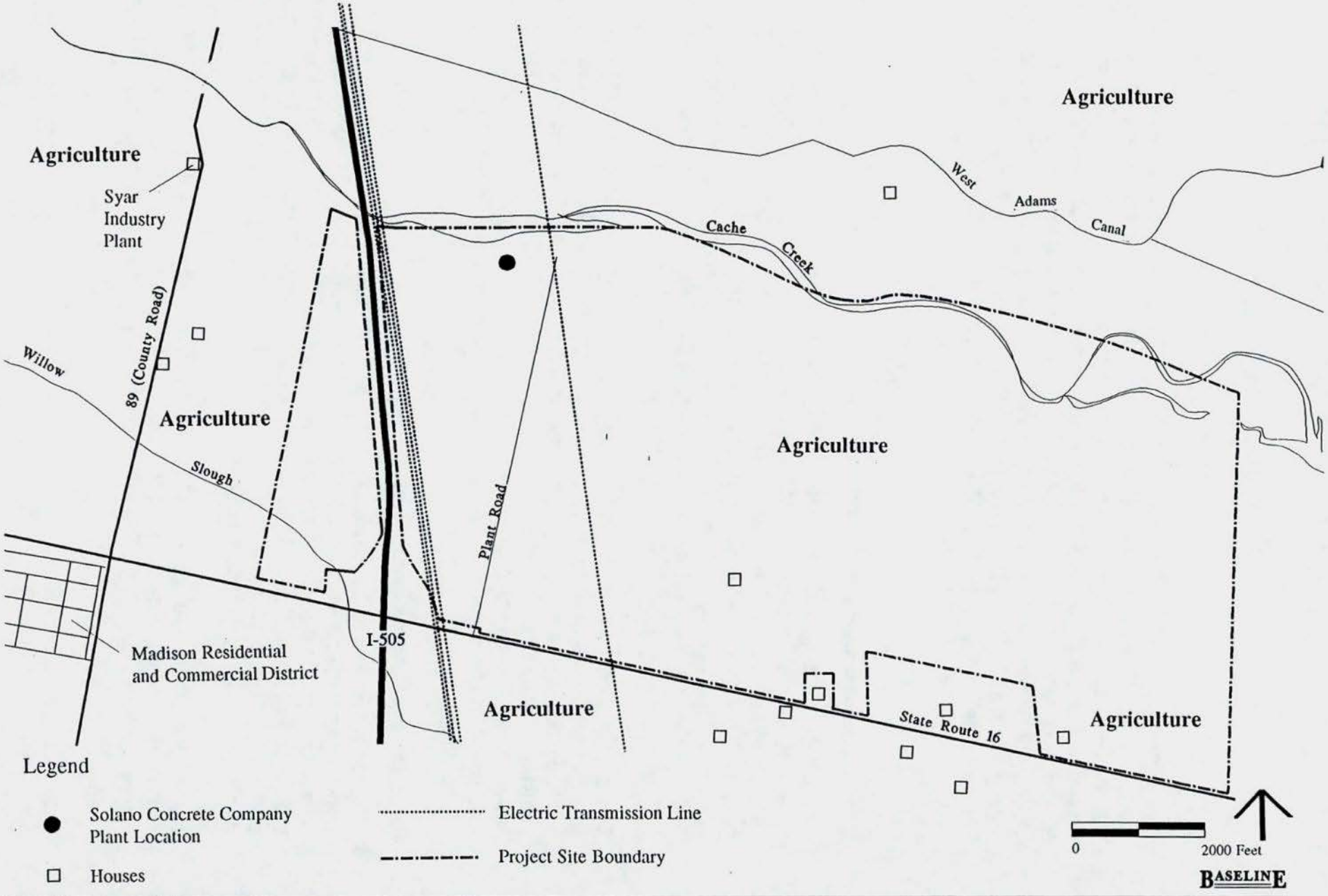
Description of Local Environment

The site is surrounded by agriculture and aggregate mining uses. The existing Solano Concrete plant is adjacent to Cache Creek, east of the I-505 bridge. The plant is accessed by a private, paved road that intersects State Route (SR) 16 several hundred feet east of the SR 16/I-505 interchange. Unpaved haul roads along the Cache Creek levee connect portions of the site to the plant (Figure 4.2-1). The surrounding agricultural fields are planted in various row crops and orchards.

Immediately east of I-505 the Table Mountain/Vaca-Dixon 500 kilowatt PG&E transmission line, with a 200-foot easement, bisects the Kaupke parcel in a north-south direction. A Central Valley Project (CVP) line with a 125-foot easement bisects the adjacent Hutson

EXISTING LAND USES

Figure 4.2-1



parcel, also in a generally north-south direction. A third power line, a 115 kV PG&E line with an 80-foot easement traverses the Snyder East and Snyder West parcels.

The eight parcels within the project site are generally long and rectangular in shape, with the south side of the parcels fronting on SR 16 (Figure 3-2). Mining is proposed on 598 acres of the total 1,828 acres, generally in the northern portion of the parcels near Cache Creek. Solano Concrete has completed mining on the Hutson parcel and is now in the process of mining the Farnham West parcel. Thus, seven of the eight parcels are proposed for mining under the long term-mining application.

The mining plan submitted by the applicant indicates that excavation under the long-term application would occur in phases, beginning near the existing mining operations and plant and then proceeding incrementally in the east portion of the site, before finishing on the parcel west of I-505 (Figure 3-3). Reclamation of the mined areas would occur after each phase is completed. The mined areas would be reclaimed as a series of lakes surrounded by wildlife habitat, row crops, and tree crops (Figure 3-4 in Chapter 3.0).

Rural residences in the area consist of mobile homes and houses, located along SR 16 and north of Cache Creek. The nearest residences to the proposed mining area are located approximately 1,600 feet from the southern boundary (Figure 4.2-1).

Consistency with Applicable Policies, Plans, and Regulations

Yolo County General Plan

The Yolo County General Plan was adopted in 1983. The plan designates land uses for incorporated and unincorporated areas throughout the County, and establishes policies to guide future development. The Yolo County General Plan land use map designates the 1,828-acre project parcel as "Agriculture." All of the surrounding lands, with the exception of the Madison community, are designated Agriculture (Figure 4.2-2). The Madison community is designated for various urban uses.

The Yolo County General Plan contains dozens of goals, objectives, and policies relating to land use, transportation and circulation, open space and conservation of natural resources, public facilities, housing, and other topics. The plan contains some important agricultural conservation policies, but includes only a few policies specifically related to aggregate resources or mining in the Cache Creek area. The following relevant policies are included in the Yolo County General Plan:

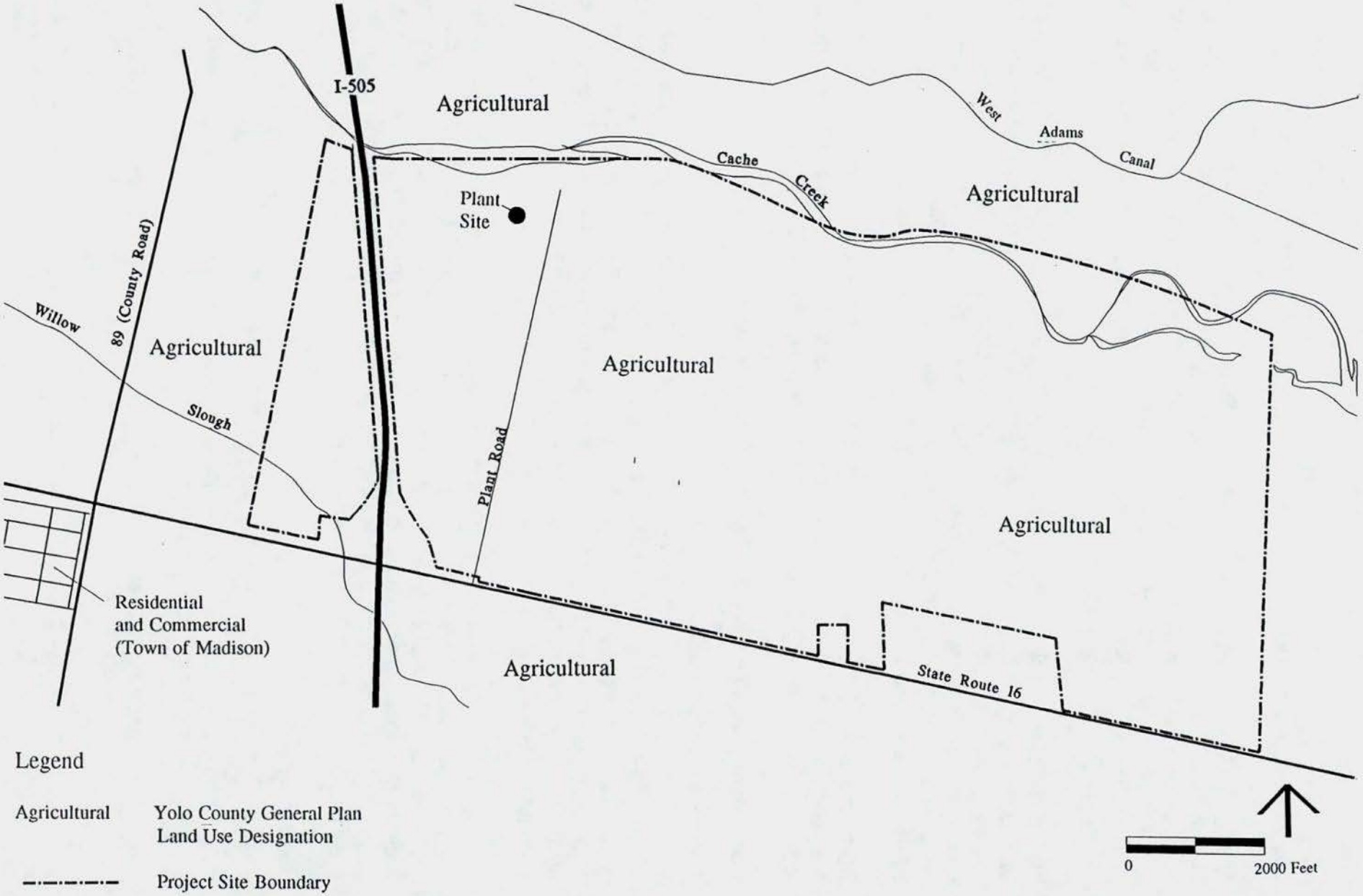
Land Use Policies

LU 6: It is the policy of Yolo County to vigorously conserve and preserve the agricultural lands in Yolo County. Yolo County shall protect and conserve agricultural lands use especially in areas presently farmed or having prime agricultural soils and outside of existing planned urban communities and outside of city limits.

LU 7: Nonagricultural land use activities are prohibited from agriculturally designated areas in Yolo County, except as specifically defined in Policies LU 12, LU 17, LU 18, LU 19, and LU 46.

GENERAL PLAN DESIGNATIONS

Figure 4.2-2



Source: YCCDA, 1995 (base); Dupras, 1988 (data).

BASELINE

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LU 46: Nonurban and resource oriented industrial uses required in specific locations outside of urban communities (such as quarries, mines, gas wells, and similar uses) should be required to control or mitigate hazardous and obnoxious products of those activities to prevent them from impinging upon adjoining properties and persons.

Noise Policies

N 6: Yolo County will review all new developments, public and private, for noise compatibility with surrounding uses to protect the occupants of nearby lands from undesirable noise levels and shall discourage new residential development in areas subject to legal, long term, excessive noises.

Conservation Policies

CON 5: In order to conform with this General Plan, as amended, or to avoid environmental hazards, Yolo County shall require conservation of natural resources, in the development and managed utilization including:

- Water and its hydraulic force
- Forests
- Tree borders along roads and highways
- Soils
- Rivers and surface waters
- Harbors (marinas)
- Fisheries
- Wildlife
- Minerals
- Other natural resources including as, oil, and geothermal.
- The reclamation of lands and waters.
- Flood control.
- Prevention and control of pollution of streams and other waters.
- Regulation of the use of land in stream channels and other areas required for the accomplishment of the conservation plan.

CON 34: Yolo County shall adopt a Mining Ordinance to implement these policies as they apply to mineral resources, including sand and gravel.

CON 35: Yolo County shall adopt a Cache Creek Management Program for the carefully managed use and conservation of Cache Creek and its sand and gravel resource, its riverside environment, its relationship to ground and surface water characteristics, and its value as a fishery and recreation resource.

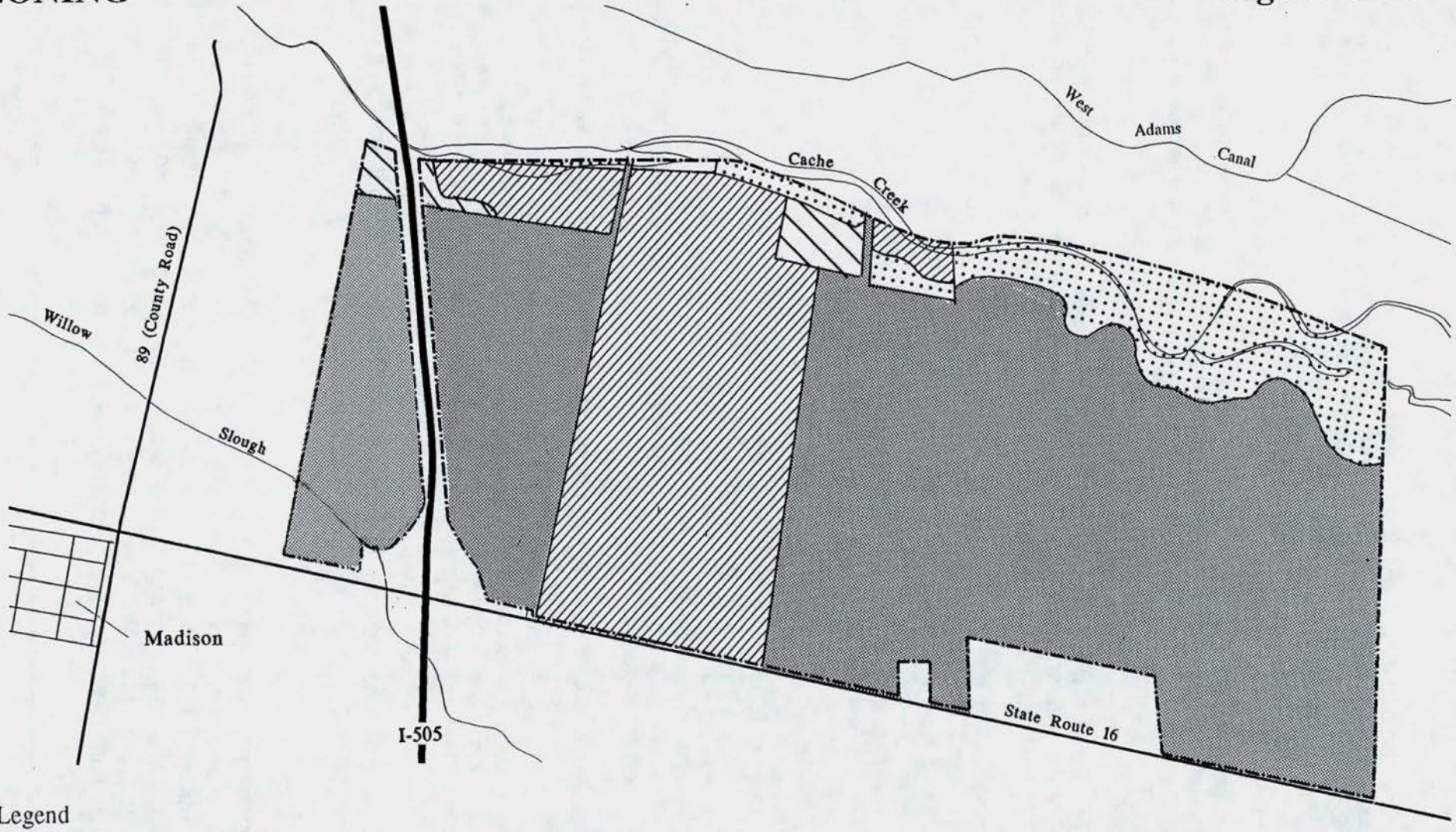
The proposed project is consistent with these General Plan policies, as described further in Impact 4.2-1, below.

Yolo County Zoning

The current zoning of the project site is a combination of A-P (Agricultural Preserve), A-1 (General Agriculture), and A-1/SG (General Agriculture, with a Sand and Gravel combining zone). Approximately 1,439 acres of the 1,828-acre project site are currently zoned A-P (Figure 4.2-3). Six of the eight project parcels are under active Williamson Act contract. The only areas of the site not under Williamson Act contracts are the Hutson parcel (276 acres) and Farnham West parcel (113 acres). These two parcels are zoned A-1/SG.

ZONING

Figure 4.2-3



Legend

A-1	Agricultural General	A-P	Agricultural Preserve	
A1/SG	Agricultural General/Special Sand and Gravel Combining Zone	AP/SG	Agricultural Preserve/Special Sand and Gravel Combining Zone	
			Project Site Boundary	

0 2000 Feet

Note: Zoning areas within project site.
Source: YCCDA, 1995 (base); Dupras, 1988 (data).

BASELINE

95263-00.03 3/19/96, Cadd File N(2), 953PL (Base) Solano Long-Term

The remaining six parcels (Solano West, Kaupke, Farnham East, Orrick, Snyder West, and Snyder East) are zoned A-P (Agricultural Preserve), except for the extreme northern portions of the parcels (Table 4.2-1). The northern portions are zoned either A-1, A-1/SG, or A-P/SG (Agricultural Preserve, with a Special Sand and Gravel combining zone). These areas were included in the County's 1979 In-Stream Mining Ordinance, and were zoned to allow mining (Figure 4.2-3).

According to the Yolo County Zoning Ordinance, the A-P zoning is applied to properties that are under a Williamson Act contract, a legal contract between the owner and the County to retain the property in agricultural use in return for a reduced tax assessment. The Zoning Ordinance states that the Special Sand and Gravel (SG) combining zone may be applied to A-1 and A-P to "indicate land areas in which surface mining operations may be conducted" (Section 8-2.2311). Use permits for the establishment of off-channel mining may not be issued for lands zoned other than A-1/SG. For land within the channel, mining may occur on lands zoned A-P/SG, if the mining is associated with erosion control and bank stabilization. Under the proposed A-1 zoning, private mines, quarries, and gravel pits are conditionally allowed, after the approval of the Special Sand and Gravel Combining Zone [Section 8.2-604(n)].

TABLE 4.2-1: **Zoning of Each Parcel in Application by Acreage.**

Parcel Name	Zoning District	Acres
Solano West	A-P	150
	A-1	5
Kaupke	A-P	189
	A-1	4
	A1/SG	36
Farnham West	A-1	14
	AP/SG	4
	A1/SG	95
Farnham East	A-P	95
	A-1	14
	AP/SG	4
Orrick	A-P	196
	AP/SG	9
	A1/SG	12
Snyder West	A-P	81
	AP/SG	348
Snyder East	A-P	249
	AP/SG	65

Notes: AP = Agricultural preserve.
A-1 = General agriculture.
AP/SG = Agricultural preserve with sand and gravel overlay.
A1/SG = General agriculture with sand and gravel overlay.
Acreages are approximate.

The OCMP proposes to amend the A-P (Agricultural Preserve) zoning regulations to allow surface mining operations outside the channel within the A-P district. If this is approved, the applicant's requested operation would be consistent with the underlying zoning, and the only necessary action would be extending the Sand and Gravel (S-G) overlay. The applicant requests that, if this OCMP language is not adopted, all of the lands that are now zoned A-P be rezoned to A-1/SG (General Agriculture, with a Sand and Gravel combining zone) when contracts expire. This "conditional" future rezoning is not permissible, however. If the OCMP is not amended to allow mining within the A-P zone, rezoning of 558 acres of the project area would be inconsistent with the requested use, effectively precluding the project from proceeding as proposed (see further discussion on the Williamson Act, below). Subsequent requests for

rezoning would have to be submitted for land currently under Williamson Act at such time as those contracts expire (2002 and 2006).

Land Conservation Act of 1965 (Williamson Act)

The Williamson Act is a State program that allows agricultural landowners to pay reduced property taxes in return for their contractual agreement to retain the land in agricultural and open space uses for a period of ten years. The legal contract is signed between the landowner and the County. The specific land uses allowed on agricultural lands under Williamson Act contracts are regulated by State law (Government Code Section 51200 *et seq.*). In general, uses on Williamson Act-contracted lands must be consistent with the intent of the law to conserve agricultural, open space, and natural resource lands.

The 1,828-acre project site consists of eight contiguous parcels, six of which are under Williamson Act contract (Figure 4.2-4). The applicant has filed notices of nonrenewal for the six parcels under Williamson Act contract. The contracts on five of the six parcels will expire in 2002; the contract on the Farnham East parcel will expire in 2006.

A recent legislative amendment to the Williamson Act (AB 2663, Sher) was enacted in 1994. The new law added Section 51238.2 to the Government Code, which specifically addresses surface mining of contracted lands. The new requirements of Sections 51238.1and 51238.2 restrict the types of uses that may be allowed on Williamson Act lands. The new Section 51238.1 states:

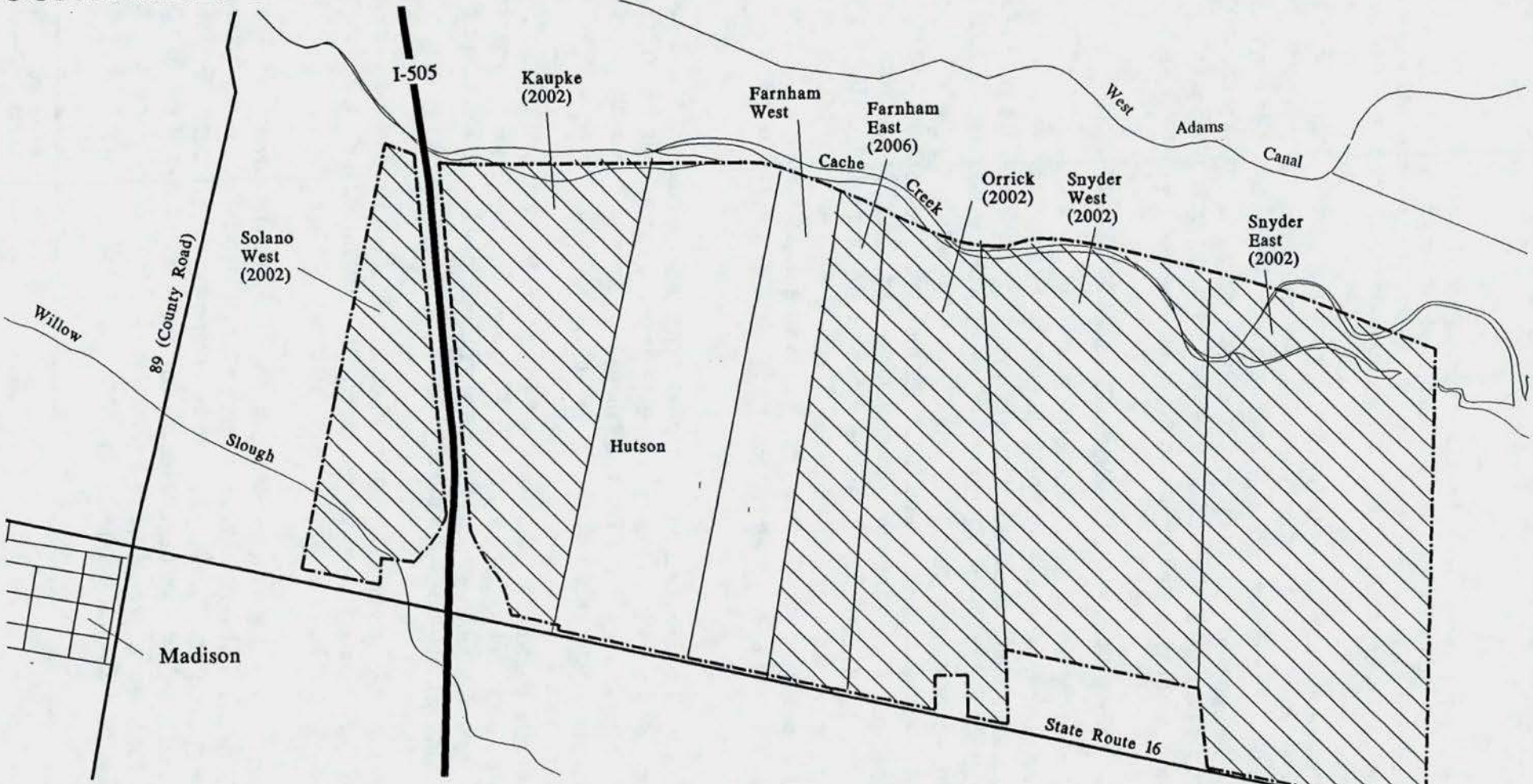
> Uses approved on contracted lands shall be consistent with all of the following principles of compatibility:
>
> (1) The use will not significantly compromise the long-term productive agricultural capability of the subject contracted parcel or parcels or on other contracted lands in agricultural preserves.
>
> (2) The use will not significantly displace or impair current or reasonably foreseeable agricultural operations on the subject contracted parcel or parcels or on other contracted lands in agricultural preserves. Uses that significantly displace agricultural operations on the subject contracted parcel or parcels may be deemed compatible if they relate directly to the production of commercial agricultural products on the subject contracted parcel or parcels or neighboring lands, including activities such as harvesting, processing, or shipping.
>
> (3) The use will not result in the significant removal of adjacent contracted land from agricultural or open-space use.

The newly adopted Section 51238.2 states:

> Mineral extraction that is unable to meet the principles of Section 51238.1 may nevertheless be approved as compatible use if the board or council is able to document that (a) the underlying contractual commitment to preserve prime land as defined in subdivision (c) of Section 51201 [which defines "prime" land], or (b) the underlying contractual commitment to preserve nonprime land for open-space use as defined in subdivision (c) of Section 51201 [which defines "nonprime" land], will not be significantly impaired.

LANDS UNDER WILLIAMSON ACT CONTRACTS AND EXPIRATION DATES

Figure 4.2-4



Legend

Kaupke (2002) Parcel Name (Contract Expiration Date)

Lands under Williamson Act Contracts

Project Site Boundary

0 2000 Feet

BASELINE

95263-00.03 3/15/96, Cadd 953PL Solano Long-Term

> Conditions imposed on mineral extraction as a compatible use of contracted land shall include compliance with the reclamation standards adopted by the Mining and Geology Board pursuant to Section 2773 of the Public Resources Code, including the applicable performance standards for prime agricultural land and other agricultural land, and no exception to these standards may be permitted.

The OCMP recommends that Yolo County amend the County Zoning Ordinance to allow mining on lands when consistent with the Williamson Act and zoned Agricultural Preserve (A-P). The OCMP contains Action 5.4-2, which states: "Revise the A-P (Agricultural Preserve) Zone to allow for the operation of surface mining on contracted land, in accordance with the provisions of the California Land and Conservation (Williamson) Act." The project's consistency with the Williamson Act is assessed below under Impact 4.2-2.

Surface Mining and Reclamation Act (SMARA) and Reclamation Regulations

The California Surface Mining and Reclamation Act (SMARA) was adopted in 1975. The law consists of a comprehensive set of requirements governing all surface mining and reclamation activities that are approved by local agencies. The law requires that the State designate and map "Production and Consumption" regional boundaries and nearby areas that contain significant mineral resources. Local governments are required to adopt policies and ordinances to protect mineral resources that have been identified as being of regional and statewide significance from incompatible land uses. The law requires that public health hazards associated with mining activities are controlled. SMARA further requires mining companies to prepare a detailed reclamation plan, and post a bond or make other assurances that the reclamation plan will be implemented. The law also requires that mining companies file annual reports and fees with the State Department of Conservation.

The State Mining and Geology Board has adopted reclamation regulations in accordance with SMARA requirements. These regulations set State policy for the reclamation of mined lands and surface mining activities. The regulations also set forth the minimum content requirements for public agencies that adopt mineral resource management plans.

The reclamation plan proposed by the applicant to conform to the SMARA requirements is analyzed in other technical sections of this EIR, including the Geology, Hydrology, Agriculture, and Hazards sections. The analysis in this section of the DEIR focuses on the land use compatibility requirements of the regulations.

Requirements of the reclamation regulations that specifically address land use issues include Section 3502, defining the minimum contents of a Reclamation Plan, and Sections 3675 and 3676, which define and discuss "incompatible land uses."

Section 3502(b)(1) states that a reclamation plan shall include "The environmental setting of the site of operations and the effect that possible alternate reclaimed site conditions may have upon the existing and future uses of surrounding lands." Section 3675 defines "incompatible land uses" as "high density residential, low density residential with high unit value, public facilities, geographically limited but impact intensive industrial, and commercial." Section 3676(c)(3) requires the lead agency (Yolo County) to adopt mineral

resource management zoning or policies that "restricts the encroachment of incompatible land uses" in designated mineral resource areas, and/or to "impose conditions upon incompatible land uses in and surrounding areas containing identified mineral deposits for the purpose of mitigating the significant land use conflicts prior to approving a use that would otherwise be incompatible with mineral extraction."

The consistency of the proposed mining and reclamation application with these SMARA regulations is analyzed under Impact 4.2-3, below.

OCMP and Implementing Ordinances

The OCMP "vision" is to allow for the development of a sufficient supply of aggregate to meet the future needs of society, while increasing the level of environmental protection and monitoring. To provide a sufficient supply of sand and gravel over the next 50 years, approximately 2,887 acres could be rezoned to include the S-G (Sand and Gravel) Zone overlay. This will clearly delineate where the County will encourage future mining, so that land use decisions can be planned accordingly.

The plan incorporates the concept of five Management Activity Zones designated along specific sections or reaches of Cache Creek, as described in the Technical Studies. The Solano Concrete long-term application is located within Zones 2 and 3. The OCMP contains a general description of the most beneficial types of uses or improvements to be implemented in each of the management zones. Most of the project site is included within Zone 3, which extends from one mile downstream of the I-505 bridge to County Road 89, just west of the I-505 bridge. In Zone 3, the OCMP states that "this reach would require little channel widening, with the primary focus on improving the transition through the I-505 bridge. Vegetative restoration would be a lesser priority through this segment of the creek."

Zone 2 includes the area more than one mile downstream of the I-505 bridge, which includes the easternmost portion of the project site, the Snyder West and Snyder East parcels. The OCMP states that "this reach contains the highest priority for riparian habitat enhancement. Channel widening would be minimal, with an emphasis on creating a smooth bank transition through the Stephens Bridge," which is the County Road 94B bridge farther downstream from the project site.

Specific land use-related goals, objectives, action statements, and performance standards of the OCMP that are relevant to the long-term mining and reclamation plans of the applicant are listed below. The consistency or inconsistency of the proposed project with each of the OCMP policies is noted, and any mitigation measures to resolve any inconsistencies are identified.

Aggregate Resources Element

Goal 2.2-1: Protect lands containing identified mineral deposits from the encroachment of incompatible land uses so that aggregate resources remain available for future use, as needed.

Goal 2.2-2: Encourage the production and conservation of mineral resources, while giving consideration to recreation, watershed, wildlife, agriculture, aesthetics, flood control, and other environmental factors.

Goal 2.2-5: Ensure that mined areas are reclaimed to a usable condition which are readily adaptable for alternative land uses.

Obj. 2.3-2: Discourage the encroachment of incompatible land uses into areas designated for future off-channel surface mining.

Obj. 2.3-6: Structure mining so that the disturbance of the existing landscape is short-lived and temporary, as much as possible, and will be reclaimed so that the property can be used and enjoyed in perpetuity by current and future generations.

The proposed project is consistent with these Aggregate Resources policies.

Water Resources Element

Goal 3.2-1: Promote the conjunctive use of surface and groundwater to maximize the availability of water for a range of uses, including habitat, recreation, agriculture, water storage, flood control, and urban development.

Goal 3.2-2: Maintain the quality of surface and groundwater so that nearby agricultural productivity and available drinking water supplies are not diminished.

Obj. 3.3-2: Improve the recharge capability along Cache Creek through the development of off-channel ponds, lakes, and canals that have the ability to raise local groundwater levels.

The proposed project may be inconsistent with these Water Resource policies. Mitigation measures have been recommended in Section 4.4, Hydrology and Water Quality, to ensure that surface and ground water quality would be maintained.

Floodway and Channel Stability Element

PS. 4.5-2: All off-channel excavations shall maintain a minimum two-hundred (200) foot setback from the existing active channel bank of Cache Creek.

PS. 4.5-3: Proposed off-channel excavations located within the streamway influence boundary shall be set back a minimum of seven-hundred (700) feet from the existing channel bank, unless it is demonstrated in a manner consistent with the Technical Studies that a smaller distance will not adversely affect channel stability. Under no circumstances shall the setback be less than two-hundred (200) feet.

The proposed project is consistent with these Floodway and Channel Stability policies. Further discussion is included in Section 4.4, Hydrology and Water Quality.

Agricultural Resources Element

Goal 5.2-2: Ensure the compatibility of land uses adjacent to agricultural operations, so that productivity is not adversely affected.

Obj. 5.3-1: Encourage the preservation of prime and important farmland along Cache Creek, while giving consideration to other compatible beneficial uses, such as groundwater storage and recharge facilities, surface mining operations, riparian habitat and public recreation.

Action 5.4-2: Revise the A-P (Agricultural Preserve) Zone to allow for the operation of surface mining on contracted land, in accordance with the provisions of the California Land Conservation (Williamson) Act. The primary purpose of the Williamson Act is to preserve open space, including agriculture, scenic areas, wildlife habitat, and recreational uses. Where surface mining operations propose to reclaim sites to one of the above uses, the land may remain in contract.

Action 5.4-4: Ensure that all proposed surface mining operations that include reclamation to agricultural uses comply with the requirements of the Land Conservation (Williamson) Act and the State Mining and Geology Board Reclamation Regulations.

Action 5.4-6: Encourage off-channel excavation operations to access additional aggregate reserves through the use of wet pits, in order to minimize the amount of agricultural land disturbed by mining.

The proposed project is consistent with these Agricultural Resources policies. No significant impacts on adjacent agricultural operations have been identified. The consistency of the project with the Williamson Act is discussed under Impact 4.2-3 below.

Biological Resources Element

Action 6.4-7: Encourage reclamation plans to include the creation of permanent tall banks in loamy and sandy soils near open bodies of water, to provide nesting habitat for bank swallows.

Action 6.4-9: Require that all surface mining applications within the planning area include a proposal for providing a "net gain" to the County, consisting of the restoration of a previously disturbed portion of Cache Creek; promotion of educational and interpretive values relating to Cache Creek; provision of public recreational opportunities along Cache Creek; other projects that result in social and/or economic benefits to the County; or participation in an established program whose goals are consistent with the activities described above.

Action 6.4-11: Include vegetated buffers between restored habitat areas and adjoining farmland, in order to minimize the potential for riparian areas to serve as harbors for predators and insect pests. Said buffers will also reduce the noise, dust, and spraying generated by agricultural operations.

The proposed project is consistent with these Biological Resources policies. See Section 4.6, Biological Resources, for further discussion.

Open Space and Recreation Element

Goal 7.2-3: Ensure the compatibility of recreational facilities with surrounding land uses, in order to minimize adverse impacts.

Obj. 7.3-3: Create a continuous corridor of natural open spaces along the Creek and provide for limited access, at specific locations, to recreational and educational uses.

Obj. 7.3-4: Discourage the encroachment of incompatible uses into areas surrounding designated recreation sites.

Action 7.4-2: Develop a future recreation plan for Cache Creek, in consultation with the County Parks administrator, to provide a range of public activities and uses. Suggested recreational uses may include, but are not limited to: hiking, horseback riding, fishing, picnic grounds, boating, educational exhibits and birdwatching.

Action 7.4-3: Identify specific locations for future recreational and educational uses along Cache Creek. Sites shall be located at regular intervals throughout the planning area, with access to a County Road or State Highway. Intensive recreational uses shall be located away from designated habitat areas.

Action 7.4-7: Ensure that active surface mining operations are located away from public areas, such as County roads, residences, and sites reclaimed to recreational uses.

PS. 7.5-1: New processing plants and material stockpiles shall be located a minimum of one-thousand (1,000) feet from public rights-of-way, public recreation areas, and/or off-site residences, unless alternative measures to reduce potential noise, dust, and visual/aesthetic impacts are developed and implemented.

PS. 7.5-2: Soil stockpiles shall be located a minimum of five-hundred (500) from public rights-of-way, public recreation areas, and/or off-site residences, unless alternative measures to reduce potential noise, dust, and visual/aesthetic impacts are developed and implemented.

PS. 7.5-3: Off-channel excavations shall maintain a minimum of one-thousand (1,000) feet from public rights-of-way and adjacent property lines, unless a landscaped buffer is provided or site-specific characteristics reduce potential aesthetic impacts. Where landscaped buffers are proposed, the setback for off-channel excavations may be reduced to a minimum of fifty (50) feet.

PS. 7.5-4: Recreational facilities shall be located a minimum of one-hundred and fifty (150) feet from private dwellings, with a landscaped buffer provided to reduce noise and maintain privacy.

The consistency of the proposed project with the Open Space and Recreation policies is discussed under Impact 4.2-8 below. A mitigation measure has been recommended to ensure consistency of the project with proposed recreational facilities in the area.

CCRMP and Implementing Ordinances

The Cache Creek Resources Management Plan (CCRMP) is also being considered for adoption by the Yolo County Board of Supervisors. The CCRMP governs land use activities and environmental restoration within the present channel banks and 100-year flood plain. The CCRMP contains separate elements that address Floodway and Channel Stability, Water Resources, Biological Resources, Open Space and Recreation, Aggregate Resources, and Agricultural Resources.

The overall floodway "vision" of the CCRMP is:

> ...to assist Cache Creek in attaining a more stable condition. One of the most important measures is to significantly reduce the amount of aggregate removed from within the channel. In-stream mining should not exceed the annual replenishment of sand and gravel, and in fact, should be far less than that amount in most years, in order to allow the creek to aggrade and reduce the amount of scour. At the same time, the CCRMP would result in reshaping of portions of Cache Creek

according to the conceptual design provided in the Test 3 Run Boundary. This proposal requires regrading the streambed to create a series of terraces and low-flow channel, which will stabilize the channel and allow it to operate more like a natural stream. In addition, selected banks and levees will be excavated to provide gentle transitions into and out of the channel bottlenecks created by the bridge structures...

Specific land use-related policies of the CCRMP that are relevant to the proposed long-term mining plans of the applicant are listed below. The consistency or inconsistency of the proposed project with each of the CCRMP policies is noted, and mitigation measures to resolve any inconsistencies are identified.

Floodway and Channel Stability Element

Goal 2.2-3: Coordinate land uses and improvements along Cache Creek so that the adverse effects of flooding and erosion are minimized.

The proposed project is consistent with this CCRMP policy. Refer to Section 4.4, Hydrology and Water Quality, of this DEIR for further discussion.

Open Space and Recreation Element

Goal 5.2-3: Ensure the compatibility of recreational facilities with surrounding land uses, in order to minimize adverse impacts.

Obj. 5.3-1: Create a continuous corridor of natural open space along the creek and provide for limited access, at specific locations, to recreational and educational uses.

Action 5.4-1: Solicit the dedication of restored habitat areas and/or recreational areas to the County or an appropriate land trust, such as the Cache Creek Conservancy, in order to provide continuous open space along the creek.

Action 5.4-3: Identify specific locations for future recreational and educational uses along Cache Creek, as shown in Figure 11. Sites shall be located at regular intervals throughout the plan area. Intensive recreational uses shall be located away from designated habitat areas.

Action 5.4-6: Design and manage recreational sites so that trespassing, vandalism, and other undesirable activities are discouraged.

PS. 5.5-1: Only those uses that are river dependent, such as fishing, canoeing, and nature observation shall be located on the creek. More active uses, including parking, restrooms, and picnic areas should be located in areas located away from sensitive habitat, preferably on land that has been reclaimed from sand and gravel mining.

PS. 5.5-3: Physically control access with gates and collect user fees to support operations and deter inappropriate activities. Limited public access will also reduce impacts to sensitive habitat and adjoining private uses. Additional options include permits, volunteer docents to patrol the site, and escorted tours.

The consistency of the proposed project with these Open Space and Recreation policies is discussed under Impact 4.2-8 below. A mitigation measure has been recommended to ensure consistency of the project with proposed recreational facilities in the area.

Agricultural Resources Element

Goal 7.2-1: Protect farmland along Cache Creek from land uses that may conflict with agricultural operations.

Action 7.4-3: Incorporate agriculturally related features, such as agricultural forage areas and drainage systems, into the design of habitat planning.

PS. 7.5-3: Species and water features included in habitat areas should be designed to discourage the intrusion of wildlife, insect pests, and weeds that would impair local crops.

The proposed project is consistent with these Agricultural Resources policies. No significant impacts on adjacent agricultural operations have been identified.

IMPACTS AND MITIGATION MEASURES

Project-Specific Implementation of Program EIR Mitigations

Possible impacts related to land use were evaluated in the OCMP EIR. These impacts included consistency with the Yolo County General Plan (OCMP EIR Impact 4.2-1), consistency with the Yolo County Zoning Ordinance (OCMP EIR Impact 4.2-2), consistency with SMARA (OCMP EIR Impact 4.2-3), consistency with the RWQCB's Basin Plan (OCMP EIR Impact 4.2-4), consistency with the RCD Agriculture Policies (OCMP EIR Impact 4.2-5), compatibility with existing and planned land uses (OCMP EIR Impact 4.2-6), change in land use intensity (OCMP EIR Impact 4.2-7), land use incompatibility due to changes in the creek boundary (OCMP EIR Impact 4.2-8), land disturbance during mining (OCMP EIR Impact 4.2-9), potential for additional mining above that which is currently known (OCMP EIR Impact 4.2-10),potential impacts from the future sale or transfer of property included within a current mining/reclamation application (OCMP EIR Impact 4.2-11) and compatibility with Watts-Woodland Airport Comprehensive Land Use Plan (OCMP EIR Impact 4.2-12). Each of these impacts, except for OCMP EIR Impacts 4.2-8, 4.2-10, and 4.2-12, is relevant to the proposed project and is evaluated in this section.

The OCMP EIR presented mitigation measures for impacts related to land use which would reduce these impacts to a less-than-significant level. Under Mitigation Measure 4.2-1 of the OCMP EIR, inconsistency with the Yolo County Zoning Ordinance would be rectified by a zoning ordinance amendment to allow the sand and gravel (SG) overlay zone for commercial mining to be applied in the Agricultural Preserve (AP) zone. This mitigation measure applies to the project and is discussed in Project Impact 4.2-2.

Under Mitigation Measure 4.2-2a of the OCMP EIR, inconsistency with the Yolo County Zoning Ordinance would be rectified by a zoning ordinance amendment to allow the sand and gravel (SG) overlay zone for commercial mining to be applied in the Agricultural Preserve (AP) zone. This mitigation measure applies to the project and is discussed in Project Impact 4.2-3.

Under Mitigation Measure 4.2-11a of the OCMP EIR, impacts from future sale or transfer of property included within a current mining/reclamation application would be mitigated by the OCMP and its implementing ordinances being expanded and clarified to address the issue of transferability of mining permits, linking property ownership to the mining permit and requiring that processing take place on-site as approved in the permit. This mitigation measure applies to the project, but the mitigation at the program level is sufficient, and this issue is not discussed in this Project EIR.

Standards of Significance

The project would have a significant effect on land use if it would:

- Conflict with General Plan designations or zoning.
- Conflict with applicable environmental plans or policies adopted by agencies with jurisdiction over the project.
- Be incompatible with existing land uses or planned growth in the vicinity.
- Substantially alter the present or planned land use of the area.
- Alter the type or intensity of land use in the area.
- Use nonrenewable resources in a wasteful or inefficient manner.

Project-Specific Analysis

Impact 4.2-1

The project as proposed is inconsistent with some of the policies of the OCMP. This is considered to be a significant impact.

Based on the analysis of the project's consistency with the applicable OCMP policies, as presented in the Setting section, some modifications to the project will be necessary to comply with the OCMP policies addressing surface and ground water quality and channel bank stability.

Mitigation Measure 4.2-1a

Implementation of Mitigation Measures 4.3-4a, 4.3-4b, 4.4-3a, 4.4-4a, and 4.4-7a will reduce this impact to a less-than-significant level.

Impact 4.2-2

The proposed project would be consistent with policies of the Yolo County General Plan. This is considered to be a less-than-significant impact.

The site of the proposed Solano Concrete long-term mining operation is designated as Agriculture in the Yolo County General Plan. As noted above, the Yolo County General

Plan contains several relevant policies that relate directly to mining operations, including Land Use Policies (LU) 6 and 46 and Conservation Policy (CON) 35.

LU 6 states the policy "to vigorously conserve and preserve the agricultural lands in Yolo County," especially "in areas presently farmed or having prime agricultural soils..." The OCMP allows for mining of prime agricultural lands outside of the Cache Creek channel, and allows for the mined lands to be reclaimed as productive agriculture or other compatible uses such as groundwater recharge basins, lakes, wildlife habitat, and recreation facilities. The project proposes off-channel mining and reclamation of mined lands in conformance with the OCMP, which is consistent with LU 6.

LU 46 requires mining operations "to control or mitigate hazardous and obnoxious products of those activities to prevent them from impinging upon adjoining properties and persons." With the adoption of the OCMP and its performance standards and its implementing ordinances, requirements will be in place to control or mitigate impacts of mining on adjacent properties and persons. In addition, Mitigation Measure 4.2-7a below and other sections in this EIR propose mitigation measures for any identified environmental impacts resulting from the proposed mining program.

CON 35 states that the County "shall adopt a Cache Creek Management Program for the carefully managed use and conservation of Cache Creek and its sand and gravel resource, its riverside environment, its relationship to ground and surface water characteristics, and its value as a fishery and recreation resource." Yolo County would adopt a Cache Creek Management Program, when it approves the Off-Channel Mining Plan, the Cache Creek Resources Management Plan, and the implementing ordinances, conforming with CON 35.

Mitigation Measure 4.2-2a

None required.

Impact 4.2-3

The proposed project may be inconsistent with the Yolo County Zoning Ordinance and the Williamson Act. This is considered to be a significant impact.

Under the current Yolo County Zoning Ordinance, mining is not permitted on lands zoned A-P (Agricultural Preserve) unless they are located within the Cache Creek channel and the mining is primarily related to bank protection and erosion control. The OCMP proposes to amend the Zoning Ordinance to allow off-channel mining on lands zoned Agricultural Preserve and under active Williamson Act contract within the MRZ-2 area only. A rezoning to add the Sand and Gravel overlay would still be required.

The application submitted by Solano Concrete states that "To the extent that the sections of the Off-Channel Mining Plan, which allow sand and gravel to be applied to active Williamson Act contracts in the A-P zone are not enacted, this application requests

conditional A-1/SG overlay zoning to become effective as to each parcel immediately upon the expiration of its Williamson Act contract."

Although the applicant requests a "conditional" rezoning of A-P-zoned parcels to take effect immediately upon expiration of the Williamson Act contract, this rezoning could not be considered on individual parcels until each parcel was actually free from Williamson Act contract commitments. For the project property to which this would apply (Solano West, Kaupke, Orrick, Snyder West, and Snyder East), this would not occur until 2002. The Farnham East parcel would not be free of commitment until 2006. At these times, the applicant would need to submit a formal rezoning request to the Yolo County Community Development Agency and the application would be analyzed and set for public hearings at the County Planning Commission and at the Board of Supervisors.

According to the applicant's proposed mining schedule, Phase I would involve continued reclamation of the Hutson parcel, continued mining and reclamation of 35 acres of the Farnham West parcel that is currently being mined under the Solano short-term mining permit, and new mining of five acres of the Farnham West parcel. Phase I mining activities would last approximately one and one-half years. Neither the Hutson or Farnham West parcels are under Williamson Act contract.

The phasing schedule indicates that Phase II mining would occur on 65 acres of land on the Kaupke parcel, immediately south of the existing plant. The Kaupke parcel is under a Williamson Act contract that will not expire until 2002. Phase II mining could begin prior to 2002 provided that the proposed reclamation is to prime agricultural use, consistent with the Williamson Act. The mined portion of the Kaupke parcel is to be reclaimed to row crops, according to the applicant's reclamation plan.

Of the remaining proposed mining, only the Phase III mining schedule could be affected by Williamson Act contracts, depending on when Phase II mining begins and is completed. Williamson Act contracts on the Orrick, Snyder West, and Farnham East parcels (included in Phase III) will not expire until 2002, 2002, and 2006, respectively, and mining could not begin until then, unless reclamation is to prime agricultural use. The applicant's proposed reclamation plan indicates that the southern portion of the Phase III mined area is to be reclaimed to tree and row crops, while the northern portion is to be reclaimed to an open lake and wildlife habitat.

Phase II mining is estimated to occur over six years. If Phase III mining does not begin until 2006, then the Phase III schedule and reclamation plan would not need to be modified, since the Williamson Act contracts on all three parcels would have expired by then. However, if Phase III mining is to begin before 2006, the reclamation plan would have to be revised to ensure that all mined lands are reclaimed to prime agricultural use, i.e., row or tree crops.

Mitigation Measure 4.2-3a

The project mining schedule or reclamation plan shall be modified to ensure that, if Phase III lands are to be mined before the Williamson Act contracts expire,

reclamation shall be to prime agricultural uses only. Alternatively, if mining in Phase III does not begin until after 2006, no change to the proposed reclamation plan would be required.

Implementation of this mitigation measure would reduce the impact to a less-than-significant level.

Impact 4.2-4

The proposed project would be consistent with the State Mining and Reclamation Act (SMARA) and Regulations. This is considered to be a less-than-significant impact.

SMARA regulations address land use issues in Section 3502, which define the minimum contents of a Reclamation Plan, and in Sections 3675 and 3676, which define and discuss "incompatible land uses."

The long-term mining application conforms with the SMARA regulations, since the application identifies no "incompatible land uses" within 1,500 feet of the site. In addition, there are no private very low density (rural) residences, not owned by the applicant, within 1,500 feet of the proposed mining operations. The mining plan proposes noise restrictions at the boundary of the mining area to not exceed 65 dBA after 6:00 PM (see also further analysis of existing and planned land uses under Impacts 4.2-6 and 4.2-7).

The proposed reclamation plan also details specific types of reclaimed uses. The future use of all lands surrounding the proposed mining operation would be consistent with the County's "Agriculture" General Plan designation and would not include any incompatible land uses, as defined by the SMARA regulations.

SMARA also contains performance standards for reclamation. Performance standards address wildlife habitat; grading and slope stability of reclaimed areas; revegetation; drainage and erosion control; reclamation of agricultural land, including prime agricultural land; equipment and structure removal at the cessation of mining operations; surface and ground water protection; topsoil management; tailing and mine waste management; and closure of wells and other surface openings.

The applicant's proposed reclamation plan adequately addresses each of the SMARA reclamation performance standards, as summarized below and analyzed in greater detail in other sections of this DEIR.

Sections 3503(c) and 3703 of the SMARA reclamation regulations require protection of wildlife habitat, and avoidance of impacts on endangered species. In general, habitat restoration proposed as part of the project would serve to enhance the wildlife habitat value of the site, although impacts to some listed species could occur. Section 4.6, Biological Resources, recommends mitigation.

Exposed slopes will be at no greater than a 2:1 gradient and will be planted with a drought-tolerant seed mixture to provide erosion control, weed control, aesthetics, and habitat, as required by SMARA Sections 3502(b)(3) and 3704. A full discussion of grading and slope stability is found in Section 4.3, Geology and Soils.

Exposed slopes within the project would be revegetated as required by SMARA performance standards contained in Sections 3503(g) and 3705. The slopes surrounding the open water/habitat areas will be revegetated to provide habitat values. This issue is also discussed in Section 4.6, Biological Resources.

The project complies with drainage, erosion control, surface and ground water protection, and topsoil management performance standards in SMARA Sections 3503(e), 3706, 3710, and 3711. To control erosion, areas to be mined will not be graded until excavation begins. In addition, soil stockpiles will be seeded as soon as possible and water trucks will be used for the aggregate stockpiles. Stockpiles will be monitored and reseeded, if necessary, until reclamation commences. Surface water runoff will be contained in on-site detention basins. Further analysis is included in Sections 4.3, Geology and Soils, and 4.4, Hydrology and Water Quality.

The reclamation of agricultural land is regulated by SMARA Section 3707. A total of 446 acres of the project site will be reclaimed to agriculture, including 223 acres of row crops and 223 acres of tree crops. Reclamation to agricultural uses is analyzed in Section 4.5, Agriculture.

Mitigation Measure 4.2-4a

None required.

Impact 4.2-5

The proposed project would be consistent with the draft Yolo County Habitat Conservation Plan. This is considered to be a less-than-significant impact.

The draft Habitat Conservation Plan (HCP) for Yolo County was recently completed and is now being circulated for public review. The HCP is intended to be the basis for an "incidental take" permit to be issued by the U.S. Department of the Interior. The HCP proposes mitigation programs to mitigate impacts on 29 target plant and animal species due to urban and other development in the County over the next 20 years. However, mining activities within the Cache Creek resource area are not covered under the HCP's mitigation program.

The draft HCP identifies and designates the Cache Creek area as possessing high preservation or restoration value as a potential mitigation site. The OCMP Program EIR (Mitigation Measure 4.6-4a) recommends the addition of Performance Standard 6.5-8 to the OCMP, which would state: "All surface mining operations and reclamation plans shall conform with the preservation and enhancement measures in the Yolo County Habitat Conservation Plan. Mining operators with lands designated as having a moderate to high

potential for use as mitigation areas in the HCP shall be encouraged to participate in the Developer HCP Participation Options, including use of lands as mitigation sites."

The applicant proposes creation of 65 acres of habitat along Cache Creek, which could be enrolled in the HCP mitigation programs. Additional analysis of the impacts of the proposed long-term mining and reclamation plans on wildlife resources is included in Section 4.6 of this DEIR.

Mitigation Measure 4.2-5a

None required.

Impact 4.2-6

The proposed project would be consistent with the Regional Water Quality Control Board Basin Plan. This is considered to be a less-than-significant impact.

The OCMP Program EIR analyzed the OCMP's consistency with the Basin Plan, the guiding policy document for the Central Valley Regional Water Quality Control Board. The OCMP has been found to be consistent with the Basin Plan, provided that certain mitigation measures, in the form of new or revised policies added to the OCMP, were adopted. The main concerns are water contamination and that the evaporative water losses from any lakes or wet pits proposed as part of mining and reclamation plans are no greater than losses due to agriculture.

Section 4.4, Hydrology and Water Quality, of this DEIR analyzes the consistency of the project's proposed reclamation plan, including the creation of 161 acres of lakes, with the OCMP and the RWQCB Basin Plan and recommends mitigation measures.

Mitigation Measure 4.2-6a

None required.

Impact 4.2-7

The proposed project is inconsistent with an agricultural policy adopted by the Yolo County Resource Conservation District. This is considered to be a significant and unavoidable adverse impact.

The Yolo County Resource Conservation District (RCD) is allowed under State law to implement conservation plans and programs to protect and enhance natural resources in the County. Policies adopted by the RCD require development projects to ensure that "core resources, including land, water, waterways, and air, are not unduly diminished or permanently damaged." Policy 5a states that: "Any change in land-use or designation of land-use which results in the permanent conversion of agricultural land to a nonagricultural land-use will be discouraged." Policy 5f states that: "Proposals which provide farming-compatible wildlife habitat areas in urban or rural areas are encouraged."

The project would result in the permanent conversion of approximately 252 acres of prime agricultural lands to nonagricultural uses. This loss of agricultural land is incompatible with RCD Policy 5a. The effect of the loss of agricultural land is discussed in Impact 4.5-2.

The proposed mining long-term mining project is consistent with other RCD policies, since the reclamation plan will ensure that "core resources, including land, water, waterways, and air, are not unduly diminished or permanently damaged." In addition, the proposed reclamation plan proposes the creation of 65 acres of wildlife habitat, consistent with RCD Policy 5f to encourage "farming-compatible wildlife habitat areas."

Mitigation Measure 4.2-7a

None available.

No mitigation measures are available that would reduce this impact to a less-than-significant level.

Impact 4.2-8

The proposed project may be incompatible with some existing and planned land uses. This is considered to be a significant impact.

There are no "incompatible" land uses, as defined by the SMARA regulations, within several thousand feet of the proposed mining area. The site is surrounded by agricultural fields and some rural residences. The nearest urban (commercial, industrial, low density residential) uses are located approximately 1.5 miles west of the site in the community of Madison.

There are five rural residences located between 1,600 feet (0.3 mile) and 2,150 feet (0.4 mile) from the proposed mining boundary. The rural residences consist of mobile homes and houses located along SR 16, south of the mining area, and one residence located on the north side of Cache Creek off County Road 20. The nearest residence to the mining area is located on SR 16 approximately 1,600 feet south of the Phase V mining boundary (Figure 4.2-1).

Performance Standards 7.5-1, 7.5-2, and 7.5-3 in the Open Space and Recreation Element of the OCMP require that material stockpiles shall be located a minimum of 1,000 feet from, and temporary soil stockpiles shall be located a minimum of 500 feet from, public rights-of-way, public recreation areas, and/or off-site residences "unless alternative measures to reduce potential noise, dust, and visual/aesthetic impacts are developed and implemented." The performance standards require that off-channel excavation activities shall observe a similar 1,000-foot minimum setback "unless a landscaped buffer is provided or site-specific characteristics reduce potential aesthetic impacts." Where landscaped buffers are proposed, the setback for off-channel excavations may be reduced to a minimum of 50 feet.

The long term-mining application proposes some specific measures to reduce potential land use incompatibilities, and comply with the setback requirements of the OCMP performance standards. The applicant proposes to plant a windbreak of trees along the eastern and western sides of I-505 right-of-way to buffer the freeway from mining operations planned in Phases II and VII. However, the proposed mining plan does not propose any visual buffers along the southern mining boundary, which would be required if soil stockpiles were located within 500 feet of existing residences.

Analysis and mitigation measures recommended in Section 4.10, Visual Resources, of this DEIR address the setback requirements of the OCMP performance standards. Potentially significant land use impacts could also result from mining activities due to noise and dust. Sections 4.9, Noise, and 4.7, Air Quality, of this DEIR analyze those specific land use compatibility issues. No other potentially significant impacts to existing land uses in the immediate area have been identified.

Regarding potential incompatibilities between the mining and future planned land uses in the area, the future use of lands adjacent to the proposed mining site would be consistent with the County's "Agricultural" General Plan designation. Future land uses on adjacent properties would be further regulated by County's Zoning Ordinance, the OCMP, and the two implementing ordinances. These plans and ordinances would prevent permitting of incompatible land uses (commercial, industrial, low density residential, public uses, as defined under SMARA).

A potential land use incompatibility could occur in the vicinity of Madison and the I-505/SR 16 interchange. Two "Growth Management Study Areas" have been established around the existing town and around the existing interchange through the adoption of a resolution by the Yolo County Board of Supervisors (Minute 89-466). The Growth Management Study Areas include undeveloped agricultural lands in a circle around the SR 16/County Road 89 intersection and the SR 16/I-505 interchange. The study boundaries extend approximately 1,000 feet north of SR 16. According to the Board's action, the Growth Management Study Areas were established to indicate "areas where development may be appropriate and where additional studies need to be conducted."

The closest mining areas to the two study area boundaries are proposed in the Solano West parcel west of I-505 and the Kaupke parcel east of the freeway. Mining activity would occur in the northern portions of the two parcels, approximately 3,000 to 4,000 feet north of the I-505/SR 16 interchange. If urban uses were to be planned and constructed within a 1,000-foot perimeter around the interchange, mining activities would be located approximately 2,000 to 3,000 feet away.

The only land use incompatibility that could result from future uses involves the possible construction of a recreational or educational facility along Cache Creek near the Solano Concrete mining area. The CCRMP includes Policy 5.4-3, which states "Identify specific locations for future recreational and educational uses along Cache Creek, as shown in Figure 11 [of the CCRMP]. Sites shall be located at regular intervals throughout the plan area. Intensive recreational uses shall be located away from designated habitat areas."

Figure 11 of the CCRMP identifies "Proposed Recreation Nodes" along Cache Creek. A Recreation Node symbol is placed on Cache Creek midway between County Road 89 and County Road 94B, at a location that is north of the project's Phase IV and V mining boundary near a proposed oak woodland habitat area (Figure 4.2-5). The proposed long-term mining plan submitted by the applicant includes an offer to dedicate to the County reclaimed lands in Phase IV and/or V, which are located at or near the proposed Recreation Node.

A policy in the CCRMP calls for preparation of a future recreation plan for Cache Creek in consultation with the County Parks Administrator. Additional policies included in the CCRMP state the intent to "ensure the compatibility of recreational facilities with surrounding land uses, in order to minimize adverse impacts" and "More active uses, including parking, restrooms, and picnic areas should be located in areas located away from sensitive habitat, preferably on land that has been reclaimed from sand and gravel mining." Another policy calls for access to the recreation areas to be carefully controlled with gates and user fees.

It is unclear how the proposed Recreation Node near the project site could be accessed, since there are no nearby public roads. The future recreation plan for Cache Creek that would be prepared in consultation with the County Parks Administrator would be required to examine the feasibility of access to planned Recreation Nodes. The future recreation plan would be subject to environmental review as a separate project under CEQA. The County should determine whether the applicant's offer to dedicate reclaimed land for the proposed Recreation Node fulfills the policy of the CCRMP, and whether the applicant's proposed mining and reclamation plans should be modified to allow access to the Recreation Node.

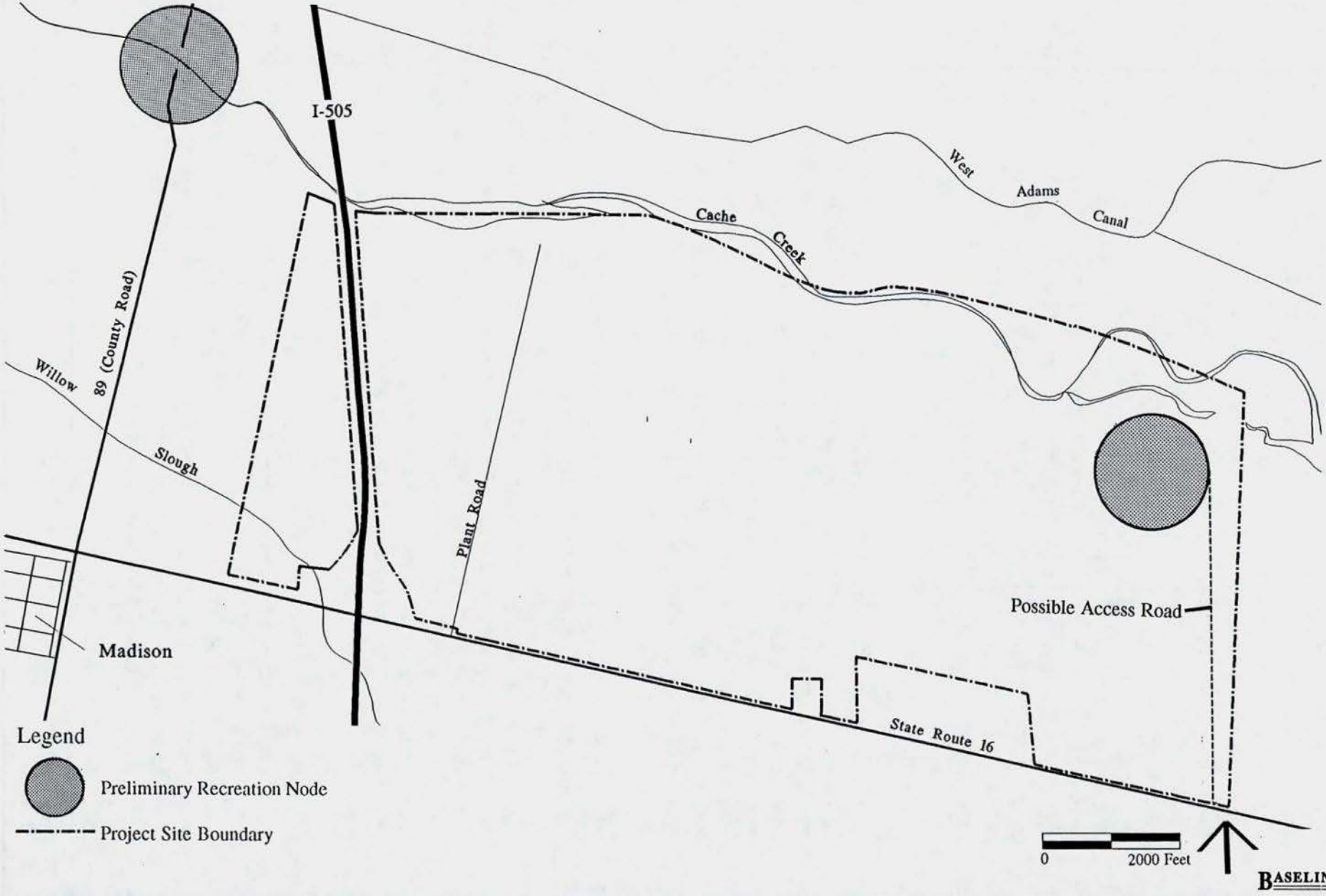
The proposed Recreation Node is located east of lands that are proposed to be reclaimed as oak woodland habitat. Placement of a recreational facility or uses near the habitat area could conflict with policies of the CCRMP, which call for recreational uses to be located away from sensitive habitat areas. Additional land use incompatibilities could result between the proposed reclaimed uses. Section 4.5, Agriculture, analyzes potential impacts between the proposed permanent lake and wildlife habitat and the adjacent tree and row crops. The analysis in Agriculture concluded that the presence of the proposed tree crop would act as a buffer between the row crop agricultural fields and the habitat area, decreasing the potential for land use conflicts, such as agricultural pests (rodents and insects).

Mitigation Measure 4.2-8a

The County shall determine whether the applicant's offer to dedicate reclaimed lands in Phase V and VI for the proposed Recreation Node would fulfill the policy of the CCRMP. The County and the applicant should enter into discussions to resolve how public access to the future recreation facility can be accommodated. If determined to be feasible, the project plans should be modified to include a public access road along the eastern boundary of the site.

PROPOSED RECREATION NODES FROM THE CCRMP

Figure 4.2-5



Implementation of this mitigation measure would reduce this impact to a less-than-significant level.

Impact 4.2-9

During the mining phases, the proposed project would result in an intensification of land use for the mining sites. This is considered to be a less-than-significant impact.

The project will involve a change of land use for the project site from commercial agriculture to mining. The commercial agricultural operations in the area and on the site involve the use of heavy equipment for all phases of farming, including planting, cultivating, application of pesticides, herbicides, and fertilizers, and harvesting. These agricultural operations include activities disturbing the soil.

Proposed mining activities would require the use of heavy equipment and disturbance of the soil, including excavation of the site and dredging where mining occurs below the water table. Hauling activities related to mining will take place on a much more intensive basis than for agriculture. Hauling of aggregate to and from the processing plant will take place year round and involve many more truck trips than for an agricultural operation.

The concern for intensification of land use relates to the impacts that arise, such as to air quality, noise, and traffic. While the proposed project will result in the intensification of the land use on the site, this, in itself, will not be a significant impact providing that associated environmental impacts related to traffic, air quality, noise, water quality, and the like can be adequately mitigated. Potential impacts relating to land use compatibility resulting from the intensification of land use have been addressed under Impact 4.2-7 above and in other sections of this DEIR.

Mitigation Measure 4.2-9a

None required.

4.3 GEOLOGY AND SOILS

4.3 GEOLOGY AND SOILS

INTRODUCTION

This section presents a description of the geologic, seismic, and pedologic (soils) conditions at and in the vicinity of the proposed project. The characteristics of the geomorphology and geology of the area present significant influences on the purpose and feasibility of the project. Deposition of alluvial sediments provides the aggregate resources that would be mined under the proposed project. Potential impacts on the proposed project potentially include adverse erosion (including erosion by Cache Creek), damage to project elements caused by slope failure or seismic shaking, and the decreased availability of aggregate resources. These potential impacts related to earth processes are evaluated and mitigation measures are presented, when appropriate, to reduce the adverse effects to a less-than-significant level.

SETTING

Description of Regional Environment

The project site is located on the western margin of the Sacramento Valley. The eastern flank of the north-central Coast Ranges forms the upland area to the west of the project site. The region is seismically active, a consequence of lithospheric plate motion. The geology of the project site is dominated by thick alluvial sediments deposited within the alluvial valley formed along Cache Creek. These sediments are recognized by the California Division of Mines and Geology (CDMG) as an important regional aggregate resource. The geologic, geomorphic, and seismic conditions of the region are more fully described in the Program EIR for the OCMP (EDAW, 1995a, Section 4.3, pp. 4.3-1 to 4.3-18).

Description of Local Environment

The project site is located on an alluvial terrace surface south of Cache Creek in the eastern portion of Hungry Hollow. The topography slopes gently eastward from an elevation of 150 feet above the National Geodetic Vertical Datum of 1929 (NGVD) at the southwestern corner of Mining Area VII to 124 feet above NGVD in the northeastern corner of Mining Area V. The majority of the project site is agricultural fields, most of which have undergone agricultural grading. The northern boundary of the project site is generally formed by the south (right) bank of the Creek. The height of the bank ranges from approximately 15 to 30 feet above the current creek bed.

An aggregate haul road has been constructed along the south bank. In some areas, the haul road is built up on a levee that separates the active creek channel from low-lying areas south of the leveed portions of the road. These areas were former aggregate mining areas (Russo, 1996). One lowered area (6.1 acres) behind the leveed segment of the levee road is located between the northern boundary of Mining Area III and the levee road. The elevation (109 feet NGVD) of the relatively flat base of this area is similar to the

elevation of the Cache Creek channel and approximately 24 feet below the elevation of the terrace surface to the south. The largest lowered area (11.8 acres) is located north of Mining Area VI. The base of this depression is approximately 22 feet below the terrace surface. An approximate 4.2-acre depression is located north of the northeastern corner of Mining Area V and is approximately 20 feet below the terrace surface.

The site is underlain by late Quaternary alluvial deposits of Cache Creek. The northern portion of the site is mapped (Helley and Harwood, 1985) as active stream channel (Qsc) deposits (Figure 4.3-1), defined roughly as lying within the banks of the active channel. The central portion of the project site and southern portion of the proposed mining area are underlain by young alluvial sediments (Qao) deposited outside the active channel. The remaining southern portion of the project site is mapped as the upper (most recently deposited) unit of the Modesto Formation, alluvial sediment that is relatively older than the young alluvial deposits within and close to the active Cache Creek channel. South of State Route (SR) 16, the surficial sediments are mapped as finer-grained Holocene basin deposits (Qm).

Subsurface information available from borings and mining excavations at the project site provide information on the stratigraphy (i.e., layering) of the aggregate deposits. The uppermost overbank deposits are clayey silts and silty clays that extend from the surface to an average depth of six feet. The thickness of the fine-grained overbank deposits reportedly increases to the south, away from the creek, to more than 20 feet within the southern portion of the project site. The fine-grained surficial deposits are directly underlain by two feet or more of sands and clayey sands[1] that change gradationally downward to sandy gravels and gravels. These deposits are informally called the "shallow sand and gravel." These deposits range in thickness from 35 to 75 feet. In the central portion of the project site the "shallow sand and gravels" are underlain by a "middle clay." The top of the middle clay is encountered at depths ranging from 21 feet in the central portion of the mining area to 50 feet in the south-central portion. The thickness of the clay, where present, ranges from eight to 25 feet. The middle clay is underlain by the "lower sands and gravels." These coarse-grained sediments range in thickness from five to 20 feet. A generalized cross-section of the subsurface materials at the project site is shown on Figure 4.3-2.

The middle clay was not encountered within the depth investigated (70 feet) in the north-central portion of the mining area and the total thickness of sand and gravel deposits (including minor silt and clay layers or lenses) in this area is 50 to 58 feet. In the eastern portion of the project site, the sand and gravel deposits are approximately 35 to 70 feet thick.

The lower sands and gravels overlie the "bottom clay" throughout all but the southeastern portion of the proposed mining area. The depth to the top of the bottom clay ranges from

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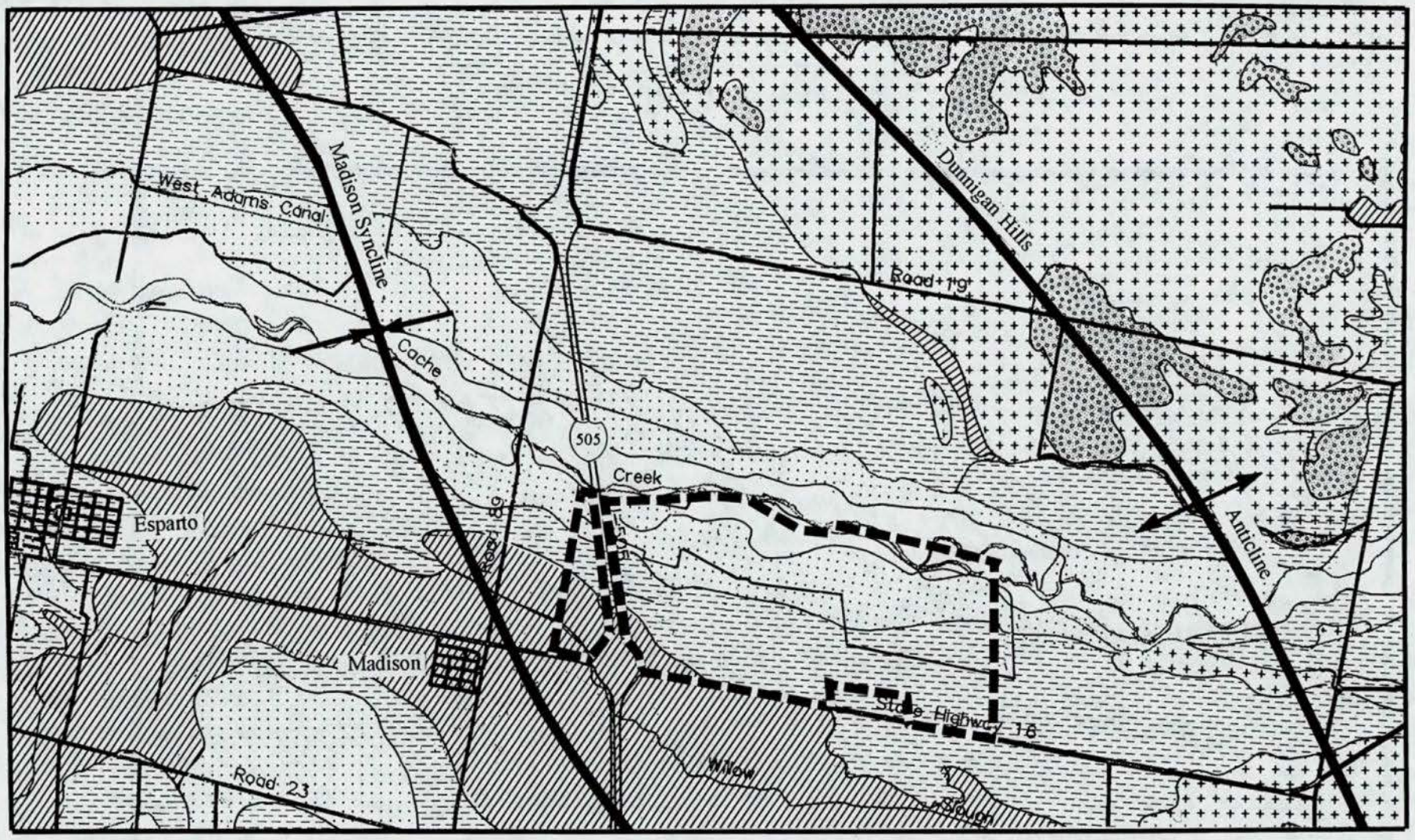
[1]The fine-grained silty, clayey, and sandy overbank deposits are not marketable aggregate products and are collectively called overburden, distinguishing them from deeper well-graded sand and gravel aggregate resources.

REGIONAL GEOLOGY

Figure 4.3-1



Source: YCCDA, 1995 (base); Helley and Harwood, 1985 (data).

BASELINE

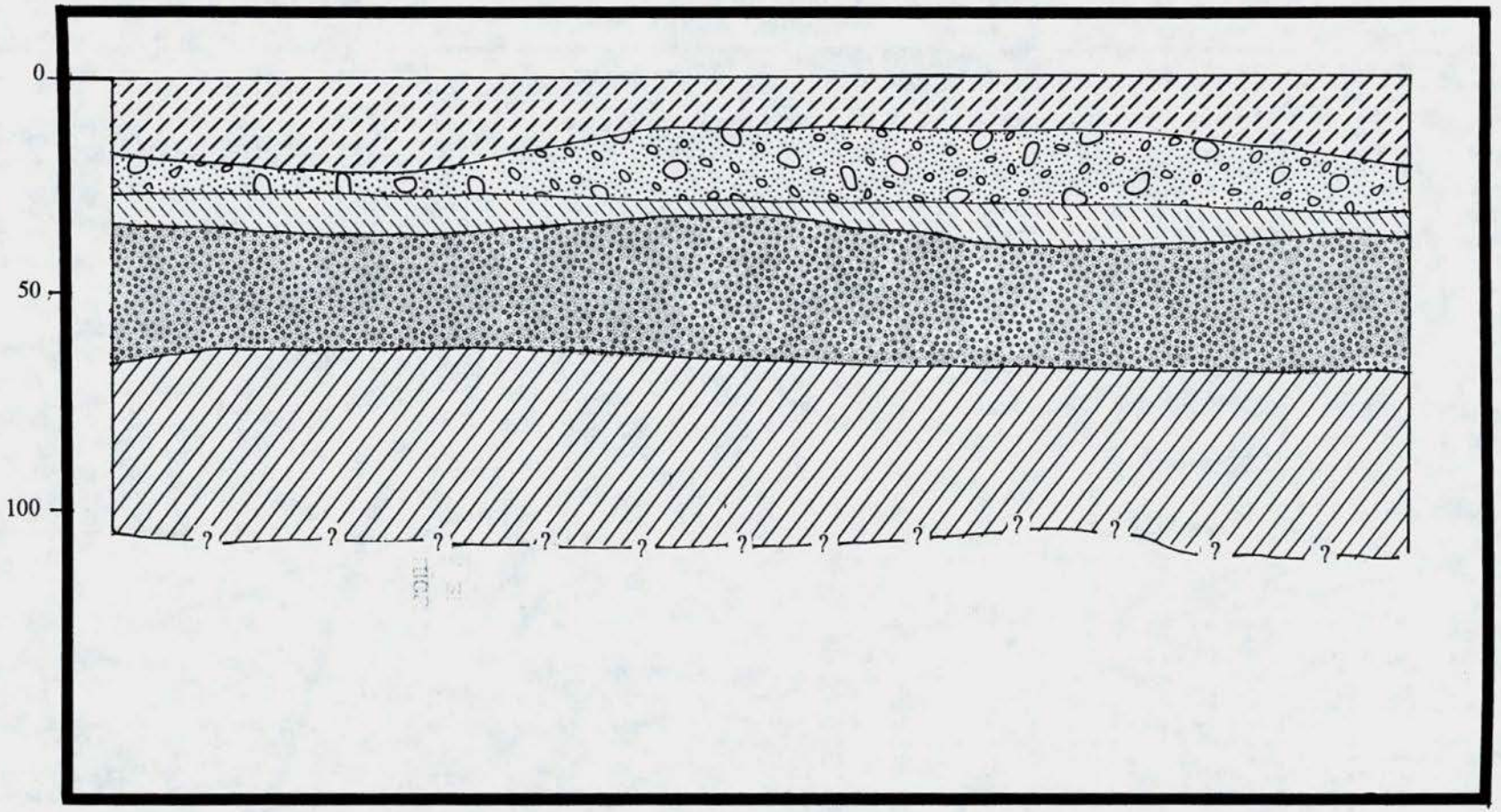
95263-00.03 3/12/96, Solano Long-Term

TYPICAL SUBSUBFACE CROSS-SECTION

Figure 4.3-2

South

North



Source: Modified from Luhdorff & Scalmanini, 1992.

95263-00.03 5/6/96 Solano Long-Term

BASELINE

about 35 feet at the northwestern portion of the mining area to approximately 80 feet in the northwestern portion of the mining area. As noted above, the bottom clay was not encountered at the depths sampled (75 feet) in the north-central potion of the mining area. The bottom clay has not been identified in the southern portions of the Hutson parcel.

The fine-grained surficial deposits, middle clay, and bottom clay represent overbank deposition from low-energy (slow-moving) water during and after flood events. These overbank sediments consist of clays, silts, and fine sands deposited on the margins of a stream. The sand and gravel sediments are higher-energy stream channel deposits. Migration, or shifting, of the channel can result in burial of overbank deposits (e.g., areas of where the middle clay or bottom clay is present) or removal (erosion) of these deposits.

Cache Creek Morphology and Processes

Stream Morphology

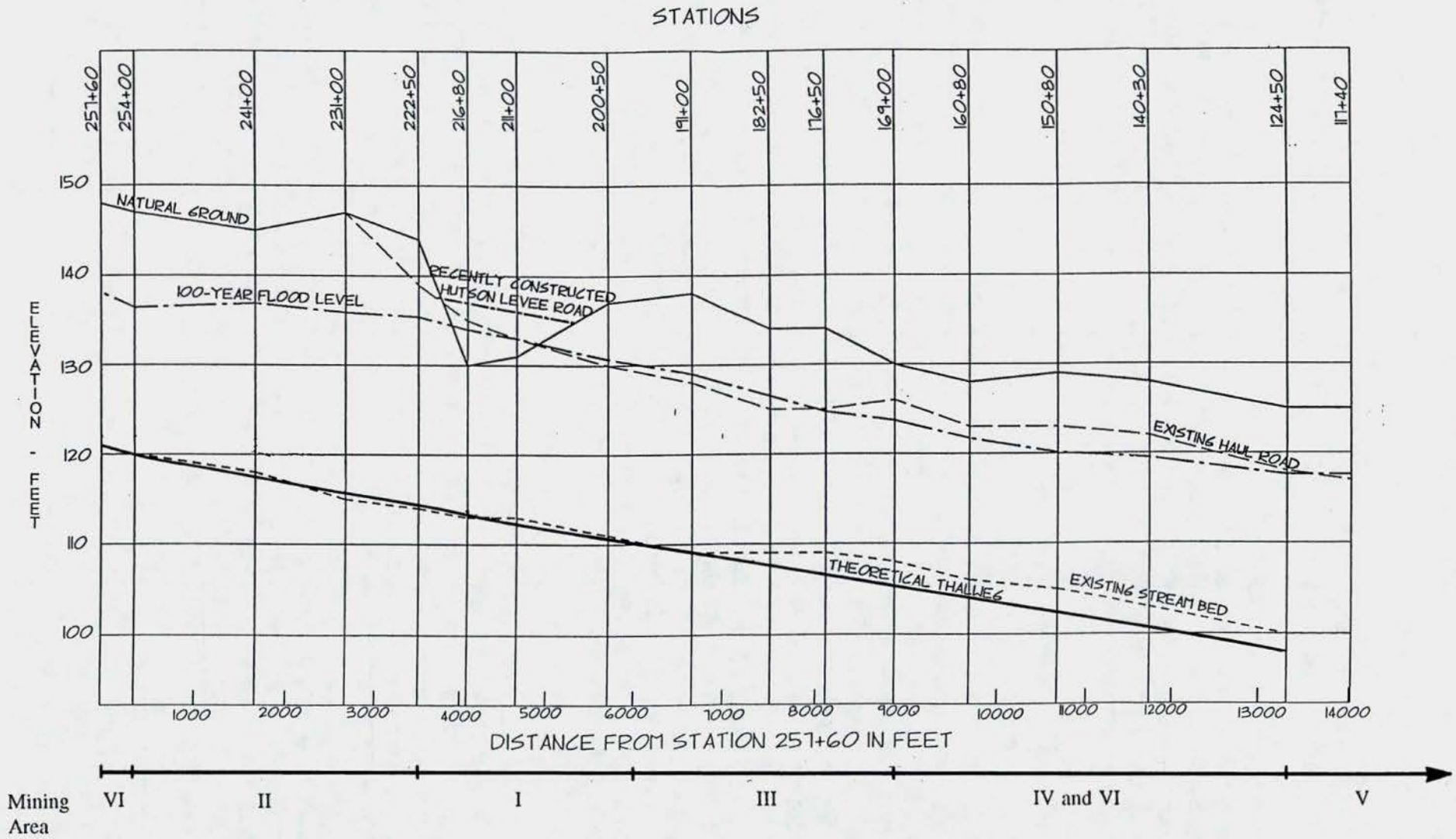
The shape, or morphology, of a stream channel is a function of the characteristics of the flow (volume and velocity) carried by the stream and the composition of sediments forming its banks and stream bed. The active channel of Cache Creek forms the northern boundary of the project site. The Technical Studies for the CCRMP (NHC, 1995) designate distinct subreaches of the Cache Creek channel on the basis of varying geomorphic and hydraulic conditions along the creek. The project site is located within the Guesiosi subreach of Cache Creek, which extends from just upstream of the Interstate 505 (I-505) bridge to approximately 2.2 miles downstream. The channel in the Guesiosi subreach is relatively straight (low sinuosity) and wide, and braided.[2] The south bank of the creek is relatively steep and typically about 20 feet high. The gradient of the channel is relatively gentle (0.12 percent). The low flow channel is not well-developed as the result of active in-channel mining within this subreach. The bed material is predominantly fine gravel and coarse sand. The easternmost portion of the project site is located within the westernmost portion of the Dunnigan Hills subreach, which is similar in morphology to the Guesiosi subreach.

The average ground surface elevation of the proposed mining areas is approximately 20 to 30 feet above the elevation of the present streambed of Cache Creek (Figure 4.3-3). The currently unmined areas of the project site are located at elevations above the 100-year flood elevation. The northern portions of the Hutson and Farnham West parcels have been lowered by previous or current mining activities. These areas are protected against 100-year flooding by the levee on which the haul road is located. The difference in elevation between the project site and the active channel indicates that most of the site occupies a terrace surface abandoned by the creek. However, this terrace surface is within the active floodplain of the creek and will be inundated by expected low frequency flood flows. In addition, leveed portions of the haul road north of Mining Areas III, IV, and V separate the active channel from low areas on the landward side of the levee. The elevation of these lower areas indicate that they were portions of the active channel prior

[2]A braided stream is characterized by more than one, or multiple, active channels that merge and diverge in a complex pattern.

TOPOGRAPHIC LONGITUDINAL PROFILES

Figure 4.3-3



Source: Modified from Keinfelder, 1995.

BASELINE

to construction of the levees or were mined to the elevation of the streambed. The elevation of the levee road in these areas is not, in all places, above the 100-year flood elevation; flooding of the lowered areas is, therefore, possible in low frequency flooding events.

Channel Stability

Substantial incision, or stream bed lowering, has been documented during historic times along the reach of Cache Creek bounding the northern portion of the project site. During the period from 1959 to 1980, the stream bed was lowered by an average of 15 feet (Collins and Dunne, 1990). The incision has resulted in increased cross-sectional area of the stream and a corresponding increase in floodwater storage. Collins and Dunne (1990) have suggested that the potential for overbank flooding has been eliminated due to the increased flood conveyance capacity. Hydraulic analyses prepared for the proposed project (Cunningham Engineering, 1995) indicate that the 100-year flood flows would be contained within the existing creek banks and leveed portions of the channel of Cache Creek in the area of the project site.

Streams are natural systems in dynamic equilibrium that adjust continually to changes in sediment supply, volume or velocity of flow, and irregularities within the channel. Channel incision on Cache Creek has been directly linked to the effects of gravel extraction caused by historic in-stream mining (summarized by Collins and Dunne, 1990). However, incision can also be related to reduced sediment supply in Cache Creek caused by interception of sediment by dammed reservoirs upstream of the subject reach. Although the dams also reduce the peak of some flood flows, the Creek is clearly capable of transporting sand and gravel bedload. If sediment supply is not provided to a stream capable of transporting these materials, the stream will erode its banks or bed. In addition, the reclamation (filling) of portions of active channel and construction of bridges have resulted in a net reduction of the channel width. The constricted flows have relatively high velocities and may have also contributed to bed erosion along the creek (NHC, 1995). The influences on the channel hydraulics and resulting conditions along Cache Creek, including channel incision, are complex and no one single influence is responsible for the current conditions.

An evaluation of the stability of the Cache Creek channel for the reach at the project site (Kleinfelder, 1995) indicates that little or no change in the elevation of the stream bed or positions of the stream banks has occurred during the period 1981 to 1993. This analysis indicates a relatively stable channel bed at the present time. However, the stability analysis indicates that lateral erosion of the south bank of the creek has occurred during this period. In the vicinity of the gravel processing plant located north of Mining Area II, the south bank of the creek eroded approximately 70 feet southward (Kleinfelder, 1995). Channel widening within this reach was also reported for the period 1981 to 1993 in the Technical Studies for the Cache Creek Resource Management Plan. Significant southward migration of the channel (up to 1,000 feet) was reported between the 1964 and 1978 (NHC, 1995). Although episodic and localized channel widening has occurred recently within the reach of the creek adjacent to the project site, the historic trend has been a progressive and significant reduction (approximately 1,500 feet) in channel width from 1900 to the present (NHC, 1995).

Under current conditions, the south bank of Cache Creek appears relatively stable along most of the project site. However, the channel bank is high and steep in the area north of Mining Area VII. Meandering of the channel in the area upstream (west) of the I-505 bridge has caused recent flow along the toe of the south bank, resulting in erosion and oversteepening of the bank.

Hydraulic and sediment transport modeling performed as part of the Technical Studies for the Cache Creek Resource Management Plan (NHC, 1995) indicates that significant scouring would occur at the I-505 bridge during flood flows ranging from the 10-year (5.3 feet of scour) to 100-year (5.9 feet of scour) events on Cache Creek. The average flow velocities at the I-505 bridge for the 10-year and 100-year events were calculated to be 8.4 and 10.1 feet per second (fps), respectively. Significant bank erosion in the area of the bridge can be expected in the future due to the combination of the potential for bed degradation and high flow velocities. Calculated flow velocities for the remaining portion of the Guesiosi subreach of Cache Creek are lower than those for the area of the I-505 bridge but are sufficiently high during the 10-year (6.6 fps) and 100-year (8.0 fps) events to result in bank erosion.

Local Soils

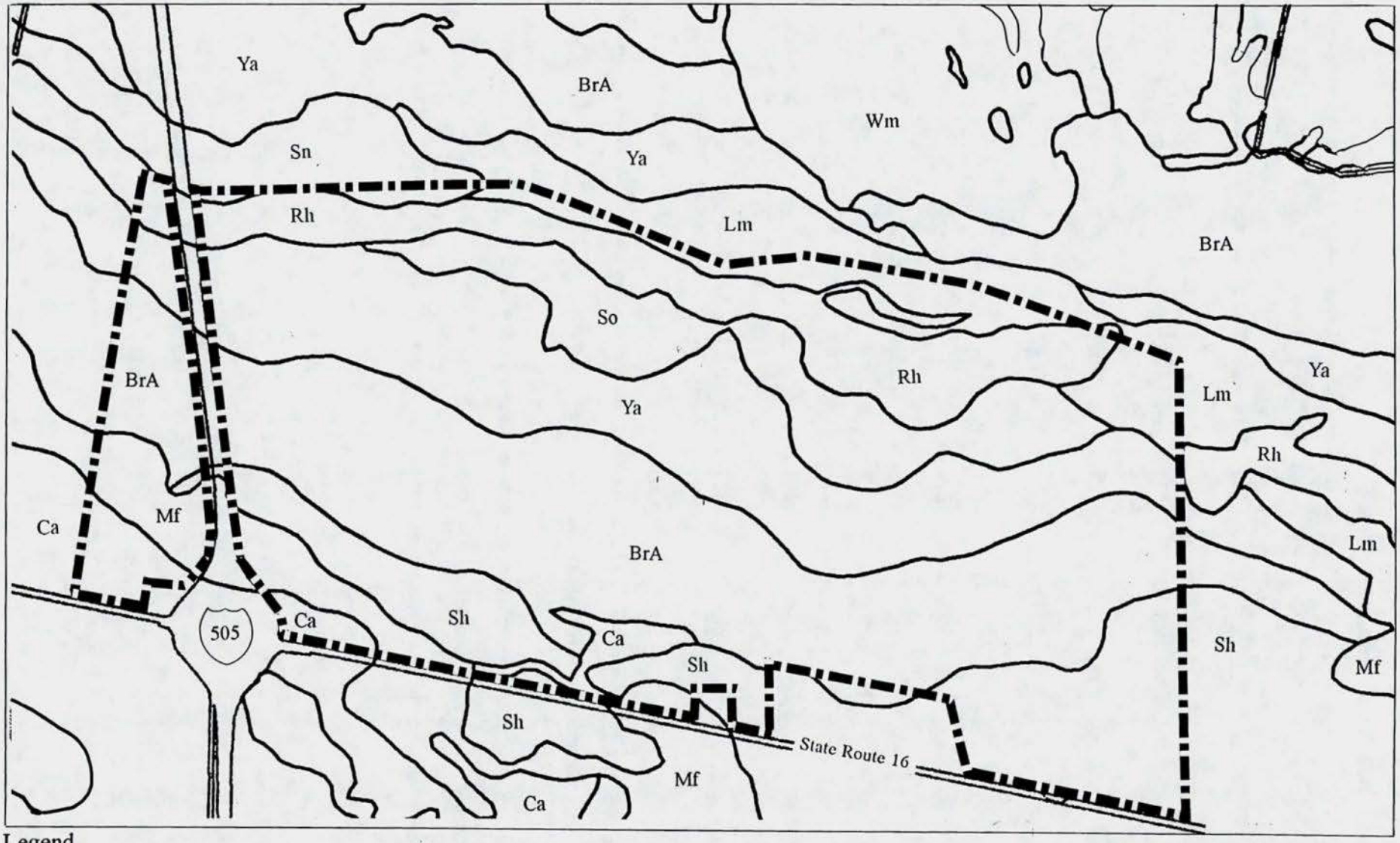
Soil, as described in this section, is the natural formation of mineral and organic material on the surface of the earth. Soils can develop on unconsolidated sediments and weathered bedrock. The development of a soil is typically dependent on five major influences: climate, topography, biologic activity, parent material, and time. Differences in soil types are, therefore, caused by changes in these influences. At the project site and within the site vicinity, different soils have been identified by the U.S. Soil Conservation Service (USDA, 1972) on the basis of characteristics that reflect relatively subtle but important changes in the soil formation factors. In general, the topography is relatively flat, the climate is similar, and biological activity is comparable. The major difference in the soils of the area is the topographic position relative to the active channel of Cache Creek and the associated differences in the consistency and age of the alluvial deposits. Mapping of the soil types, or mapping units, for the site vicinity is presented in Figure 4.3-4. The following discussion focuses on soils identified at the project site. Characteristics of the project site soils and other soil mapping units, shown on Figure 4.3-4, are summarized in Table 4.3-1.

The soils of the northernmost portion of the project site are identified as Riverwash (Rh). These soils represent recent alluvial deposition within and along the active channel of Cache Creek. Riverwash soils are excessively drained sandy, gravelly deposits that are subject to frequent flooding. The coarse-grained nature and topographic position of these young sediments severely limit the usefulness of these soils for agriculture.

Sycamore silt loam (So) is mapped in the central and northern portion of the 35-acre mining area of the project site. These soils have moderate permeability, moderate shrink-swell potential, and slight to negligible erosion hazard for undisturbed areas. The Storie Index for Sycamore silt loam (76) indicates relatively high agricultural productivity. The

SITE SOILS

Figure 4.3-4



Legend

BrA	Brentwood Silty Clay Loam	Pb	Pescadero Clay	So	Sycamore Silt Loam
Ca	Capay Clay	Rh	Riverwash	Ya	Yolo Silt Loam
Lm	Loamy Alluvial Land	Sh	San Ysidro Loam	Wm	Willows Clay
Mf	Marvin Silty Clay Loam	Sn	Soboba Gravelly Sandy Loam		Project Site Boundary

0 2000 Feet

BASELINE

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TABLE 4.3-1: **Soil Types - Physical Properties.**

Map Symbol	Soil Series Name	Shrink/ Swell Potential[1]	Permeability[2] (inches/ hour)	Erosion Hazard[3]	Corrosivity[4]
Most Common Soils:					
BrA	Brentwood silty clay loam	High	0.06-0.20	Slight to none	High
Ca	Capay silty clay	High	0.06-0.20	Slight to none	High
Lm	Loamy alluvial land	N/A	N/A	Slight to none	N/A
Mf	Marvin silty clay loam	Moderate to high	0.06-0.63	Slight to none	High
Rg	Rincon silty clay loam	Moderate	0.2-0.63	Slight to none	Moderate
Rh	Riverwash	N/A	N/A	N/A	N/A
Sh	San Ysidro loam	Moderate to high	<0.06-2.0	Slight to none	Moderate to High
So	Sycamore silt loam	Moderate to high	0.2-2.0	Slight to none	High
Ya	Yolo silt loam	Moderate	0.63-2.0	Slight to none	Low

Source: U.S. Department of Agriculture, Soil Conservation Service, 1972, Soil Survey of Yolo County, California.

1 Shrink-swell potential is the extent to which the soil shrinks as it dries or swells when wet. A high shrink-swell rating indicates a hazard to structures.
2 Permeability is the ability of a soil to transmit air or water.
3 Erosion hazard is the propensity of a soil to erode when tilled or exposed.
4 Corrosivity pertains to the potential for soil-induced chemical action that dissolves or weakens uncoated steel.

Capability Class for these soils (IIw-2) reflects the potential for flooding of this area. However, the classification of the soils does not acknowledge the flood protection provided by the existing levee system (see Section 4.4, Hydrology and Water Quality, of this document).

The central portion of the project site and southern portion of the proposed mining area is mapped as Yolo silt loam (Ya). The high agricultural value of the soils supports the highest Storie Index (100) and Capability Class (I-1) designations. The soils have moderate permeability, low shrink-swell potential, and slight to negligible erosion hazard. The mapped location of the Yolo silt loam generally coincides with young alluvium of Cache Creek (Qa) and is outside the 100-year flood hazard zone.

The surface soil mantling the southern portion of proposed mining area is Brentwood silty clay loam (BrA). The texture of these soils is more clayey than the soils in the northern portion of the site, which are located closer to the creek. The higher clay content is reflected in the moderately slow permeability and high shrink-swell potential of the Brentwood soils. The development of more well defined soil horizons indicate that these soils are also older than the soils to the north. These soils have high natural fertility, deep rooting depth (more than 60 inches), and available water holding capacity. These beneficial characteristics support a relatively high Storie Index (81) and Capability Class I-7 designation for these soils.

The southwestern area of the project site is mapped as San Ysidro loam (Sh) with a narrow band identified as Capay silty clay (Ca). The San Ysidro loam has a well developed clayey B-horizon subsoil that has very slow permeability. The soil has a moderate to high shrink-swell potential. The low natural fertility of the soil is indicated by the Capability Class IVs-3 designation and relatively low Storie Index (50). The Capay clay also has slow permeability and high shrink-swell potential but is considered to have high natural fertility (Capability Class IIs-5).

Aggregate Resources

The Quaternary alluvial deposits of the Cache Creek area are recognized as a major source of aggregate for the production of concrete, asphaltic concrete, and road base materials. Aggregate mining has occurred in and along Cache Creek since the early 1900s. An estimated 80 to 90 million tons of aggregate have been removed from Cache Creek since the beginning of mining (Collins and Dunne, 1990). The majority of aggregate mined from the lower Cache Creek basin are suitable for the production of Portland Concrete Cement (PCC). The specifications for PCC-grade aggregate are more restrictive than specification for other aggregate products, criteria that increase the usefulness and marketability of these deposits.

A mineral land classification of aggregate materials in the Sacramento-Fairfield region conducted by the California Division of Mines and Geology (Dupras, 1988) presents an evaluation of the availability of aggregate resources within the lower Cache Creek watershed. Evaluation of aggregate resources throughout the State is required by the

California Surface Mining and Reclamation Act (SMARA). Provisions of SMARA require that the CDMG determine the boundaries of major aggregate Production-Consumption (P-C) regions, identify aggregate resource areas within the regions, and evaluate the availability and supply of those resources. Assessment of the aggregate resources includes the classification of Mineral Resource Zones (MRZs) on the basis of existing geologic data. Identified zones, where sufficient data indicate the likelihood for occurrence of significant aggregate deposits is high, are categorized as MRZ-2. If land uses within MRZ-2 zones are compatible with aggregate mining, the zones are classified as "sectors." Under the State mineral lands classification system, the available tonnage of aggregate resources within sectors is then estimated.

The entire proposed project is located within an identified MRZ-2 zone (Figure 4.3-5). The portion of the zone located in the area east of I-505 and west of the Weggars Airport is designated as Sector C of the Cache Creek mining area (Dupras, 1988). This designation of the area identifies the aggregate resources as "significant mineral deposits" under the State Mining and Geology Board's *Guidelines for Classification and Designation of Mineral Lands*. The estimated total PCC aggregate resource within Sector C is approximately 194 million tons.

Consistency with Applicable Regulations, Plans, and Policies

SMARA and Related Regulations

The California Surface Mining and Reclamation Act (SMARA) was enacted in 1975 to provide a means of identifying potential mineral resources throughout the State and to provide for reclamation of mined lands. The stated intent (Section 2712) of SMARA is to ensure that:

a) Adverse environmental effects are prevented or minimized and that all mined lands are reclaimed to a usable condition that is readily adaptable for alternative land uses;

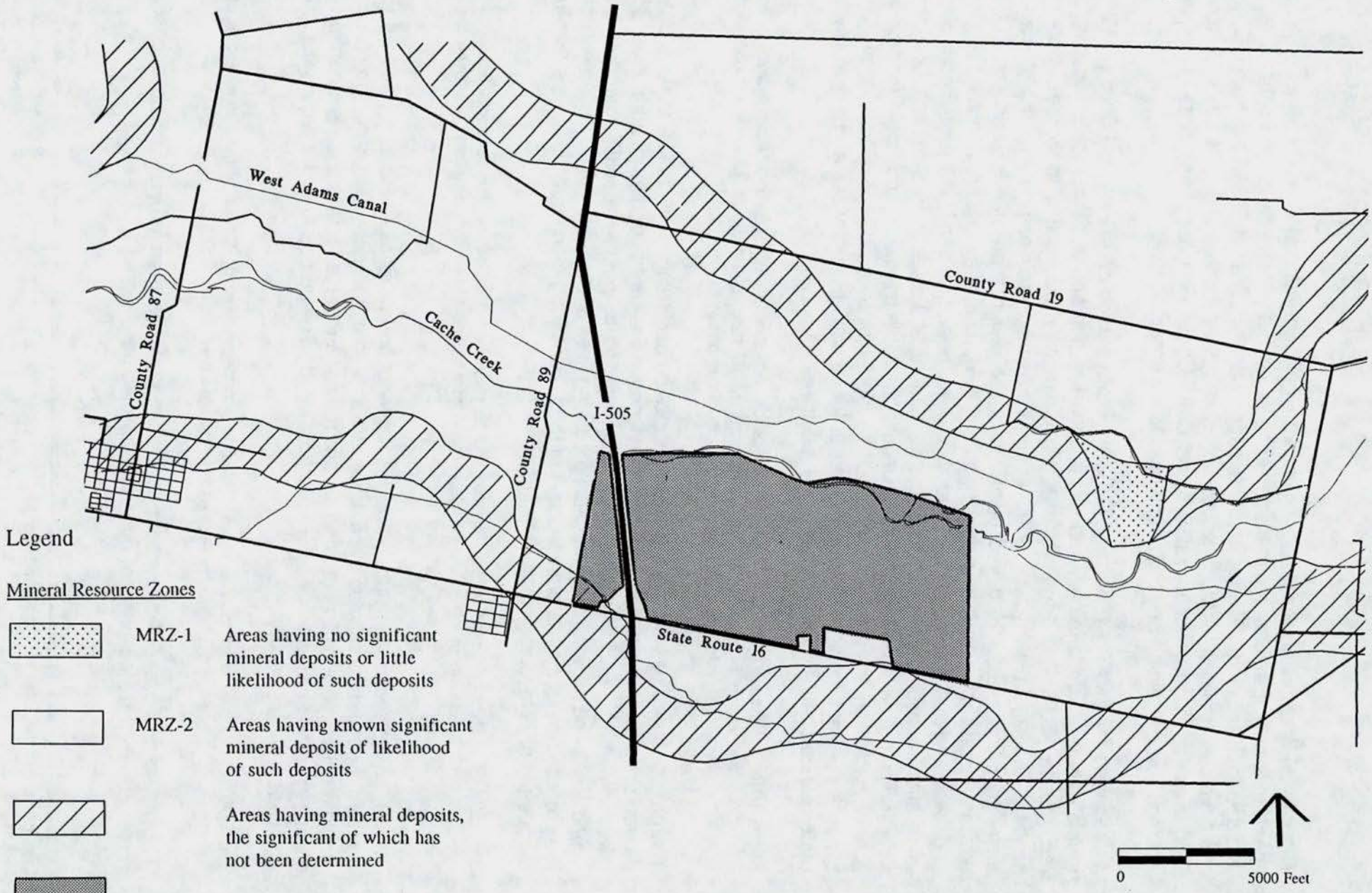
b) The production and conservation of minerals are encouraged, while giving consideration to recreation, watershed, wildlife, range and forage, and aesthetic enjoyment;

c) Residual hazards to the public health and safety are eliminated.

The entire project site, including the proposed mining area, is located within an area classified by California Division of Mines and Geology (CDMG) as a MRZ-2 Mining Resource Zone. The area has also been classified as a mineral resource "sector" by CDMG. The identification of the area as a mineral resource "sector" implies that current land uses are compatible with the extraction of high-quality aggregate materials. The proposed mining is consistent with similar operations in this "sector" and would not threaten the potential to extract minerals in this area, as discussed in SMARA Section 2762.

MINERAL RESOURCE ZONES

Figure 4.3-5



Source: YCCDA, 1995 (base); Dupras, 1988 (data).

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The classification of an area as a source of significant mineral deposits requires lead agencies to establish resource management policies that will emphasize the conservation and development of identified mineral deposits" (Section 2762 of SMARA). Yolo County has developed policies for the protection of aggregate resources in the County's General Plan and has completed the OCMP and CCRMP (and implementing ordinances) to address surface mining and reclamation issues in greater detail.

As required by SMARA (Section 2755), the State Mining and Geology Board (SMGB) regulations for surface mining and reclamation practice and performance standards for reclamation (CCR Title 14, Chapter 8, Subchapter 1) are applicable to the proposed project. The regulations (Secs. 3500, et seq.) present objectives and required elements for reclamation plans. Required elements of the reclamation plan for addressing the environmental setting, public health and safety, steepness of excavated and filled slopes, and backfilling and grading of disturbed areas have been included in the proposed project application (public health and safety issues are further discussed in Section 4.12 of this DEIR). The regulations also include minimum acceptable practices (Sec. 3503) for erosion control, backfilling and grading, and topsoil salvage, maintenance, and redistribution. The proposed project meets or exceeds most of the acceptable practices and the following performance standards set forth in the regulations:

Sec. 3704(b) Where backfilling is required for resource conservation purposes (e.g., agriculture, fish and wildlife habitat, and wildland conservation), fill material shall be backfilled to the standards required for the resource conservation use involved.

The project conforms with this section by proposing backfilling techniques that have been proven to support agricultural use of mined lands in the central portion of the project site (Hutson parcel). Backfilling would be accomplished by pushing backfill materials into mined areas and allowing settlement of processing fines delivered to the mining areas from the processing plant. The past success of these backfilling techniques indicates that the proposed project would comply with this section.

Sec. 3704(c) Piles or dumps of mining waste shall be stockpiled in such a manner as to facilitate phased reclamation. They shall be segregated from topsoil and topsoil substitutes or growth media salvaged for use in reclamation.

The proposed reclamation plan includes segregation of topsoil (A-horizon), subsoil (B-horizon), and undifferentiated overburden into separate stockpiles. Reclamation phasing would result in minimization of handling and movement of these soils and replacement of topsoil in areas from which the soils are excavated. The proposed reclamation generally complies with this section.

Sec. 3704(d) Final reclaimed fill slopes, including permanent piles or dumps of mine waste rock and overburden, shall not exceed 2:1 slope gradient ...

The project proposes 2:1 or gentler final reclaimed slopes, therefore, is in compliance with this section. The stockpiles for overburden would have slopes of 2:1 or less.

Sec. 3704(e) At closure, all fill slopes shall conform with the surrounding topography and approved/or end use.

The reclaimed agricultural fields and habitat areas proposed by the project would be surrounded by 3:1 and 4:1 slopes, separating it from adjacent relatively flat topography. The agricultural fields would have similar topography to the existing reclaimed field and they would conform with the proposed end use.

Sec. 3704(f) Cut slopes shall have a minimum slope factor of safety that is suitable for proposed end use and conform with the surrounding topography and end use.

The project proposes maximum cut slopes of 1.5:1. The slope stability analysis presented with the application have determined that these slopes have suitable factors of safety for static and dynamic (seismic) conditions during mining and reclamation. This analysis, based on site-specific testing of subsurface conditions and conventional slope stability modeling, indicate that the slopes are suitably stable and conform with the requirements of this section. The proposed end uses following reclamation, agriculture and habitat, present a low-risk condition relative to slope stability hazards.

Sec. 3704(g) Permanent placement of piles or dumps of mining waste and overburden shall not occur within wetlands.

The project does not propose placement of any fills in designated wetland areas and is, therefore, in compliance with this section.

Sec. 3711(a) All salvageable topsoil shall be removed from areas to be removed as a separate layer and topsoil and vegetation shall not precede mining activities by more than one year, unless a longer period is approved by the lead agency.

The project proposes removal and segregation of topsoil from all areas of the project site that would be disturbed by mining and reclamation activities. The schedule of activities presented in the reclamation plan does not propose removal of vegetation or topsoil before the year that mining activities are to commence.

Sec. 3711(b) Topsoil resources shall be mapped prior to stripping and the location of stockpiles shall be shown on a map in the reclamation plan.... Topsoil and suitable growth media shall be maintained in separate stockpiles.

The reclamation plan for the proposed project includes a soil assessment that includes mapping of topsoil and subsoils in the proposed mining areas. The proposed project includes segregation of the surface soils (A-horizon), subsoil (B-horizon), and undifferentiated overburden. The locations of the stockpiles for topsoil that is not immediately transported for use in reclamation are identified in the reclamation plan and are shown on Figure 3-3.

Sec. 3711(c) Soil salvage operations and phases of reclamation shall be carried out in accordance with a schedule that: (1) is set forth in the approved reclamation plan; (2) minimizes the area disturbed; and (3) is designed to maximize revegetation success.

The proposed reclamation plan provides a sequence of activities that minimizes stockpiling of soil and movement of soil. The proposed sequence would result in rapid reuse of topsoil and promote the preservation of fertility of those soils and revegetative success.

Sec. 3711(d) Topsoil and suitable growth media shall be used to phase reclamation as soon as can be accommodated by the mining schedule presented in the approved reclamation plan following the mining of an area. Topsoil and suitable growth media that cannot be utilized immediately for reclamation shall be stockpiled in an area where it will not be disturbed until needed for reclamation.

The project proposes a reclamation sequence and schedule that would minimize storage of topsoil. Topsoil removed from the mining area would be either used immediately for reclamation of completed mining areas or segregated and stockpiled. The soil stockpiles would be planted with wheat.

Sec. 3711(e) Topsoil and suitable growth media shall be redistributed in a manner that results in a stable, uniform thickness, consistent with the approved end use, site configuration, and site drainage.

The reclamation plan for the project proposes placement of two feet of topsoil on a very gently sloping reclaimed agricultural field. Drainage would occur as sheetflow to drainage ditches. The design of the field indicates that the soil on the agricultural fields would be stable. Slopes along the perimeter of the lowered agricultural fields would be planted with native and non-native grasses.

Yolo County General Plan

Mining and reclamation activities are addressed in several goals and policies contained in the Yolo County General Plan. The general goals that relate to aggregate mining include:

- Provide for industrial growth in the County to provide employment, services, and tax base while minimizing hazards and nuisances and while conserving resources and agricultural lands;
- Provide for seismic safety;
- Control erosion and practice soil management;
- Conserve natural resources.

The General Plan also includes the following conservation (CON) and safety (S) policies that relate to aggregate mining:

S 1 Yolo County shall regulate, educate, and cooperate to reduce death and injuries or damage to property and to minimize the economic and social dislocation resulting from ... geologic hazards.

The proposed project conforms with Policy S 1 through application for a mining and reclamation plan permit application in compliance with the General Plan and requirements of the long-term, off-channel mining permit application process.

CON 2 Yolo County shall foster conservation of its resources and avoid natural hazards by planning, encouraging, and regulating the development and use of these resources.

Through compliance with requirements for performance of a slope stability analysis and proposed slopes that meet or exceed the requirements of SMARA, the project conforms with the policy of avoiding natural hazards.

CON 3 Plans, projects, and programs shall treat land as a resource rather than as a commodity.

CON 6 Yolo County shall plan, encourage, and regulate to ensure that natural resources are maintained for their long-term ecological values as well as for their more direct and immediate benefits.

The project conforms with Policies CON 3 and CON 6 by proposing reclamation of mining areas to agricultural use and managed habitat development.

CON 9 Yolo County shall ensure the protection, maintenance, and wise use of the State's natural resources, especially scarce resources and those that require special control and management.

CON 10 Yolo County shall plan, encourage, and regulate public and private agencies to prevent wasteful exploitation, destruction and/or neglect of the State's resources.

Review of the proposed project by the County under CEQA provides compliance with Policies CON 9 and 10. In addition, the OCMP and CCRMP provide goals and policies for balancing resource needs in the lower Cache Creek basin. Compliance with the OCMP and CCRMP would make the project consistent with these policies.

CON 34 Yolo County shall adopt a Mining Ordinance to implement these policies as they apply to mineral resources, including sand and gravel.

Required compliance of the project with the OCMP and its implementing ordinances provides regulatory control by the County over aggregate extraction. Compliance with the OCMP would make the project consistent with this policy.

OCMP and Implementing Ordinances

Yolo County is currently completing environmental review of the OCMP and its implementing ordinances. The OCMP contains numerous goals, objectives, actions, and performance standards for design and implementation of off-channel aggregate mining projects. Compliance of the proposed project with the policies of the OCMP is required. The following policies of the OCMP apply to slope stability, erosion and sedimentation, and creek channel stability:

Obj 2.3-6: Structure mining so that the disturbance of the existing landscape is short-lived and temporary, as much as possible, and will be reclaimed so that the property can be used and enjoyed in perpetuity by current and future generations.

The proposed project presents a phasing plan that minimizes the disturbance of land by promoting concurrent mining and reclamation. Under the phasing proposed for the project,

reclamation of mined areas will proceed in a sequential manner following the progression of mining.

PS. 2.5-4: During operations, a series of benches may be excavated in a slope. The maximum vertical height of the benches shall not exceed ten (10) feet, and all banks shall not exceed 1:2 (horizontal to vertical). Slopes shall not exceed 1:1 (horizontal to vertical) below the summer low water level of exposed groundwater in water filled excavations.

The project does not specifically propose construction of benches during mining or reclamation. Therefore, this performance standard does not apply to the first point presented in the standard. The project proposes 1.5:1 slopes for excavation below the groundwater table, a slope less steep than that allowed under this performance standard.

PS. 2.5-16: Except where benches are used, all banks above groundwater level shall be sloped no steeper than 2:1 (horizontal:vertical). Proposed steeper slopes shall be evaluated by a slope stability study, prepared by a qualified engineer. Slopes below the groundwater level shall be no steeper than 1:1 (horizontal:vertical).

The project propose slopes of 2:1 and 3:1 above the groundwater level, and slopes of 1.5:1 below the groundwater level. The proposed slopes are equal to or less steep than the slopes allowed by this performance standard. Therefore, the project is consistent with this standard.

PS. 2.5-17: Upon the completion of operations, grading and revegetation shall minimize erosion and convey surface runoff to natural outlets or interior basins. The condition of the land shall allow sufficient drainage to prevent water pockets or undue erosion. Natural and storm water drainage shall be designed so as to prevent flooding on surrounding properties and County rights-of-way.

Silt basins which will store water during periods of surface runoff shall be equipped with sediment control and removal facilities and protected spillways designed to minimize erosion when such basins have an outlet to lower ground and/or Cache Creek.

Under the proposed reclamation plan for the project, runoff would be directed northward from agricultural row crop areas to tree crop areas. The runoff would be detained in the tree crop areas. The gentle slope of the agricultural fields (0.1 to 0.2 percent) would reduce the potential for erosion sediment transport to very low levels. The minor amounts of transported sediment would settle out in the tree crop areas. The low level of sediment delivery would not require construction of silt basins. The project is, therefore consistent with this standard of the OCMP.

PS. 2.5-18: All final reclaimed slopes shall have a minimum safety factor equal to or greater than the critical gradient as determined by an engineering analysis of the slope stability. Final slopes less than five (5) feet below groundwater shall be designed in accordance with the reclaimed use. Reclaimed wet pit slopes located five (5) feet or more below groundwater level shall not exceed 1:1 (horizontal:vertical), in order to minimize the effects of sedimentation and biological clogging on groundwater flow and to prevent stagnation.

The proposed slopes for the project are consistent with this standard. Although the standard does not specify the minimum factor of safety for these slopes, the slope stability analysis prepared for the project (Kleinfelder, 1995) indicates that the slopes would be stable under seismic shaking with a factor of safety of 1.2 or greater. The engineering analysis indicates that this factor of safety is adequate for the intended reclaimed uses (agriculture and habitat).

PS. 2.5-20: Operational areas and haul roads that are not required for future use of the site shall be ripped, resoiled, and prepared accordingly, to allow for replanting.

The project does not specify that all operational areas and haul roads would be ripped and prepared for planting. However, the reclamation plan indicates that all areas, including the location of haul roads, to be reclaimed to agriculture would be ripped and planted. The conditions of approval for the project should require conformance with this standard.

PS. 2.5-21: The grading of final slopes, the replacement soil, and associated erosion control measures shall take place prior to November 1 in areas where mining has been completed. To minimize erosion, all slopes above the groundwater level shall be seeded with a drought-tolerant mix of native and non-native grass species, as soon as is practical after grading and prior to November 1. The grass seed mix shall be weed-free.

The project does not specifically indicate when, within the calender year, final grading and erosion control measures would be in place. The schedule for yearly completion of erosion control measures must be established before the project would be in compliance with this standard. The impact resulting from lack of compliance with this standard are further addressed in Impact 4.3-2.

PS. 4.5-1: All off-channel surface mining operations shall be provided with a minimum one-hundred (100) year flood protection. Off-channel excavations that extend below the existing streambed elevation of Cache Creek shall be designed to minimize the possibility of levee breaching and/or pit capture, except under controlled circumstances.

The project proposes 100-year flood protection for all mining and reclamation areas and is, therefore, consistent with this standard. The 100-year flood protection would provide protection against overtopping for all events less frequent (and less severe) than the 100-year flood. The engineering analysis for the project (Kleinfelder, 1995) presents an evaluation of pit capture due to failure or erosion of the land separating the mining areas from the active channel of Cache Creek. The appropriateness of this analysis is evaluated in Impact 4.3-4.

PS. 4.5-2: All off-channel excavations shall maintain a minimum two-hundred (200) foot setback from the existing active channel bank of Cache Creek.

Portions of the proposed mining areas are not located 200 feet or more from the existing active channel bank of Cache Creek. The project, therefore, is not in compliance with this standard, as discussed in Impact 4.3-4.

PS. 4.5-3: Proposed off-channel excavations within the streamway influence boundary shall be set back a minimum of seven-hundred (700) from the existing channel bank, unless it is demonstrated in a manner consistent with the Technical Studies that a smaller distance will not adversely affect channel stability. Under no circumstances shall the setback be less than two-hundred (200) feet.

The project presents an engineering evaluation of the stability of the land separating the mining areas from Cache Creek. The analysis concludes that the excavation and fill slopes proposed by the project would be stable under static and pseudostatic conditions. In addition, the engineering evaluation concludes that, with recommended bank protection on the south bank of Cache Creek, the potential for erosion of the bank would be reduced and that the potential for pit capture would be minimal. The potential for erosion or slope failure are discussed in detail in Impact 4.3-2; pit capture is evaluated in Impact 4.3-5.

California Water Code

The excavation of mining areas below the groundwater table will result in the formation of open water bodies within the mining pits. Division 3, Part 1 of the California Water Code presents requirements for permitting of reservoirs impounded by dams and establishes the jurisdiction of the Department of Water Resources Division of Safety of Dams (DSD). These regulations define dams as any artificial barrier which does or may impound water. The alluvial separators that would be created between some of the pits and the Cache Creek channel are not artificial barriers. The separators are not impounding water as flowing water is not being trapped by the separators. Surface water will not be diverted in to the mining areas. Furthermore, the purpose of the separators is to provide a separation between the mined areas and the Cache Creek Channel. The separators (including levees built on them) are required to provide 100-year flood protection. Levees are specifically excluded from the definition of dams (California Water Code Division 3, Part 1, Section 6004(a)). Therefore, the separators and the lakes created in mining areas are not likely to fall under the jurisdiction of DSD. However, the determination of jurisdiction can only be made by DSD.

IMPACTS AND MITIGATION MEASURES

Project-Specific Implementation of Program EIR Mitigations

Possible impacts related to geology and soils were evaluated in the OCMP EIR. These impacts included effects of seismic shaking (OCMP EIR Impact 4.3-1), slope failure and erosion (OCMP EIR Impact 4.3-2), decreased availability of aggregate resources (OCMP EIR Impact 4.3-3), and failure of the earthen separator between proposed mining areas and the Cache Creek channel (OCMP EIR Impact 4.3-4). Each of these impacts is relevant to the proposed project and is evaluated in this section.

The OCMP EIR presented mitigation measures for the impacts related to geology and soils that would reduce these impacts to a less-than-significant level. Under Mitigation Measure 4.3-1a of the OCMP EIR, mining projects would be required to meet performance standards that provide for inspection and repair of seismically-induced damage to reclamation features. This mitigation measure applies to the proposed project and is discussed in Project Impact 4.3-1. Performance standards required by Mitigation Measure

4.3-2a of the OCMP EIR for control of erosion and slope stability are applicable to the proposed project. As discussed in Project Impact 4.3-2, these standards are either met through the project design or required in Project Mitigation Measure 4.3-2a of this section.

The project is not consistent with all performance standards required by the OCMP and Mitigation Measure 4.3-3a of the OCMP EIR for prevention of erosion or overtopping of the channel bank separating the proposed mining areas from Cache Creek. The inconsistency of the proposed project with these performance standards is discussed in Project Impact 4.3-4. The OCMP EIR did not find the impact of decreased availability of aggregate resources to be significant and did not require mitigation for the impact. This impact, as it relates to the proposed project, is discussed in Project Impact 4.3-3 of this EIR.

Standards of Significance

The project would have a significant effect on geology and soils if it would result in:

- Exposure of people or property to geologic hazards, including but not limited to:

  Fault rupture on active faults,
  Seismic shaking (accelerations greater than 0.1g),
  Seismically-induced ground failure, including liquefaction,
  Seismically-induced wave,
  Landslides or mudflows (including excavated slopes),
  Erosion, changes in topography, or unstable soil conditions,
  Subsidence of the land, or
  Expansive soils

- Destruction, covering, or modification of unique geologic or physical features.

- Result in the loss or availability of a known mineral resource that would be of future value to the region.

Project-Specific Analysis

Impact 4.3-1

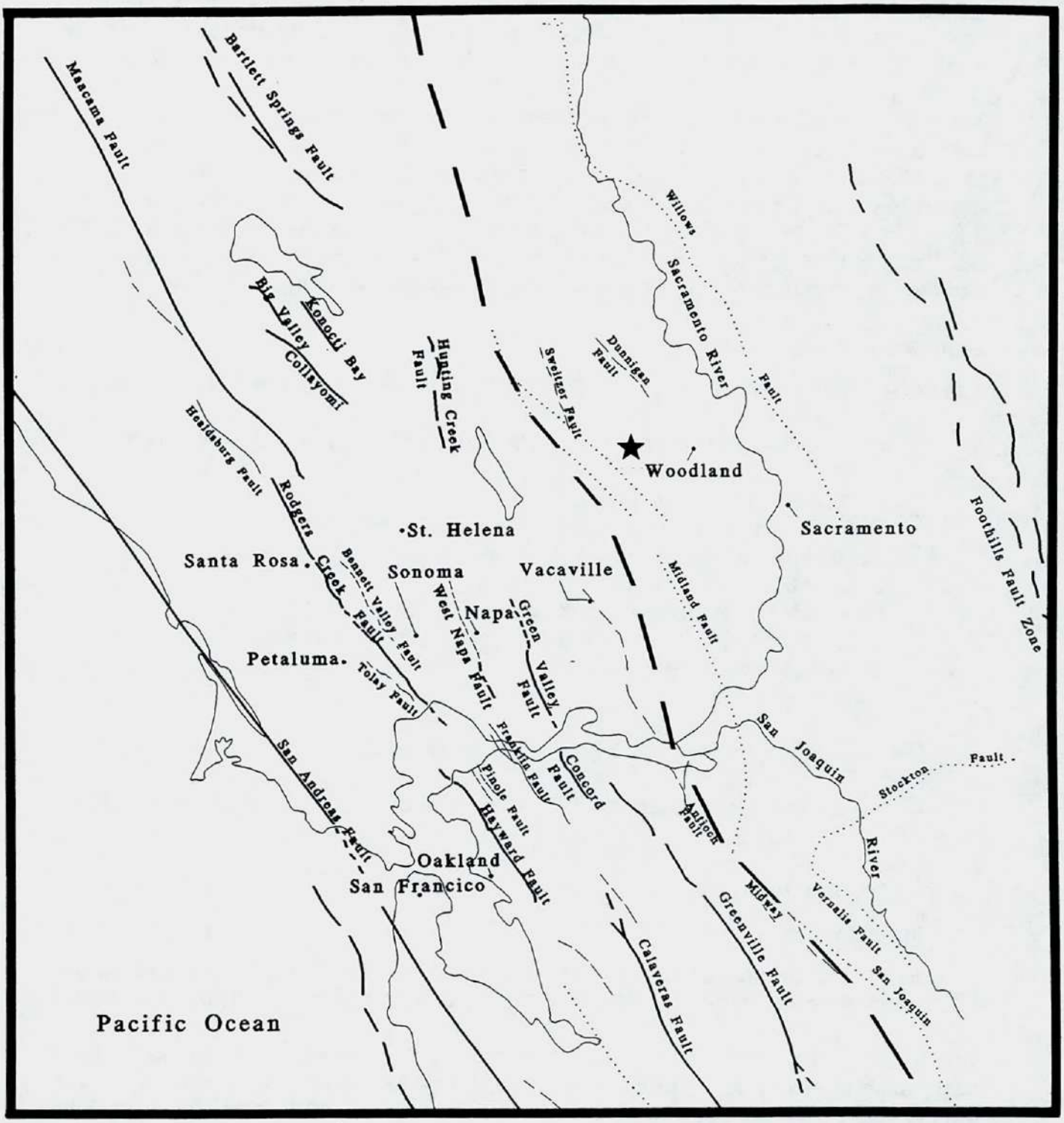
Expected seismic shaking at the project could result in ground failures and damage to reclamation features. This is considered to be a significant impact.

The tectonic setting of western California creates a relatively high potential for the occurrence of moderate to large earthquakes. Large earthquakes can cause damaging ground shaking throughout a large area. The active and potentially active faults possibly affecting the project site are shown on Figure 4.3-6. The characteristics of these faults are summarized in Table 4.3-2.

The Coast Range Sierran Block Boundary Zone (CRSBBZ) is the closest regional seismic source to the project site and would, in the event of an expected earthquake, produce the

REGIONAL FAULT MAP

Figure 4.3-6



Legend

Active Fault - Fault has evidence of surface displacement within the last 11,000 years

Potentially Active Fault - Fault has evidence of surface displacement within the last 2 million years

Coast Range-Sierran Block Boundary

Project Site

0 20 Miles

Source: Jennings, 1994; Mualchin and Jones, 1992.

BASELINE

TABLE 4.3-2: **Major Faults Potentially Affecting the Project.**

Fault	Approximate Distance from Planning Area (miles)	Maximum Credible Earthquake[1,2] (M_L)	Recurrence Interval[3] (years)	Expected Maximum Peak Ground Acceleration during MCE[4] (g)	Expected Ground Shaking Intensity at the Site (MMI)
Bartlett Springs	49	6.75	NA	0.04	VI
Big Valley Fault	50	6.25	2,675	0.04	VI
Konocti Bay Fault Zone	41	6.25	NA	0.05	VI
Maacama Fault Zone	41	7.25	696	0.08	VII
Hunting Creek	22	6.75	NA	0.12	VII
Rodgers Creek-Healdsburg	43	7.0	255	0.07	VII
Hayward Fault	50	7.5	264-556	0.08	VII
West Napa	30	6.5	NA	0.07	VII
Foothills	43	6.5	NA	0.05	VI
Green Valley	25	6.75	424	0.10	VII
Dunnigan Hills	6	6.5[5]	N/A	0.31	VIII
Sweitzer	7	6.5[5]	N/A	0.28	VIII

Notes: NA = Data not available.
MMI = Modified Mercalli Intensity.
g = acceleration of gravity.

1 The maximum credible earthquake (MCE) is the largest earthquake expected under the present geologic framework.
2 Estimated magnitude of MCE from Mualchin and Jones (1992), except where noted.
3 Recurrence interval, or repeat time, is the estimated interval of time between maximum credible earthquakes (Wesnousky, 1986).
4 Expected maximum peak ground accelerations are based on seismic shaking attenuation curves presented in Mualchin and Jones (1992).
5 Estimate by Wakabayashi and Smith (1994). Unruh, et al., 1992.

strongest ground shaking at the site. The CRSBBZ is a complex series of folds and faults formed at the boundary between two distinct structural blocks of the earth's crust, the Coast Range block to the west and the Sierran block to the east. Seven distinct segments of the CRSBBZ at the western edge of the Sacramento Valley have been identified as being capable of generating local magnitude 6 (M 6) or greater earthquakes (Wakabayashi and Smith, 1994). These potential seismic sources include the North and South Dunnigan Hills fault segments identified in the region.

Interpretation of historic records for earthquakes affecting central California indicates that possibly eleven earthquakes of M 6 or greater have been generated along the CRSBBZ (Wakabayashi and Smith, 1994). An evaluation of more recent earthquakes (recorded by seismographs) indicate that the earthquakes of the southwestern Sacramento Valley region are characteristically caused by reverse or thrust faulting. Wong and others (1988) suggest that clusters of seismicity recorded within the western Sacramento Valley near Williams in Colusa County during the period 1980 to 1985 are representative of earthquakes on reverse faults. Their evaluation of recorded earthquakes for the period 1969 to 1985 also indicates clusters of seismicity beneath the Dunnigan Hills and in the area southwest of Madison. An M 4.2 earthquake near Madison in 1978 was also characterized as a reverse fault earthquake.

The maximum expected earthquake for the CRSBBZ is estimated to be an approximate M 7 event (Mualchin and Jones, 1992), which could occur on numerous known, suspected, or unidentified faults within the zone. The average recurrence interval (i.e., period between characteristic earthquakes) within the CRSBBZ is estimated to be 360 to 440 years. The North and South Dunnigan Hills fault segments are expected to generate M 6.1 and M 5.8 earthquakes. The estimated maximum credible earthquake (MCE) for the potentially active Sweitzer Fault is M 6.5 (Unruh, et al., 1992).

The expected maximum ground shaking (peak ground acceleration) occurring at a particular location during an earthquake is controlled by a complex set of conditions. However, the major controls on ground shaking are the magnitude of the earthquake and the distance from the rupture surface of the quake and the project site. In general, the intensity of ground shaking is reduced (attenuated) with distance. Based on magnitude-distance attenuation relationships (Mualchin and Jones) and the estimated maximum expected earthquakes on the regional faults, the highest peak ground acceleration expected at the project site (0.31g) would occur during a 6.5 earthquake on the Dunnigan Hills fault, located 6 miles east of the project site. The peak ground accelerations would cause strong ground shaking at the project site. This estimate of expected ground shaking is based on a "deterministic" method that does not factor the probability of the expected ground shaking.

Strong ground shaking at the project site could result in ground failures that would not be expected during nonseismic (static) conditions. The stability of slopes created at the site by the proposed project under static and pseudostatic (seismic) conditions were evaluated in the geotechnical report prepared for the project (Kleinfelder, 1995). The analysis assumed a peak ground acceleration of 0.1g. This estimate of ground shaking was

obtained from published maps (FEMA, 1992) developed on probabilistic determination of expected regional ground shaking. The regional mapping is based on historic seismicity and represents the level of ground shaking that has a ten percent chance of being exceeded in the next 50 years. Although this probabilistic approach results in a smaller expected peak ground acceleration than estimates using a deterministic analysis, the probabilistic approach is consistent with the requirements of the Uniform Building Code for the design of structures. Therefore, the use of the probabilistic estimate of ground shaking is considered in this DEIR as appropriate for design of slopes that present low risks to public safety.

The results of the pseudostatic slope stability analysis indicate that all project slopes would be stable under expected seismic shaking. The lowest factor of safety calculated for the slopes was 1.2. Factors of safety, under seismic analysis, above 1.0 are typically considered acceptable for slopes, such as those at the project site, that pose low risks to public safety.

Expected ground shaking at the project site would be high enough to initiate liquefaction of sediments susceptible to this process. Liquefaction occurs when seismic shaking causes pore water pressures in saturated sediments to increase beyond a critical threshold, resulting in the sudden loss of soil strength. Sediments that are most susceptible to liquefaction are loose, saturated, granular sediments. Finer-grained, poorly-graded (fine sand or silty sand) are generally more susceptible to liquefaction than coarse-grained, well-graded materials (sandy gravel or gravelly sand). Subsurface data from borings made at the site indicate that sandy gravel, gravelly sands, and clay are the dominant types of sediments beneath the site. These sediments would have a low potential for liquefaction. Although, sand and silty sand deposits were encountered in the boring, standard penetration testing conducted during sampling indicates that the density of these sediments is sufficient to withstand liquefaction. Although loose liquefiable sediments may be present in the subsurface at the site, no laterally extensive deposits of this type of sediment were identified at the site. These data and the expected level of ground shaking at the site indicate that the potential for liquefaction and associated ground failure would be low for the alluvial deposits at the project site.

However, the project proposes to partially backfill mining areas with the processing fines produced by the washing of aggregate at the processing plants. These materials, when loose and saturated, have a high potential for liquefaction. The method of placement of these sediments (natural settlement out of processing water returned to the mining pits) beneath the groundwater table indicates that these sediments would be loose and saturated during and after reclamation. Overburden materials placed as fill in pits below the groundwater level may also be susceptible to liquefaction. Liquefaction of these materials could result in settlement of reclaimed surfaces and possible loss of reclaimed areas due to slumping into reclaimed open water bodies.

Mitigation Measure 4.3-1a

Implement performance standards presented in Mitigation Measure 4.3-1a of the OCMP Program EIR.

Implementation of this mitigation measure would reduce impacts of seismically-induced damage to mining or reclamation areas to a less-than-significant level.

Impact 4.3-2

Potential failure and/or erosion of slopes could result in unstable slope conditions or adverse sedimentation of open water bodies. This is considered to be a significant impact.

The proposed project would result in the formation of moderately steep slopes around the perimeter of mining and reclamation areas. Under existing conditions, the topography of the project site is flat to gently sloping and the potential for erosion is generally low to negligible. When slopes are constructed in the soils and underlying sediments at the site, the potential for erosion would be increased. The proposed slopes for the project that would be subject to erosion (i.e., above the groundwater level) would be constructed at gradients of 2:1 (horizontal to vertical) or less steep. If properly managed, these slopes would not present significant erosion hazards. Proper management would include uniform grading of the slopes, revegetation of the slopes as soon as possible before the initiation of the rainy season each year, and prevention of runoff flow onto the slopes. The project proposes grading of the project site to prevent runoff onto mining and reclamation areas. Although the project proposes that erosion control and soil replacement for completed mining areas would be completed by the first of November each year, the reclamation plan does not address erosion control for active mining areas. The timing of proposed revegetation of the slopes with a mixture of native and non-native grasses is not specified. Under the plan, mining slopes could be left unreclaimed over several rainy seasons and significant erosion could occur.

The stability of the proposed mining slope was evaluated in a geotechnical report prepared for the proposed project (Kleinfelder, 1995). The results of the slope stability analysis indicate that the proposed slopes below the groundwater level (1.5:1) and above the groundwater level (2:1 or less steep) would be stable under static and pseudostatic conditions. Large-scale slope failures would not be expected. However, minor soil slips caused by erosion (particularly along the perimeter of lakes within mining areas) could be expected. These types of slope failures would not produce significant sediment sources.

Mitigation Measure 4.3-2a

Compliance with Mitigation Measure 4.3-2a of the OCMP Program EIR.

Implementation of this mitigation measure would reduce the potential impacts of slope instability, erosion, and sedimentation to a less-than-significant level.

Impact 4.3-3

Aggregate extraction proposed by the project would result in the decreased availability of aggregate resources. This is considered to be a less-than-significant impact.

Implementation of the proposed project would result in the extraction of 33.6 million tons of aggregate over a 30-year period (1.1 million tons per year). This extraction would result in the depletion of currently available Portland Cement Concrete grade aggregate resources available within the lower Cache Creek basin. The project is located within the OCMP planning boundary. PCC-grade aggregate resources within the MRZ-2 areas located within the OCMP planning area were estimated in 1982 by CDMG to be 838 million tons (Dupras, 1988). An additional 111 million tons of aggregate were estimated to be located under the Cache Creek channel at elevations below the current in-channel mining depth limit imposed by Yolo County that were not included in the above total since their extraction is prohibited. Based on aggregate production records, an additional 31 million tons of aggregate have been excavated from 1982 to 1995. Therefore, approximately 807 million tons of PCC-grade aggregate are currently available within this area. The aggregate extraction proposed by the project would represent approximately 4.2 percent of the available resource.

Aggregate resources are necessary for construction materials for buildings, bridges, canals, and pavements. The demand for aggregate within the Sacramento-Fairfield Production-Consumption Region (S-FP-CR) that includes Yolo County for the period 1983 to 2033 was estimated by CDMG to be 888.6 million tons (17.7 million tons per year) to meet all aggregate needs. Approximately 40 percent (355.2 million tons) of the total aggregate demand was historically used as PCC-grade aggregate. The OCMP estimates that the production of aggregate within the OCMP planning area over the period 1997 to 2047 would be 289 million tons if the area were to continue to meet its existing 26 percent share of the regional demand. Approximately 27.9 million tons of the extracted resource from the proposed project would be available for sale following processing. The proposed project would, therefore, provide approximately 9.6 percent of the aggregate produced within the OCMP area over the next 30 years.

Although the precise age of the sand and gravel sediments within the area have not been determined, these sediments have been deposited within relatively recent geologic time. The Cache Creek watershed is clearly capable of generating high sediment production. Sediment supply to the lower Cache Creek Basin has been reduced by the construction of dams and other in-stream structures that tend to trap sediment upstream of the proposed project site. The current sand and gravel sediment yield along the creek within the OCMP planning area has been estimated to be 210,000 tons per year (NHC, 1995). This estimate represents only the amount of sediment that enters this area of the creek, not necessarily the amount of sediment deposited annually. However, whether deposited within the OCMP area or in upstream or downstream areas, the sediment production within Cache Creek provides potential future sand and gravel resources.

The volume of available aggregate resources and the potential for future sediment supplies within the Cache Creek watershed indicate that the decreased availability of aggregate resources related to implementation of the proposed project would be less-than-significant.

Mitigation Measure 4.3-3a

None required.

Impact 4.3-4

Erosion, failure, or overtopping of the channel bank separating the proposed mining areas from the active channel of Cache Creek could result in flooding of the pits and potential permanent inundation of the mining or reclaimed lower agricultural fields. This is considered to be a significant impact.

The modified topography associated with off-channel mining in areas adjacent to active creek channels can be affected by the creek processes, including flooding and erosion. Overbank flow during flooding can result in inundation of mining areas or reclaimed lands. The mined areas would fill to the elevation of the flood waters, resulting in localized, deeper flooding. Post-reclamation uses such as agriculture or habitat could be adversely affected by such flooding. Lowered reclamation areas, whether lakes or filled areas, would be surrounded by slopes that would cause increased flow velocity of flood waters. Under these conditions, significant erosion of the slopes can occur, potentially damaging reclamation features.

The erosion of slopes surrounding mined lands during flooding could potentially result in breaching of land separating the mined areas (separator) from the creek channel. If the separating land is eroded to an elevation similar to that of the creek bed, the channel flow in the creek could be diverted into the mined areas. The breaching of the separator could also result from slope failure or channel flow erosion of the separating land.

The creek-side slopes of the land separating the creek from the proposed mining areas or levees constructed on the separators could be oversteepened by erosion causing slope failure. Failed slope materials (landslide deposits) could be readily transported by the stream. A continued cycle of erosion and slope failure could eventually lead to total removal of the separator. In this situation, the creek could permanently "capture" the mined areas. This condition, referred to here as "pit capture," could cause significant channel bed destabilization. The erosion of the separators would be accelerated during an overtopping event.

If the creek channel were to migrate into and remain located in the captured pit, a localized overly steepened bed gradient, or nickpoint, would develop. Adjustment of the stream to this condition would result in erosion that would cause the nickpoint to migrate upgradient until a stabilized channel form developed. The migration of the nickpoint could cause erosion of important in-channel structures, such as bridges or irrigation diversion structures. Adjustments of the stream could also result in channel migration that could cause unexpected lateral erosion. Bank erosion could potentially result in loss of

agricultural land or damage to creekside structures such as bridge abutments, habitat restoration projects, or, under some conditions, buildings, roadways, or irrigation canals.

The velocity and erosive power of the channel flow is controlled by the slope of the water surface. When confined to the channel, the slope of the channel flow is controlled by the slope of the channel bed and the geometry of the channel. At a given discharge, measured as flow volume per unit of time (e.g., cubic feet per second), a narrow, steep channel will create a higher flow velocity relative to a wide, gently sloping channel. As the channel flow, or a portion of the channel flow, is redirected into a lowered mined area, the velocity of the flow would be reduced as it spreads across and fills the flooded off-channel area. Once the flooded area is filled, the flood waters could flow to areas that are lower than the flood elevation. The flood water could be concentrated in existing stream channels or irrigation canals in the off-channel areas that have beds lower than the flood elevation. Under extreme conditions, the redirection of channel flow into mined areas could result in a permanent change in the position of the channel, or "stream capture." The potential for "stream capture" to be caused or initiated by the excavation of off-channel mining pits is remote due to the elevation of the terrace surfaces above the existing channel.

The instability of the channel of Cache Creek in the area of the project site was described in the Setting discussion of this DEIR. Significant bank erosion has occurred along the south bank of Cache Creek within the Guesiosi subreach. Expected average velocities for flood flow events exceed those required to mobilize the alluvial sediments forming the bed and banks of the channel (in the range of four to seven cubic feet per second). The flow velocities would be variable within the channel. Although velocities at the margins (i.e., banks) would generally be slower than those in the central portion of the flow, the average flow velocities suggest that erosion of the bank could occur. The potential for erosion of the bank would be greater at the outside of meander bends. This condition is expected at the western end of the project site. This area has been significantly eroded in the recent past.

The mining plan for the proposed project does not provide a minimum 200-foot setback for portions of the mining areas from the existing creek bank as required by Performance Standard 4.5-3. Under this standard the setback area for the project cannot include the previously mined areas or portions of the former active channel which are separated from the existing active channel by the haul road levee. Among other things, the purpose of the setback is to provide an adequate buffer for the off-channel mining areas against expected lateral erosion in areas that are not considered to have significant channel stability problems. The buffer also provides access for bank maintenance and repairs if necessary. The existing bank is observable at the site as a distinct break in slope at the northern margin of the alluvial terrace. In some areas, the bank is separated from the active stream channel by a levee on which the existing haul road is constructed.

The areas of the proposed mining and reclamation plans which are not consistent with Performance Standard 4.5-3 of the OCMP, as modified by OCMP Mitigation Measure 4.3-3a, are summarized as follows:

Mining Area I

All reclamation areas of Mining Area I that are within the Hutson parcel are within the CCRMP boundary as presented in the OCMP (Figure 4.3-7a). However, the hydraulic analysis prepared for the proposed project indicates that this area is outside the 100-year flood hazard zone. This discrepancy was recognized in the CCRMP EIR and modification of the CCRMP boundary in this area was recommended (Mitigation Measure 4.4-1a; p. 4.4-29). Following adoption of the new boundary position, the reclamation proposed for the Hutson parcel would be consistent with the policies of the OCMP.

The northern portion of the mining pit within the Farnham West parcel is less than 200 feet south of the current CCRMP boundary. However, the northern margin of the pit is more than 200 feet south of the channel bank and the 100-year flood hazard zone (as determined by site-specific hydraulic analysis). Therefore, this area is consistent with the 200-feet setback requirement.

Mining Area II

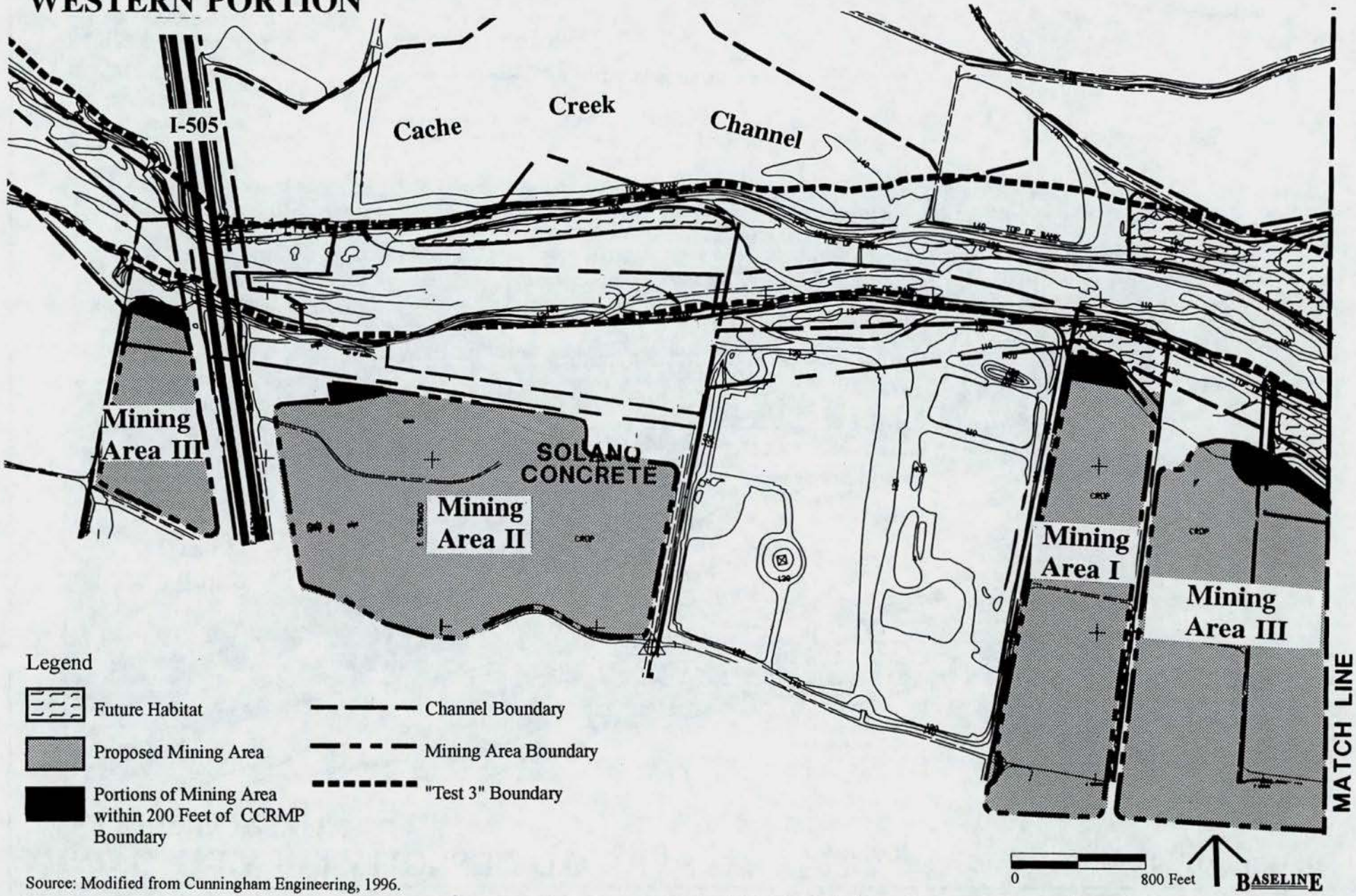
A small area of the northwestern portion of Mining Area II (Figure 4.3-7a) is located less than 200 feet south of the stream bank, the 100-year flood hazard boundary, the Test 3 boundary, and the CCRMP channel boundary. According to the applicant (Cunningham Engineering, 1996), the mining boundary in this area will be moved southward to a position 200 feet or more from the existing stream bank and the CCRMP boundary.

Mining Area III

Within Mining Area III, two areas of the northern portion of the mining area are not consistent with the requirements of OCMP EIR Mitigation Measure 4.3-3a. The north central portion of the proposed mining area is located 200 feet or more from the mapped position of the CCRMP boundary (Figures 4.3-7a and 4.3-7b). In this area, the CCRMP boundary is mapped along the haul road at the northern boundary of the project site. The Test 3 boundary is also mapped in the same general position. However, a former in-channel mining pit (approximately five acres in area) is located south of the road and within the proposed setback. The haul road is constructed on a levee separating the former mining pit from the active channel of Cache Creek. Under current conditions, this mining pit is subject to inundation in a 100-year flooding event. At the eastern end of the former mining pit, the top of the levee is lower than the 100-year flood elevation. Site-specific hydraulic analysis indicates that the 100-year flood hazard boundary is located at the southern margin of the former mining pit. The application for the project indicates that, prior to mining, the levee would be heightened to provide 100-year flood protection. However, Mitigation Measure 4.3-3a of the OCMP EIR specifies that the setback area separating mining areas from the active channel cannot include formerly mined areas protected by levees. Therefore, this area is inconsistent with the setback requirements.

MINING AREA RELATIONSHIP TO CHANNEL SETBACK
WESTERN PORTION

Figure 4.3-7a



Source: Modified from Cunningham Engineering, 1996.

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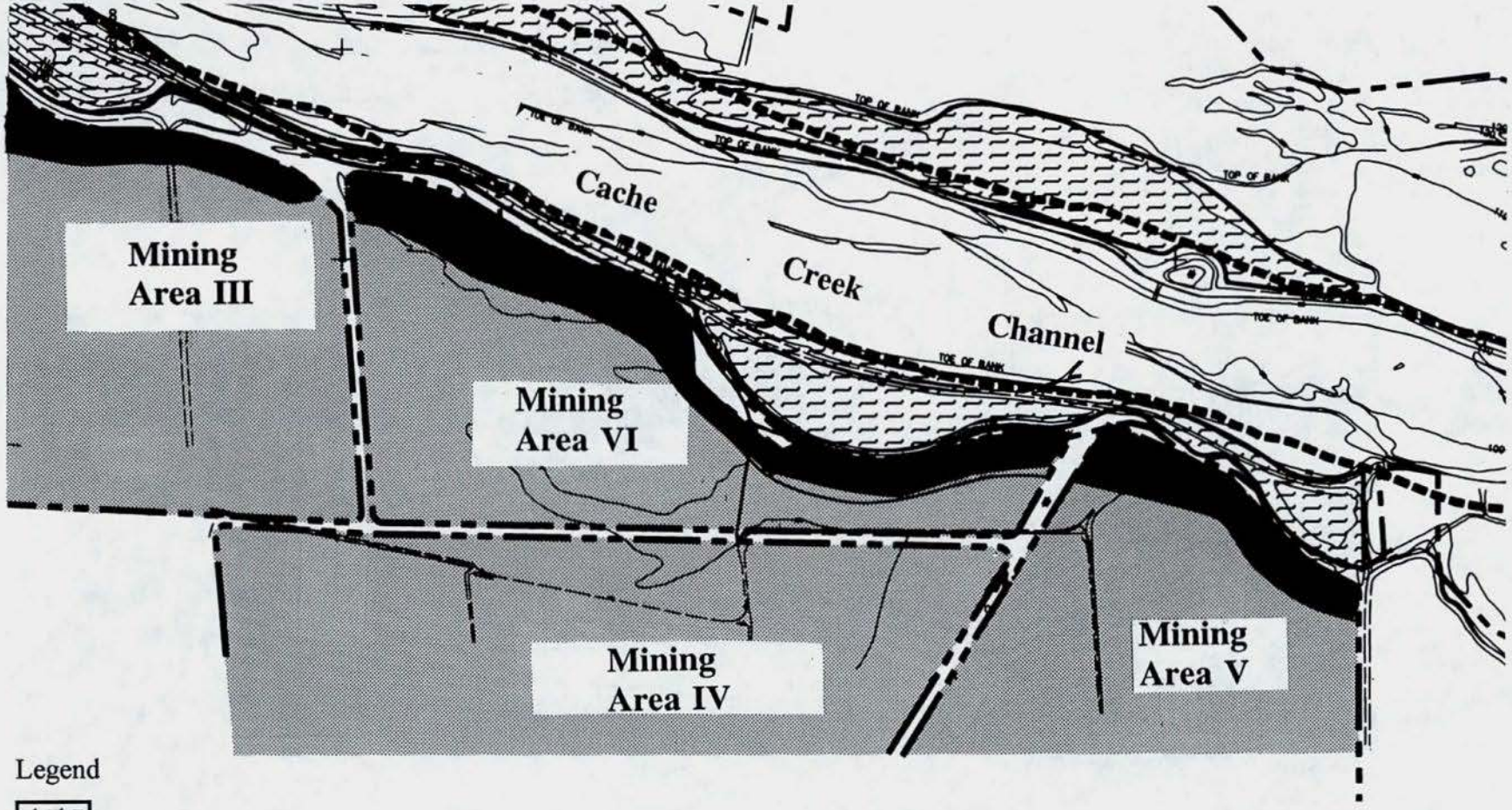
MINING AREA RELATIONSHIP TO CHANNEL SETBACK EASTERN PORTION

Figure 4.3-7b



Legend

- Future Habitat
- Proposed Mining Area
- Portions of Mining Area within 200 Feet of CCRMP Boundary
- Channel Boundary
- Mining Area Boundary
- "Test 3" Boundary

0 800 Feet

BASELINE

Following discussions between the County and the applicant regarding the setback inconsistency within this area of the project site, the applicant has proposed that the improvements (raising) of the levee not be implemented. Under these conditions, the former mining pit would be inundated in high flow events, providing the opportunity for continued sedimentation of the mining area and further establishment of riparian vegetation. This revised plan would be consistent with the provisions of the CCRMP. The mining area would not be subject to inundation during a 100-year flooding event. Erosion of the land separating the proposed mining area and the former mining pit would be minimized by the protection provided by the existing levee, expected low flow velocities within the inundated former mining pit, and the presence of riparian vegetation within the former mining area and on surrounding slopes. However, uncontrolled flooding of the former pit could result in erosion of and damage to the levee and riparian vegetation on the levee and within the former mining pit. Under existing conditions, the vertical separation between the bottom of the former mining area and the top of the southern portion of the levee (approximately 15 feet) would present the potential for high flow velocities for water entering the mining area. Approval by YCCDA of an exception from Performance Standard 4.3-8 would be required.

The northern margins of portions of Mining Area III within the Snyder West parcel are located less than 200 feet from the CCRMP boundary (Figure 4.3-7a). In this area, the CCRMP is generally consistent with the position of the channel bank. Within this area, the applicant has proposed to move the mining boundary southward to a position 200 feet south of the CCRMP boundary.

Mining Area IV

Mining Area IV is located south of Mining Areas III and VI and no conflicts with setback requirements occur in this area.

Mining Area V

Along the northern margin of Mining Area V, the mining boundary is less than 200 feet from the existing channel bank and the 100-year flood hazard boundary. In northwestern portion of this area, the mining area is located within the CCRMP boundary. The position of the CCRMP should be adjusted in this area to correspond with the existing channel bank, located at the northern edge of the haul road along Cache Creek. The channel bank and the 100-year flood hazard boundary are generally coincident in this area. The applicant has agreed to modify the proposed mining plan and move the northern boundary of the mining area to a position 200 feet from the revised position of the CCRMP boundary.

The northeastern corner of the Snyder East parcel included a portion of a former mining area. Hydraulic modeling (Cunningham, 1996) indicates that this former mining pit, separated from the active channel by a levee, would be inundated during a 100-year flood. This topographic depression currently supports riparian vegetation. The applicant proposes to define the datum for establishing the 200-foot setback as

the northern side of the levee. The applicant also proposes, following discussions with the County, to allow continued inundation of the former mining area during low frequency flooding events. Similar to the conditions described for former mining areas within Mining Areas III and VI, the proposed inundation would support sedimentation of the topographic depressions and continued establishment of riparian vegetation. The proposed mining areas would not be subject to 100-year flooding and the potential for erosion of the land separating the proposed and former mining areas would be minimal. Uncontrolled flooding of the former mining area would likely result in significant erosion and damage to the levee and riparian vegetation. The project would require approval of an exception to Performance Standard 4.5-3 of the OCMP for approximately 750 feet of creek frontage, covering an area of approximately three acres. Within this area, the mining area would be set back approximately 40 feet instead of the required 200 feet.

Mining Area VI

Within Mining Area VI, the northern boundary of the proposed mining area is located within 200 feet of the channel bank and the 100-year flood hazard boundary (Figure 4.3-7b). In the northwestern portion of Mining Area VI, the 100-year flood hazard boundary is coincident with the channel bank formed north of the haul road at the northern boundary of the project site. The CCRMP boundary is not consistent with this position. The applicant proposes (Cunningham, 1996) that the 100-year flood hazard boundary be used as the datum for the 200-foot setback and that the CCRMP boundary be modified to coincide with the 100-year flood boundary. The mining plan would be revised to provide a minimum setback of 200 feet from the 100-year flood hazard boundary.

In the northeastern portion of Mining Area VI, the proposed mining area would be 40 feet south of the southern margin of a former mining area. At its northern margin, the former mining area is separated from the active channel of Cache Creek by a levee. The southern portion of the levee is not sufficiently high to provide 100-year flood protection for the former mining pit. Although the former mining area would be inundated during a 100-year flood under current conditions, the area of the proposed mining would not be flooded. The 100-year flood hazard boundary and the CCRMP boundary are positioned at the southern margin of the former mining area. Therefore, as presented in the application for this project, the proposed mining would be inconsistent with the 200-foot setback requirement of Performance Standard 4.5-3 of the OCMP and Mitigation Measure 4.3-3a of the OCMP EIR.

Following discussions with the County, the applicant has proposed (Cunningham, 1996) to allow continued inundation of the former mining area during low frequency flooding events. Similar to the conditions described for former mining areas within Mining Areas III and V, the proposed inundation would support sedimentation of the topographic depressions and continued establishment of riparian vegetation. The proposed mining areas would not be subject to 100-year flooding and the potential for erosion of the land separating the proposed and former mining areas would be

minimal. Similar to the proposed low frequency flooding of former mining areas discussed above, significant erosion of the levee and riparian areas would be expected if the flood flow velocities were not controlled. The project would require approval of an exception to Performance Standard 4.5-3 of the OCMP for approximately 2,000 feet of creek frontage, covering approximately seven acres which would have a setback of 40 feet instead of the required 200 feet.

Mining Area VII

The northern margin of Mining Area VII (Figure 4.3-7a) is located less than 200 feet south of the CCRMP boundary, the 100-year flood hazard boundary, and the Test 3 Run boundary. Mining within 200 feet of these boundaries would not be allowed without an exception from Performance Standard 4.5-3. The applicant has indicated (Cunningham Engineering, 1996) that the mining boundary in this area will be moved southward to a position 200 feet or more from the existing stream bank and the CCRMP boundary.

The applicant proposes measures to reduce the potential for erosion of the south bank of Cache Creek at the project site. Bare sections of the bank would be planted with vegetation to reduce the exposure of the bank to erosion. The project applicant also proposes placement of riprap or other bank armor for the south bank of the creek extending 1,500 feet downstream of the I-505 bridge. Approximately 70 feet of southward erosion of the toe of the bank was recorded in this area from 1981 to 1993. This erosion resulted in oversteepening of the bank, increasing the potential for bank failure. The riprap would extend up the bank from the stream bed to the elevation of the 100-year flood flow. The placement of riprap in this area would reduce the potential for bank erosion. However, biotechnical bank protection solutions could provide adequate protection and would be more consistent with the policies of the CCRMP to promote riparian vegetation on the creek banks.

In the north of Mining Area VII, there is significant potential for severe erosion. The instability of the channel in this area extends westward of the site boundary and has caused serious erosion of both the north and south banks of the creek. The project does not propose bank protection in this area. Bank protection at the project site alone would not necessarily fully mitigate the potential for damage to the site by bank erosion. Severe erosion potential exists upstream of the project boundary. Southward erosion of the bank on property west of the site could significantly compromise bank stabilization measures to protect Mining Area VII.

Mitigation Measure 4.3-4a

The County shall revise the CCRMP channel boundary in the vicinity of the site to reflect the Cunningham Engineering (1995) 100-year floodplain boundary. The hydraulic model used to determine the boundary assumes replacement of the Capay bridge with a three-span bridge. If this assumption changes, additional HEC-2 modeling will be required to establish the revised CCRMP boundary. If this boundary changes significantly upon modeling, additional review may be required.

Mitigation Measure 4.3-4b

Portions of the northern margin of the proposed Mining Areas II, III, V, VI, and VII shall be redesigned to provide a minimum 200-foot setback from the existing Cache Creek stream bank, in conformance with the requirements of Performance Standard 4.5-3 and all other pertinent performance standards in the OCMP. The revised project design shall be submitted prior to commencement of mining within Phase 3 and be consistent with the recommended slope design presented in the current application. If the redesigned project results in changes in any other mining area boundaries, additional CEQA review may be required.

Mitigation Measure 4.3-4c

Obtain an exception to Performance Standard 4.5-3 for the northeastern portions of Mining Areas III, V, and VI. Such approval shall require submittal and approval of engineering design for controlled flow inlet channels for each of the former mining areas. The design of the inlets shall be prepared by an experienced, licensed engineer. Inlet channels shall be designed and constructed to concentrate and control flow into the former mining areas. The design shall provide channel materials which will not erode during inundation events. Design shall be approved and work completed prior to commencement of mining within affected phases.

Alternatively, the portions of the levee in these areas could be raised to provide 100-year flood protection for these areas with a minimum of three feet of freeboard. This mitigation measure would be consistent with the proposed project and the requirements of the OCMP. Any levee work performed shall be completed prior to commencement of mining within the affected phases.

Mitigation Measure 4.3-4d

Implement Mitigation Measure 4.3-3a of the OCMP EIR. Specifically, the applicant shall conduct annual monitoring and maintenance of the channel banks and levees at the northern margin of the project site during the mining and reclamation period. The monitoring shall be conducted by a licensed engineer and shall minimally include visual inspection of channel banks and levees for evidence of erosion or slope instability. Evidence of erosion shall include, but not be limited to, the existence of oversteepened banks and loss of vegetation. Evidence of slope instability shall include formation tension cracks, arcuate scarps, or unexcavated benches.

The annual report of channel bank and levee conditions shall be submitted to the Yolo County Community Development Agency with the Annual Mining and Reclamation Report. The report shall include the identification of the location (on scaled maps and photographs), estimated area and volume of eroded materials or slope failure, a determine of the cause(s) of erosion or slope failure, and recommendations for remedial action. Recommended remedial actions shall be implemented prior to November 1.

Mitigation Measure 4.3-4e

Following reclamation, the YCCDA shall determine, on the basis of inspection of the performance of the channel banks and levees during the mining and reclamation period, the need for continued channel bank and levee monitoring and reporting. A restriction shall be place on the deed for the underlying property requiring continued inspection and maintenance of channel banks and levees, and allowing access by the County for same.

Mitigation Measure 4.3-4f

The proposed project design shall be revised to provide a biotechnical bank protection design to replace the proposed placement of rip rap on that section of the south bank of Cache Creek extending 1,500 feet downstream from the I-505 bridge. The proposed biotechnical bank protection shall be submitted to the Yolo County Community Development Agency for approval prior to the commencement of mining in Mining Area VII.

Mitigation Measure 4.3-4g

Mining within Mining Area VII shall not be conducted within 700 feet of the existing stream bank until stream bank stabilization is provided for that portion of the south bank of Cache Creek upstream from the I-505 bridge. The bank protection shall be performed in accordance with the guidelines presented in the Cache Creek Resource Management Plan and Cache Creek Improvements Program. The proposed biotechnical bank protection shall be submitted to the Yolo County Community Development Agency for approval prior to the commencement of mining in Mining Area VII.

Mitigation Measure 4.3-4h

Recommendations of the geotechnical report (Kleinfelder, 1995) for stabilization of the south bank of Cache Creek shall be implemented within one year after the commencement of mining. Prior to the construction of the improvements, detailed plans identifying the type of stream bank protection shall be submitted to the County for review and approval. The bank protection plans shall incorporate biotechnical methods of bank stabilization.

Mitigation Measure 4.3-4i

The applicant shall enter into a legally-binding agreement with the County that commits the applicant to participate in implementation of the Cache Creek Improvements Program for that portion of creek frontage owned or controlled by the applicant. Participation shall include, but not be limited to, contribution of equipment and labor for channel widening projects, channel maintenance mining recommended by the County, and channel modification at the Esparto bridge.

Mitigation Measure 4.3-4j

Prior to the commencement of mining below the groundwater level, the applicant shall contact the California Division of Safety of Dams (DSD) for a determination on whether the alluvial separators that would be created by the project fall under DSD jurisdiction.

Implementation of these mitigation measures would reduce this impact to a less-than-significant level.

4.4 HYDROLOGY AND WATER QUALITY

4.4 HYDROLOGY AND WATER QUALITY

INTRODUCTION

This section examines potential impacts on hydrology and water quality associated with implementation of the proposed project. The main issues addressed in the section are:

- potential impacts associated with flooding;
- potential loss of water from aquifer storage due to evaporation;
- potential degradation of water quality during mining and after reclamation;
- potential impacts to groundwater levels, and the rate and direction of groundwater flow;
- potential impacts associated with alteration of surface water drainage patterns;
- potential impacts associated with inundation of lowered reclaimed surfaces by high groundwater conditions.

SETTING

Description of Regional Environment

The project site is located on the western margin of the Sacramento Valley, an area characterized by hot, dry summers and moist winters. Cache Creek and Willow Slough are the principal drainage features in the vicinity of the project site. Near the project site, Cache Creek is an incised creek with well-developed banks. In general, flood flows up to and including the 100-year event are contained within the channel banks of the creek. Willow Slough has a broader floodplain and routinely overtops its banks. Uppermost groundwater, which occurs in alluvial deposits, is unconfined at depths ranging from 10 to 75 feet below the ground surface and flows toward the east. Hydrology and water quality conditions of the region are more fully described in the Program EIR for the OCMP (pp. 4.4-1 to 4.4-18).

Description of Local Environment

Surface Water

Site Runoff and Drainage

In an undeveloped or agricultural setting, a significant amount of precipitation that falls on the ground infiltrates into the subsurface. When rainfall intensities exceed the infiltration capacity of surface soils, runoff flows over the ground surfaces toward established natural or constructed drainage channels. Storm water runoff is then conveyed away from the area in creeks and canals. In a developed setting much of the natural soils can be covered with impervious surfaces (i.e., roads, driveways, and roofs), reducing infiltration and increasing amounts and altering flow patterns of runoff. The existing conditions at the site include very limited impervious cover.

The area between Cache Creek and SR 16 in the vicinity of the project site includes two general types of land uses; aggregate mining and agriculture. Depending on agricultural

grading practices, the northern portions of this area drain through culverts or open ditches to Cache Creek, while the southern portions drain to ditches along SR 16 and eventually to Willow Slough (Cunningham Engineering, 1993).

Drainage of agricultural tailwater directly into creeks is common practice in the area (Russo, 1996). In the study area (adjacent to and west of the project site), past aggregate removal and reclamation to agricultural production has resulted in creation of a lowered terrace surface which no longer drains to Cache Creek. Tailwaters from the lowered field are collected at the base of the levee in a low-lying area and allowed to infiltrate and evaporate. At the project site, drainage from the terrace surface flows into Cache Creek and Willow Slough, as discussed above.

Detailed topographic mapping and field observations indicate that there are no developed drainage channels at or adjacent to the proposed mining and reclamation areas. In the northern portion of the project site, storm water apparently flows eastward and northward and ultimately is blocked from flowing directly into Cache Creek by the levee road. No culverts beneath the road have been identified. The runoff is detained in low areas and eventually infiltrates or evaporates. Storm water in the southern portion of the site flows southward to an eastward-flowing drainage ditch at the southern boundary of the site.

Flooding

The project site is partially located within the 100-year flood hazard zone as mapped by the Federal Insurance Administration[1] (U.S. Department of Housing and Urban Development, 1980) (Figure 4.4-1), indicating that it could be inundated during the 100-year storm event.[2] The U.S. Department of Housing and Urban Development has generated Flood Insurance Rate Maps (FIRMs) which depict flood hazard areas within studied communities for use as planning tools. Map preparation methods range from detailed engineering studies using HEC-2[3] modeling to approximations of hazard areas based on existing topographic maps and general hydraulic assumptions. The FIRM which covers the project site was not based on HEC-2 modeling (Andrews, 1995).

A hydraulic study has been conducted to more accurately evaluate the inundation area in the vicinity of the project site during the 100-year event (Cunningham Engineering, 1995). As part of that investigation, topographic control of the Cache Creek channel and the levee was obtained and HEC-2 modeling was conducted. The investigation evaluated flood elevations for the 10, 100, and 500-year floods for the reach of the Creek from the I-505

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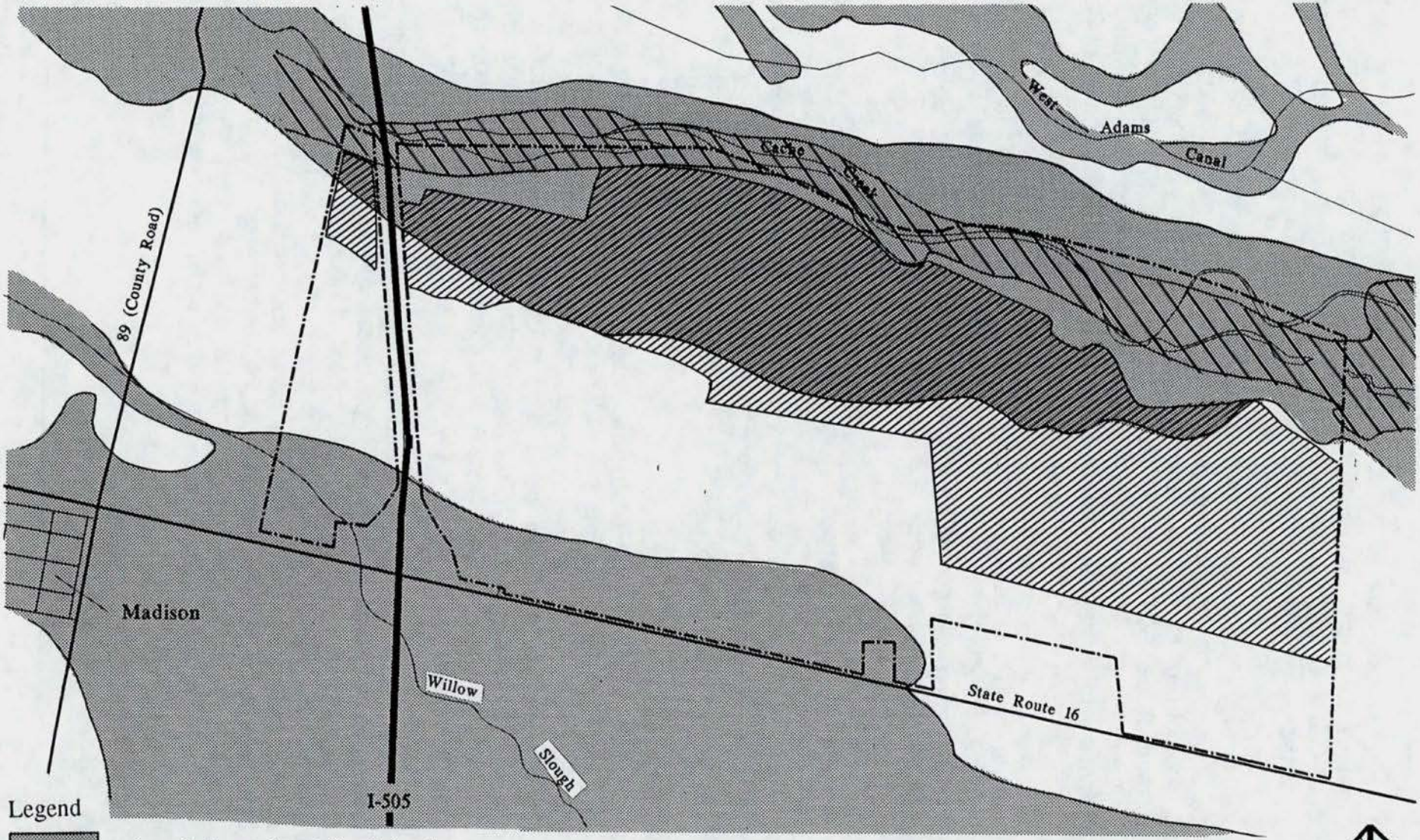
[1] The Federal Insurance Administration is a predecessor of the Federal Emergency Management Agency (FEMA).

[2]The "base flood" (or 100-year flood) is the flood having a one percent chance of being equaled or exceeded in any given year. In any single 100-year period, several "base flood" events (or none) *could* occur. But over the very long term, the frequency of the "base flood" is expected to *average* once in 100 years.

[3]HEC-2 is a widely used model developed by the U.S. Army Corps of Engineers, Hydrologic Engineering Center (HEC) to evaluate water surface profiles.

FLOOD HAZARD ZONES

Figure 4.4-1



bridge to a position approximately 15,000 feet downstream. The results of the analysis indicated that the 100-year design flow is contained within the channel banks throughout this reach of Cache Creek, although portions of the levee do not have three feet of freeboard, as required of a levee designed to provide 100-year flood protection.

The hydraulic study also evaluated the potential change in base flood elevations and inundation areas for the modifications to channel management proposed under the CCRMP. According to the hydraulic study (Cunningham Engineering, 1995), implementation of the CCRMP would result in approximately five feet of channel aggradation adjacent to the site. Floodplain analysis modeling indicated that even under that condition, the 100-year flood would be contained within the existing banks of Cache Creek.

Since structural integrity of the levee during high water conditions would be critical to its flood control function, the levee was evaluated for stability (Kleinfelder, 1995). It was concluded that there is a low degree of risk for failure of the levee. Levee and channel stability are discussed further in Section 4.3, Geology, Soils, and Seismicity, of this document.

Willow Slough (Figure 4.4-1) overtops its banks frequently (as recently as January 1995) and floods areas near SR 16 and the southern portion of the study area. Historically, the proposed mining area has not been affected by flooding on Willow Slough and is not located within the 100-year flood hazard zone associated with this drainage. No other on-site historic flooding problems have been reported (Russo, 1996).

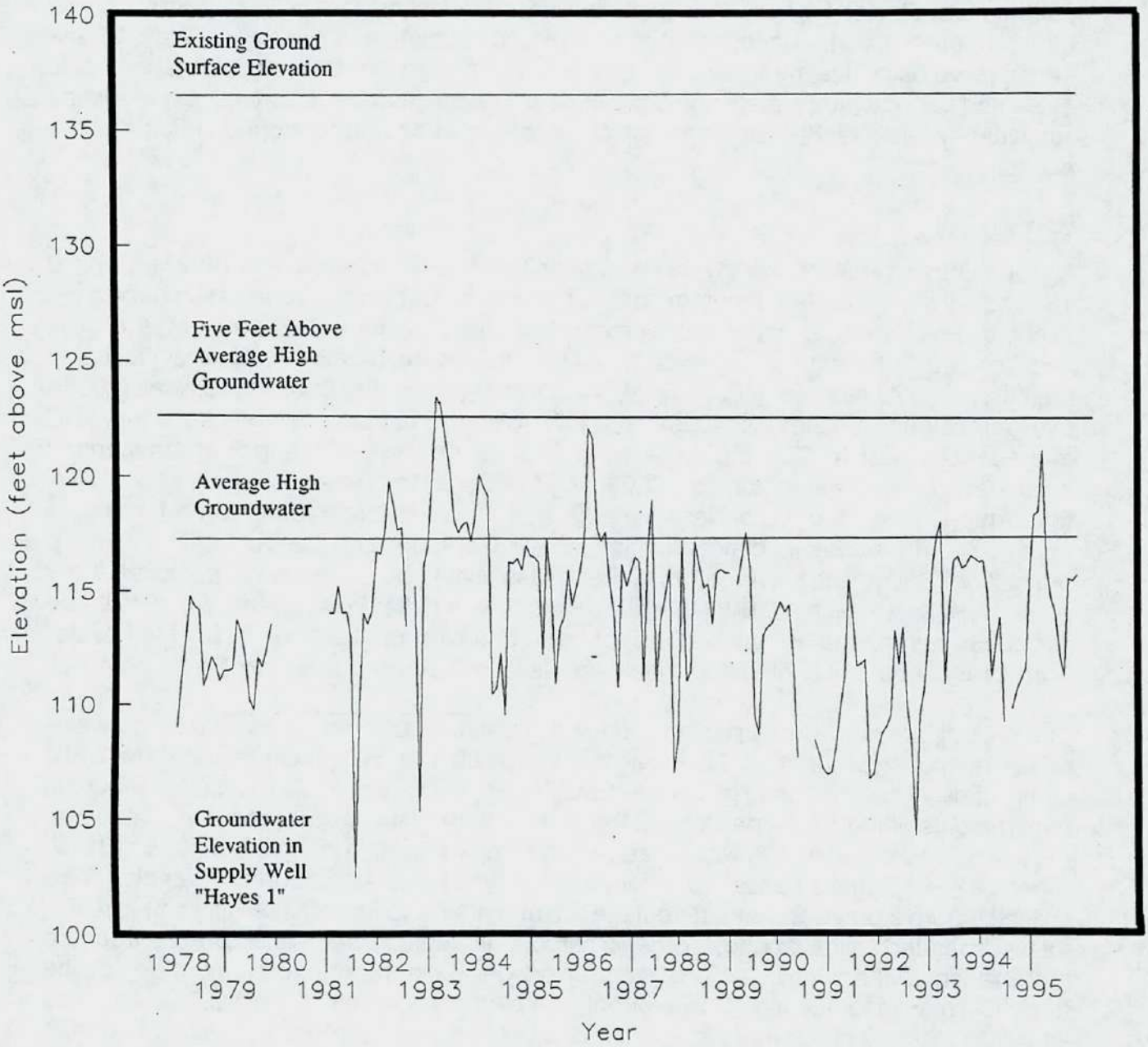
Groundwater

Shallow groundwater at the site occurs in alluvial clay, silt, sand, and gravel deposits. As discussed in the Geology, Soils, and Seismicity section of this document, fine-grained layers (silt and clay, hereafter referred to as "clay") occur within the sands and gravels. Two prominent clay layers have been identified in borings and excavations at the site. The uppermost clay occurs discontinuously (ranging in thickness from 0 to 20 feet), at a depth of approximately 40 feet. The deeper clay is more continuous and generally occurs at a depth of approximately 70 feet below the ground surface at the site.

Water levels have been measured in groundwater supply wells at the project site since 1973. Figure 4.4-2 shows a typical hydrograph indicating groundwater level fluctuation from 1978 to the present. In addition, in 1990, a network of groundwater monitoring wells were installed at the site. Groundwater level measurement have been recorded on a monthly basis in the monitoring wells since installation. Historic data indicate that seasonal high groundwater levels occur between 16 and 24 feet below existing grade, depending on location within the project site. Low groundwater levels occur at 26 to 40 feet below grade. Typically, highest groundwater occurs in the late winter or early spring, prior to regional pumping and irrigation.

GROUNDWATER LEVEL FLUCTUATIONS

Figure 4.4-2



Source: RUSSO, 1996.

Note: This hydrograph is based on monthly water level measurements. Some low groundwater levels (summer) may be affected by a pump operating in the well. Gaps in the plot refect missing data.

BASELINE

The groundwater flow direction at the site is generally consistent with the regional easterly gradient. Groundwater contour maps of data collected from the on-site monitoring wells are presented as Figure 4.4-3 (low groundwater condition) and Figure 4.4-4 (high groundwater level condition). Low groundwater (typically late spring to early fall) flow patterns are affected by agricultural pumping wells, evident in the vicinity of monitoring well OW-9 (Figure 4.4-3). Based on the type of aquifer materials underlying the site, the seepage velocity (the rate at which groundwater flows from one place to another) is estimated to be approximately one foot per day. Contaminant transport velocity would be significantly less than the seepage velocity because of natural retardation effects of the aquifer.

Water Quality

Surface and groundwater quality has been monitored at the project site in 1992, 1994, and 1995 as part of a voluntary program[4] initiated by Solano Concrete. During each monitoring event, samples were collected and submitted to a laboratory for analysis from on-site wells and one wet pit location. Analyses included general minerals, inorganics (including mercury), volatile organics (1992 and 1994), coliform (1995), pesticides/herbicides (1995), total petroleum hydrocarbons (1995), and polynuclear aromatic hydrocarbons (1995). TDS ranged from 420 to 753 mg/L, below the State of California upper recommended secondary drinking water standard (1,000 mg/L). Boron concentrations ranged from 1.6 to 2.4 mg/L. Levels of boron less than 30 mg/L have not been found to be harmful to human health; however, concentrations above 0.5 mg/L can be detrimental to crop production (Hauge and Mitchell, 1983). Pesticides and herbicides were not detected in any of the wells or wet pit sampling locations during the 1995 sampling event. All metals and petroleum hydrocarbons have either not been detected or were below Drinking Water Standards. A summary of the analytical results is included in Tables 4.4-1 through 4.4-3.

The project site has been a participant and designated sampling facility in a storm water group monitoring program for National Pollutant Discharge Elimination System[5] (NPDES) compliance. The monitoring group was established by the aggregate industry to meet the requirements of the statewide General Permit for Storm Water Discharges Associated with Industrial Activities. The site was a designated sampling facility during the winters of 1992-93 and 1994-95 (not all sites are required to analyze samples of runoff). Samples were collected from storm water runoff from the site and analyzed for pH, electrical conductivity, total suspended solids, and total organic carbon. In addition, samples collected from the more recent winter were also analyzed for copper, lead, nickel, zinc, and diesel. The analytical results for the storm water runoff samples are summarized in Table 4.4-4. The analytical results indicate that storm water discharges exceed the Water Quality Objectives

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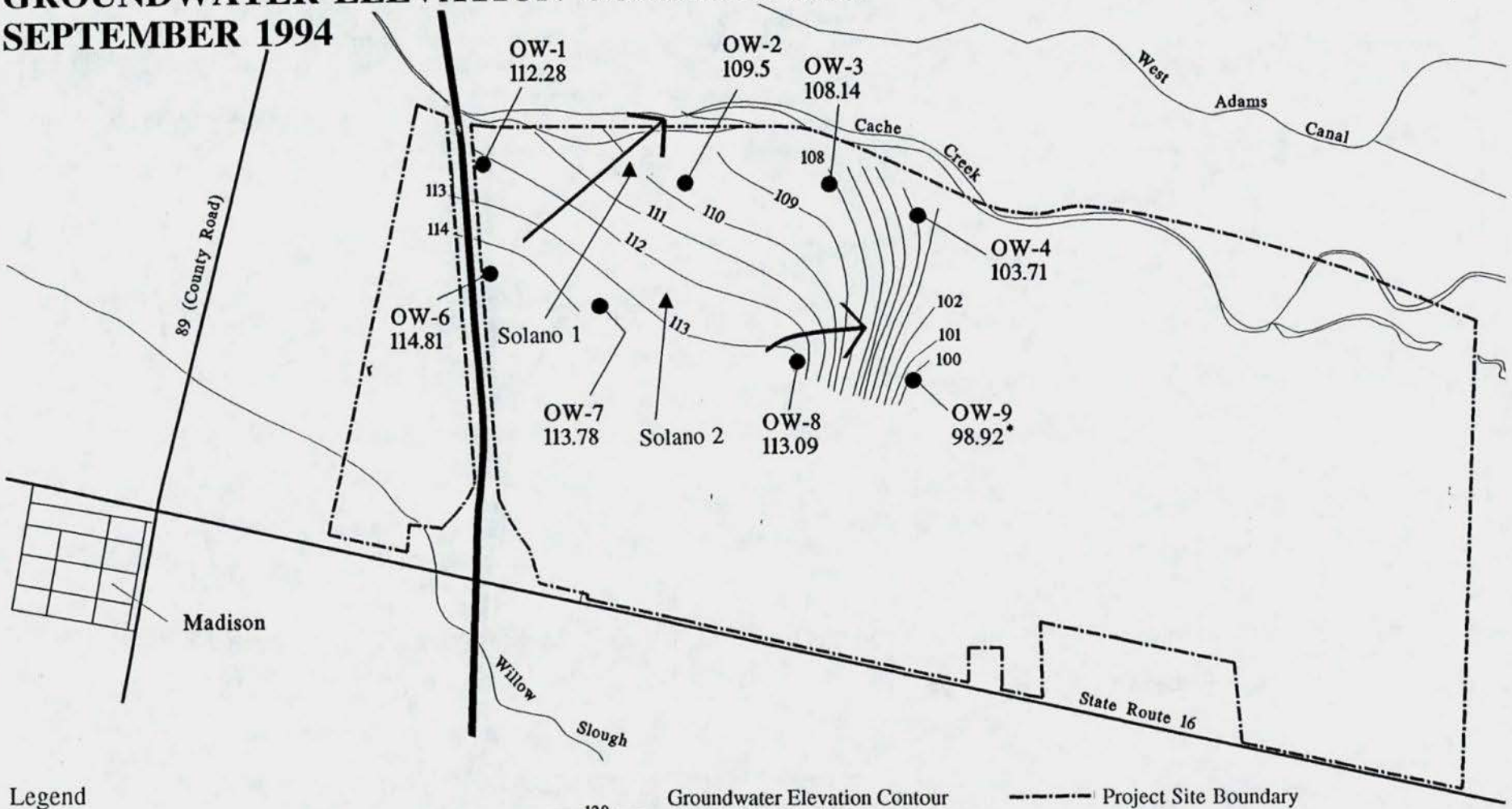
[4]The monitoring program was not included in the Conditions of Approval for the current Hutson parcel mining permit. A monitoring event was conducted in 1990; samples were analyzed for electrical conductivity, pH, total dissolved solids, and boron. Subsequent monitoring events included extensive analyses.

[5]The National Pollutant Discharge Elimination System (NPDES), part of the Clean Water Act, prohibits storm water discharges to the waters of the United States, unless the discharge is compliance with an NPDES permit.

WELL LOCATIONS AND GROUNDWATER ELEVATION CONTOUR MAP SEPTEMBER 1994

Figure 4.4-3



Legend

Solano 1	▲	Supply Well
OW-1	●	Monitoring Well
112.28		Groundwater Elevation in Feet Above msl (September 1994)
— 120 —		Groundwater Elevation Contour (Contour Interval = 1 Foot)
→		Groundwater Flow Direction
*		Nearby Pump in Operation during Water Level Measurement
-·-·-		Project Site Boundary

0 2000 Feet

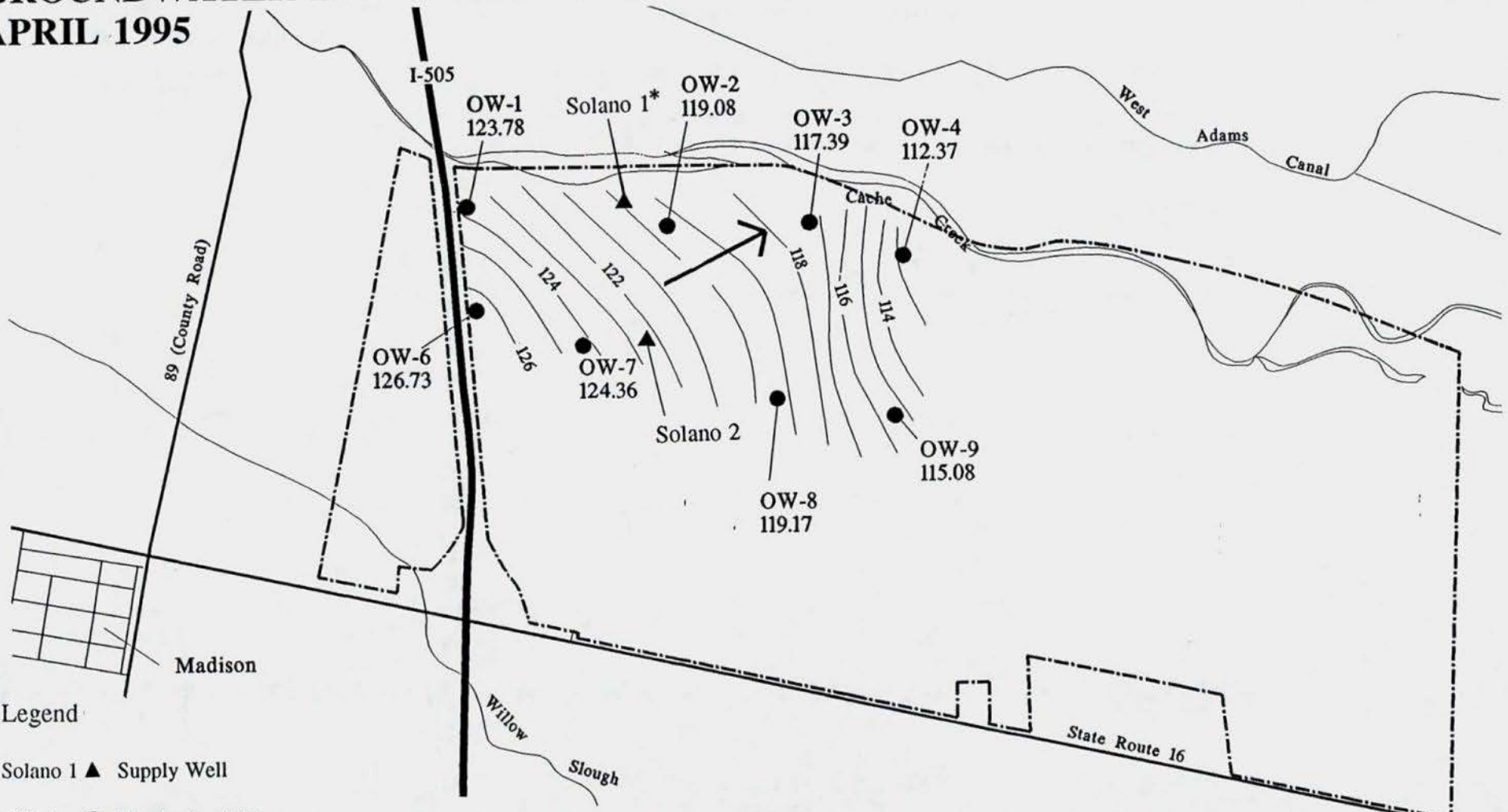
Note: Data provided by Solano Concrete; contouring completed by BASELINE.

BASELINE

95263-00.03 3/19/96, Cadd File N(2), 953GSEPT Solano Long-Term

WELL LOCATIONS AND GROUNDWATER ELEVATION CONTOUR MAP APRIL 1995

Figure 4.4-4



Note: Data provided by Solano Concrete; contouring completed by BASELINE.

BASELINE

95263-00.03 3/19/96, Cadd File N(2), 953GApril Solano Long-Term

Table 4.4-1

Groundwater Quality Sampling Results, Spring 1992
Solano Concrete-Madison Project

Analytes	Reporting Limit	MCL	Sampling Results OW-2	OW-4	OW-9	Pond #2
General Minerals						
Bicarbonate Alkalinity, mg/l	10		376	358	275	271
Calcium, mg/l	0.25		63.2	60.1	44.9	40.7
Carbonate Alkalinity, mg/l	1.0		N.D.	N.D.	N.D.	12.2
Chloride, mg/l	1.0	250*	73.8	61.7	60.5	69.5
Copper, mg/l	0.05	1*	N.D.	N.D.	N.D.	N.D.
Hardness, mg/l	2.0		338	332	268	280
Iron, mg/l	0.025	0.3*	0.11	0.088	N.D.	**4.7**
Magnesium, mg/l	0.25		47.6	43.7	34.4	42.1
Manganese, mg/l	0.015	0.05*	N.D.	N.D.	N.D.	**0.096**
pH	N/A	6.5/8.5*	7.5	7.8	7.7	**8.5**
Sodium, mg/l	0.50		53.3	68.3	45.4	47.3
Specific Conductance, umhos/cm	100	900*	890	820	680	754
Sulfate, mg/l	10	250*	49.9	50.3	42.5	25.6
Surfactants, mg/l	0.025		N.D.	N.D.	N.D.	N.D.
Total Dissolved Solids, mg/l	5.0	500*	**753**	**656**	**507**	**578**
Zinc, mg/l	0.02	5*	N.D.	N.D.	N.D.	N.D.
Inorganic Chemicals						
Aluminum, mg/l	0.050	1	N.D.	N.D.	N.D.	N.D.
Arsenic, mg/l	0.01	0.05	N.D.	N.D.	N.D.	N.D.
Barium, mg/l	0.050	1	0.28	0.25	0.22	0.12
Cadmium, mg/l	0.005	0.005	N.D.	N.D.	N.D.	N.D.
Chromium (total), mg/l	0.010	0.05	N.D.	N.D.	N.D.	0.017
Fluoride, mg/l	0.10	2	0.12	0.14	0.1	0.25
Lead, mg/l	0.005	0.05	N.D.	N.D.	N.D.	N.D.
Mercury, mg/l	0.0002	0.002	N.D.	N.D.	N.D.	N.D.
Nitrate as NO3, mg/l	1.0	45	31	37	21	27
Selenium, mg/l	0.005	0.05	N.D.	N.D.	N.D.	N.D.
Silver, mg/l	0.01	0.05	N.D.	N.D.	N.D.	N.D.
Volatile Organics (EPA 502.2)**			N.D.	N.D.	N.D.	N.D.

Note: N.D. = Not Detected at or above the reporting limit
* = Secondary MCL
** = Includes BTEX

sol_wq1.wb2

Source: Luhdorff and Scalmanini, et al., 1996.

BASELINE

Table 4.4-2

Groundwater Quality Sampling Results, Summer 1994
Solano Concrete-Madison Project

Analytes	Reporting Limit	MCL	Sampling Results				
			Solano #1a	*OW-2*	*OW-4*	*OW-9*	*Pond #4*
General Minerals							
Bicarbonate Alkalinity, mg/l	1.0		280	310	290	250	210
Calcium, mg/l	0.50		57	58	54	45	36
Carbonate Alkalinity, mg/l	2.0		N.D.	N.D.	N.D.	N.D.	12
Chloride, mg/l	0.20	250*	61	65	69	64	71
Copper, mg/l	0.010	1*	N.D.	N.D.	N.D.	N.D.	N.D.
Hardness, mg/l	1.0		300	320	280	250	220
Hydroxide Alkalinity, mg/l	0.10		N.D.	N.D.	N.D.	N.D.	N.D.
Iron, mg/l	0.020	0.3*	N.D.	0.042	N.D.	N.D.	0.12
Magnesium, mg/l	0.50		38	43	36	33	32
Manganese, mg/l	0.010	0.05*	N.D.	N.D.	N.D.	N.D.	N.D.
pH	N/A	6.5/8.5*	7.6	7.3	7.8	7.6	8.6
Potassium, mg/l	1.0		2.9	1.9	2.2	2.0	2.6
Sodium, mg/l	0.50		44	46	54	46	50
Specific Conductance, umhos/cm	10	900*	700	750	750	650	600
Sulfate, mg/l	0.10	250*	55	57	44	57	61
Surfactants, mg/l	0.025		N.D.	N.D.	N.D.	N.D.	N.D.
Total Dissolved Solids, mg/l	10	500*	480	500	530	440	420
Zinc, mg/l	0.010	5*	N.D.	N.D.	N.D.	N.D.	N.D.
Inorganic Chemicals							
Aluminum, mg/l	0.050	1	N.D.	0.1	0.16	N.D.	0.33
Antimony, mg/l	0.0050	0.006	N.D.	N.D.	N.D.	N.D.	N.D.
Arsenic, mg/l	0.0050	0.05	N.D.	N.D.	N.D.	N.D.	N.D.
Barium, mg/l	0.10	1	0.22	0.24	0.21	0.22	0.13
Beryllium, mg/l	0.0050	0.004	N.D.	N.D.	N.D.	N.D.	N.D.
Cadmium, mg/l	0.0020	0.005	N.D.	N.D.	N.D.	N.D.	N.D.
Chromium (total), mg/l	0.010	0.05	N.D.	N.D.	N.D.	N.D.	N.D.
Cyanide, mg/l	0.010	0.2	N.D.	N.D.	0.09	N.D.	N.D.
Fluoride, mg/l	0.10	2	N.D.	N.D.	N.D.	N.D.	0.12
Lead, mg/l	0.0050	0.05	N.D.	N.D.	N.D.	N.D.	N.D.
Mercury, mg/l	0.00020	0.002	N.D.	N.D.	N.D.	N.D.	N.D.
Nickel, mg/l	0.025	0.1	N.D.	N.D.	N.D.	N.D.	N.D.
Nitrate as NO3, mg/l	1.0	45	27	33	31	22	16
Nitrite as N, mg/l	1.0	1	N.D.	N.D.	N.D.	N.D.	N.D.
Selenium, mg/l	0.0050	0.05	N.D.	N.D.	N.D.	N.D.	N.D.
Silver, mg/l	0.010	0.05	N.D.	N.D.	N.D.	N.D.	N.D.
Thallium, mg/l	0.0050	0.002	N.D.	N.D.	N.D.	N.D.	N.D.
Boron, mg/l	0.10		1.8	1.9	2.4	2.2	2.2
Volatile Organics (EPA 601)			N.D.	N.D.	N.D.	N.D.	N.D.

Note: N.D. = Not Detected at or above the reporting limit
* = Secondary MCL

sol_wq.wb2

Source: Luhdorff and Scalmanini, et al., 1996.

BASELINE

Table 4.4-3

Groundwater Quality Sampling Results, Summer 1995
Solano Concrete-Madison Project

Analytes	Reporting Limit	MCL	Sampling Results			
			Solano #1a	*Farnham West*	*OW-9*	*Pond #4*
General Minerals						
Bicarbonate Alkalinity, mg/l	10		250	370	820	180
Calcium, mg/l	0.25		54	74	65	30
Carbonate Alkalinity, mg/l	1.0		N.D.	N.D.	N.D.	N.D.
Chloride, mg/l	1.0	250*	60	80	80	70
Copper, mg/l	0.010	1*	N.D.	N.D.	N.D.	N.D.
Hardness, mg/l	2.0		280	400	370	240
Hydroxide Alkalinity, mg/l	1.0		N.D.	N.D.	N.D.	N.D.
Iron, mg/l	0.025	0.3*	0.053	0.034	0.12	0.19
Magnesium, mg/l	0.25		36	52	50	40
Manganese, mg/l	0.010	0.05*	N.D.	N.D.	N.D.	N.D.
pH	N/A	6.5/8.5*	8.0	7.9	7.6	8.7
Potassium, mg/l	1.0		2.4	2.8	2.6	2.4
Sodium, mg/l	0.50		41	62	56	49
Specific Conductance, umhos/cm	100	900*	700	900	1000	700
Sulfate, mg/l	10	250*	33	55	42	40
Surfactants, mg/l	0.025		N.D.	N.D.	N.D.	N.D.
Total Dissolved Solids, mg/l	5.0	500*	410	610	540	370
Zinc, mg/l	0.010	5*	N.D.	N.D.	0.010	N.D.
Inorganic Chemicals						
Aluminum, mg/l	0.050	1	N.D.	N.D.	0.060	0.18
Antimony, mg/l	0.0050	0.006	N.D.	N.D.	N.D.	N.D.
Arsenic, mg/l	0.0050	0.05	N.D.	N.D.	N.D.	N.D.
Barium, mg/l	0.050	1	0.20	0.35	0.30	0.12
Beryllium, mg/l	0.0010	0.004	N.D.	N.D.	N.D.	N.D.
Cadmium, mg/l	0.0010	0.005	N.D.	N.D.	N.D.	N.D.
Chromium (total), mg/l	0.010	0.05	N.D.	0.012	N.D.	N.D.
Cyanide, mg/l	0.010	0.2	N.D.	N.D.	N.D.	N.D.
Fluoride, mg/l	0.10	2	0.16	0.11	0.15	0.19
Lead, mg/l	0.0050	0.05	N.D.	N.D.	N.D.	N.D.
Mercury, mg/l	0.00020	0.002	N.D.	N.D.	N.D.	N.D.
Nickel, mg/l	0.025	0.1	N.D.	N.D.	N.D.	N.D.
Nitrate as NO3, mg/l	1.0	45	21	60	38	16
Nitrite as N, mg/l	1.0	1	N.D.	N.D.	N.D.	N.D.
Selenium, mg/l	0.0050	0.05	N.D.	N.D.	N.D.	N.D.
Silver, mg/l	0.010	0.05	N.D.	N.D.	N.D.	N.D.
Thallium, mg/l	0.0050	0.002	N.D.	N.D.	N.D.	N.D.
Total Coliform (MPN/100ml)	2		N.D.	N.D.	N.D.	3000
Fecal Coliform (MPN/100ml)	2		N.D.	N.D.	N.D.	13
Turbidity (NTU)			0.27	0.09	0.24	1.8
Polynuclear Aromatic Hydrocarbons (EPA 8310)			–	–	N.D.	N.D.
Organophosphorus Pesticides (EPA 8140)			N.D.	N.D.	N.D.	N.D.
Organochlorine Herbicides (EPA 8150)			N.D.	N.D.	N.D.	N.D.
TPH-Gasoline (Modified EPA 8015)			N.D.	N.D.	N.D.	N.D.
TPH-Diesel, Motor Oil (Modified EPA 8015)			N.D.	N.D.	N.D.	N.D.
BTEX (EPA 602/8020)			N.D.	N.D.	N.D.	N.D.

Note: N.D. = Not Detected at or above the reporting limit
– = Not Analyzed
* = Secondary MCL

Source: Luhdorff and Scalmanini, et al., 1996.

for Inland Surface Waters set by the Central Valley Regional Water Quality Control Board (RWQCB) for electrical conductivity, copper, and zinc. The General Permit conditions require reporting of the analytical results to the RWQCB and improvement of management practices to reduce discharges that exceed water quality standards.

TABLE 4.4-4: **Analytical Results, Storm Water Runoff**.

Analysis	Water Quality Objectives[1]	Sampling Date		
		3/17/93	10/4/94	11/15/94
pH;[2] pH units	6.5>;<8.5	7.7	7.8	7.9
EC,[3] μmhos/cm	230	190	240	540
TSS,[4] mg/L	--	450	2,100	1,700
TOC,[5] mg/L	--	20	7.4	5.7
Copper,[6] mg/L	0.0056	NT	0.06	0.14
Lead,[6] mg/L	--	NT	0.032	0.026
Nickel,[6] mg/L	--	NT	0.30	0.61
Zinc,[6] mg/L	0.1	NT	60.10	0.24
Diesel,[6] mg/L	--	NT	0.27	NT

Notes: EC = Electrical conductivity.
TSS = Total suspended solids.
TOC = Total organic carbon.
-- = No objective set by CVRWQCB.
NT = Not tested.

1 Central Valley Regional Water Quality Control Board, 1991, Water Quality Control Plan, Water Quality Objectives for Inland Surface Waters.
2 Analyzed by EPA Method 150.1.
3 Analyzed by EPA Method 9050.
4 Analyzed by EPA Method 160.2.
5 Analyzed by EPA Method 415.1.
6 Analyzed by EPA Method 6010.

During a typical winter, storm water runoff does not discharge from the plant area to Cache Creek (Russo, 1996). The drainage area of the plant site is relatively small, is isolated by berms from adjacent farm fields, and is located on permeable well-drained deposits. Therefore, runoff from the plant is contained and infiltrates into the subsurface or evaporates. Elimination of storm water discharge from industrial areas is one of the most effective Best Management Practices for improvement of downstream surface water quality.

The storm water runoff samples, discussed above, were collected from standing water in the aggregate processing plant area. These samples represent an area of more concentrated industrial and mining equipment usage relative to the proposed mining area of the project site. Therefore, storm water runoff samples analyzed as part of the ongoing

NPDES compliance program would be expected to be of lesser quality than runoff from the mining area.

Municipal Wells

The nearest municipal wells to the proposed mining area are those operated by the town of Madison. Of the town's two operating supply wells, the nearest is approximately one mile from proposed mining activities. Based on the regional groundwater flow direction, the supply wells are located in a cross gradient position relative to proposed mining. A cross gradient position indicates that groundwater flowing through the proposed mining area would not flow into the Madison wells. In addition, the screened interval[6] of the wells are all greater than 100 feet below the surface (Lopes, 1996).

Proposed mining activities would be conducted within approximately 2.8 miles of the Esparto supply wells, within 4.9 miles of the Woodland supply wells, and 5.5 miles of the Yolo supply wells.

Consistency with Applicable Policies, Plans, and Regulations

Clean Water Act

Section 402(p) of the Clean Water Act (CWA) and implementing regulations require control of storm water discharges as part of the National Pollutant Discharge Elimination System (NPDES) program. Discharges of storm water from certain industrial activities and large municipalities require a permit under the NPDES program.

Implementation of the NPDES program has been delegated to the State of California. The State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs) are the implementing agencies in the State. The SWRCB adopted a General NPDES Permit for Discharges of Storm Water Associated with Industrial Activities (General Permit) in 1991. Sand and gravel, crushed rock, asphaltic concrete, and concrete operations are included in the list of industries required to apply for inclusion under the General Permit.

The project applicant is a participant in a Group Compliance Program for storm water discharges and maintains a current Storm Water Pollution Prevention Plan. Therefore, the applicant is in compliance with the General Permit.

Regional Water Quality Control Board Basin Plan

The Basin Plan is a regulatory reference for meeting the State and Federal requirements for water quality control in the Central Valley Region. The preparation of basin plans is supported by the Federal Clean Water Act and required by the State's Porter-Cologne Water Quality Control Act. The Central Valley Regional Water Quality Control Board,

[6] The screened interval is the depth in which the casing is perforated allowing groundwater to enter the well. The wells are sealed from the surface to a depth approximately equal to the top of the screened interval. Therefore, shallow groundwater cannot enter the well.

which is responsible for implementation of the Basin Plan in Yolo County to protect beneficial uses, evaluates discharges that may impact water quality and, if appropriate, issues numerical standards and monitoring requirements for the discharge.

Discharges of wash water and fine-grained sediments from the processing plant at the project site are permitted by the Regional Board. Therefore, the proposed project is in compliance with the permitting requirements of the Basin Plan.

SMARA and Related Regulations

The California Surface Mining and Reclamation Act (SMARA) of 1975 requires that the State adopt regulations which establish State policy for reclamation of mined land that include measures to be employed by lead agencies in specifying water quality, watershed, and flood control (Sec. 2756). In addition, SMARA requires adoption of regulations specifying minimum verifiable statewide reclamation standards for drainage and stream protection (Sec. 2773).

The State reclamation regulations, developed in support of SMARA, contain several minimum acceptable practices and Performance Standards for drainage diversion structures, waterways, and erosion control (CCR Title 14 Section 3706) that may be applicable to the proposed project, including:

Sec. 3503(b)(1) Settling ponds or basins shall be constructed to prevent sedimentation of streams at operations where they will provide a significant benefit to water quality.

During mining, the mining areas would be internally drained (forming a large pond) and runoff from the mining area would not discharge to streams. Following reclamation, the project proposed that runoff generated from reclaimed row crop fields would be discharged to a lowered surface where sediment could be trapped prior to flowing into Cache Creek or infiltrate into the ground. These provisions of the project are generally consistent with the intent of this regulation.

Sec. 3503(b)(2) Operations shall be conducted to substantially prevent siltation of groundwater recharge areas.

The project proposes filling of the mined pits with finer-grained sediment than the sand and gravel extracted by the proposed mining. However, the existing surface soil would be replaced and surface water infiltration would not be reduced. The mining pits would be backfilled with overburden materials, which are predominantly fine sands. The backfilled pits would reduce the rate of flow through the aquifer but would increase groundwater storage (Impact 4.4-5).

Sec. 3706(b) The quality of water, recharge potential, and storage capacity of groundwater aquifers which are the source of water for domestic, agricultural, or other uses dependent on the water, shall not be diminished, except as allowed in the approved reclamation plan.

The backfilling of mining pits with overburden and processing fines could impact the quality, recharge potential, and storage capacity of the aquifer underlying the project site. These potential impacts are addressed in Impacts 4.4-3 through 4.4-5. Following implementation of recommended mitigation measures, the project would be in compliance with this regulation.

Sec. 3706(c) Erosion and sedimentation shall be controlled during all phases of construction, operation, reclamation, and closure of a surface mining operation to minimize siltation of lakes and watercourses, as required by the Regional Water Quality Control Board or the State Water Resources Control Board.

In general, all mining activities would be conducted in an internally drained area, greatly reducing erosion and sedimentation hazards resulting from the project. No mining or related activities are proposed in existing creeks or streams. In addition, the proposed project includes numerous erosion and sedimentation minimization provisions to further reduce the potential for impacts to water quality.

Sec. 3706(d) Surface runoff and drainage from surface mining activities shall be controlled by berms, silt fences, sediment ponds, revegetation, hay bales, or other erosion control measures, to ensure that the surrounding land and water resources are protected from erosion, gullying, sedimentation, and contamination. Erosion control methods shall be designed to handle runoff from not less than the 20 year/1 hour intensity storm event.

Surface water from the proposed mining area would flow to the interior of the mining area, away from permanent wet pits, not away from the site. Therefore, runoff from the site would not cause erosion or sedimentation of surrounding lands. Water conveyance facilities were designed to handle at least a 20-year/1-hour storm event. Therefore, the project would conform with this regulation.

Sec. 3707(d) Use of fertilizers or other soil amendments shall not cause contamination of surface or groundwater.

Reclamation of the proposed mining areas would return the project site to agricultural and habitat uses. Fertilizers would be applied to crops on the reclaimed surfaces. The reclamation plan for the project proposes that surface water runoff from the agricultural fields would be directed to the lowered tree production areas and/or settling basins. Retention of the runoff in these areas prior to discharge to Cache Creek would allow settlement of particles (potentially containing agricultural chemicals). The reclaimed areas would contain a minimum of five feet of fine-grained soils above the groundwater table (as required in Mitigation Measure 4.4-7 in this DEIR), providing filtration of tailwaters.

Yolo County General Plan

The following policies related to water resources are included in the Safety (S) and Conservation (CON) elements of the 1980 Yolo County General Plan:

S 5: Yolo County shall regulate, educate, and provide guidelines and standards for avoiding and mitigating the effects of flooding.

S 6: Yolo County shall adopt and apply standards and ordinances for control of development relating to potential flooding and local drainage and require mitigation of identified impacts. The County may, at a future time, establish a policy for a countywide drainage plan, but does not require such a plan at this time.

S 7: Yolo County shall require development of all kinds, in areas of "acceptable low risk flooding," to be flood proof.[7]

S 9: Yolo County shall use the Federal Flood Insurance Program maps and standards in regulating and advising on development proposals in flood plains and these maps are a part of this General Plan by reference.

The proposed mining areas will be protected from 100-year storm events through the use of levees and berms. Furthermore, three feet of freeboard will be provided, creating additional flood protection. The project complies with the intent of policies S 5, S 6, S 7, and S 9 of the Safety Element of the General Plan.

CON 16: Yolo County shall relate new development to water availability and water pollution avoidance or mitigation.

The project would not reduce water availability within the area. Water loss due to evaporation during and after mining operations would be a less-than-significant impact (Impact 4.4-2). The project would pose potential threats to water quality (Impacts 4.4-3 and 4.4-4), but adequate mitigation has been recommended to reduce these effects to a less-than-significant level.

CON 17: Yolo County shall encourage waste water reclamation and reuse.

The project would include reuse of waste water generated during the processing of mined aggregate. The waste water from the processing plant would be returned to the mining area and would infiltrate to the aquifer.

CON 20: Groundwater shall be protected from overdraft and shall not be encroached upon by construction. Impervious surfaces should be reduced or replaced and groundwater recharge enhanced. The use of non-impervious surfaces is encouraged.

CON 24: Yolo County shall continue to evaluate water resources and to maintain the Yolo County Water Resources Plan.

The proposed project would not result in significant loss of groundwater from the aquifer currently being used for water supply to the processing plant. Construction of impervious surfaces are not proposed by the project. However, the project proposes dredge mining below the groundwater table, as has been occurring on the adjoining Hutson parcel since 1980. This method of mining could be considered an "encroachment" of groundwater by the project, in conflict with policy CON 20. However, mathematical modeling conducted

[7]Flood proof: Structures and facilities designed and constructed to accept the maximum 100-year flood circumstance without significant hazard to the public, to occupants, or to users, nor to sustain significant damage to vital systems that would lead to such hazards.

to evaluate disturbance of flow patterns resulting from backfilling of wet pits with fine-grained sediment (David Keith Todd, 1995) indicates that alteration of the groundwater flow regime would be limited to very near the pit boundaries.

CON 40: Yolo County shall prohibit surface water courses or groundwater recharge areas to be used for dumping sites for toxic materials or secondarily treated waste water and shall support agricultural practices to minimize chemical and nutrient runoff, erosion, and siltation, and support the use of check dams.

No discharge of toxics or treated municipal wastewater would be conducted as part of this project, and the project is therefore consistent with this policy.

Flood Damage Prevention Ordinance (Flood Ordinance)

The purpose of the Yolo County Flood Ordinance is to "...promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas (Sec. 8-3.103)."

The Flood Ordinance includes the following relevant objectives (Sec. 8-3.104):

(a) Restricting or prohibiting uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or flood heights or velocities;

(b) Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;

(c) Controlling the alteration of natural floodplain, stream channels, and natural protective barriers, which help accommodate or channel flood waters;

(d) Controlling filling, grading, dredging, and other development which may increase flood damage, and

(e) Preventing or regulating the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards in other areas.

The Flood Ordinance requires acquisition of a Development Permit (Sec. 8.3-401) before construction or development begins in any area of special flood hazard. The project does not propose any activities that would be in conflict with this ordinance.

OCMP and Implementing Ordinances

The OCMP and implementing ordinances contain the following policies relevant to hydrology and water quality at the project site:

PS. 2.5-8: Unnecessary personnel shall be excluded from off-channel excavations. Open pits shall be fenced with a four strand barbed wire fence or the equivalent, prior to the commencement of excavation. Fencing may enclose the property of which mining is a part, the mining site, or both. In addition, signs shall be installed at the project site boundaries and access road, indicating that the excavation area is a danger zone.

The perimeter of the proposed mining site is currently fenced. The requirement for restricted access to the site is further described in Impact 4.4-4.

PS. 2.5-18: All final reclaimed slopes shall have a minimum safety factor equal to or greater than the critical gradient as determined by an engineering analysis of the slope stability. Final slopes less than five (5) feet below groundwater shall be designed in accordance with the reclaimed use. Reclaimed wet pit slopes located five (5) feet or more below groundwater level shall not exceed 1:1 (horizontal:vertical), in order to minimize the effects of sedimentation and biological clogging on groundwater flow and to prevent stagnation.

The final below-groundwater slopes proposed by the project would not exceed (be steeper than) 1:1. The proposed project is in compliance with Performance Standard 2.5-18.

PS. 3.5-1: The area of backfilled off-channel excavations extending below the groundwater level should be minimized in order to reduce changes to groundwater flow. Backfilled pits should be oriented with regard to the direction of groundwater flow so in order to prevent localized obstructions. If a backfilled off-channel excavation were proposed to penetrate either fifty (50) feet or one-half (½) into the saturated thickness of the shallow aquifer then prior to the commencement of excavation below the water table, the applicant should demonstrate in a manner consistent with the Technical Studies that the pit design would not adversely affect active off-site wells within one-thousand (1,000) feet of the proposed pit boundary. If the application included a series of backfilled pits, then the applicant should also demonstrate that the cumulative effects of the multiple backfilled pits will not adversely affect groundwater flow, if there were any active off-site wells within one-thousand (1,000) feet of the pit boundaries.

The project proposes excavations deeper than 50 feet and would remove more than one-half of the saturated thickness of the shallow aquifer. There are no off-site wells located within 1,000 feet of the proposed wet pit mining areas, and therefore the project is consistent with this performance standard.

PS. 3.5-2: Under no circumstances shall any operator of an off-channel excavation use dewatering as a part of the surface mining operation.

The project does not propose using wet pits for dewatering, and is therefore consistent with Performance Standard 3.5-2 .

PS. 3.5-3: Surface water shall be prevented from entering mined areas, through perimeter berms or ditches and grading. Appropriate erosion control measures shall be incorporated into all surface drainage systems.

The project proposes a drainage plan that would direct surface water runoff away from the wet pits into several settling basins. The project is consistent with Performance Standard 3.5-3.

Action 3.4-3: Include a groundwater monitoring program as a condition of approval for any surface mining operation that proposes off-channel excavations that extend below the groundwater level. The monitoring program shall require regular groundwater level data, as well as annual test for water quality based on a developed set of standards.

PS. 3.5-4: All surface mining operation that propose off-channel excavations extending below the groundwater level shall develop and maintain a groundwater monitoring program. At a minimum, the program shall consist of three (3) monitoring wells, one upgradient of the wet pit and two downgradient. Monitoring wells shall be installed at least six (6) months prior to excavation below the groundwater level. The water level shall be recorded and a water quality test performed for all monitoring wells and submitted to the County prior to the commencement of wet pit mining. The test results shall provide baseline data for future comparison and analysis.

Once wet pit mining has commenced, groundwater levels shall be monitored quarterly, while groundwater quality shall be monitored annually. The analysis of groundwater quality shall include, but may not be limited to, the following: mineral constituents, nitrate, pH, electrical conductivity, turbidity, and total coliform. A report to the County shall be submitted annually regarding the results of the groundwater monitoring program.

The applicant has initiated a groundwater monitoring program. As of March 1996, the monitoring wells had been monitored for groundwater quality on three occasions. The project is consistent with Action 3.4-3 and Performance Standard 3.5-4. The requirements of the monitoring program are further discussed in Impact 4.4-3 and 4.4-4.

PS. 3.5-5: At least one toilet shall be provided for each off-channel mining operation. Chemical toilets shall be properly maintained and serviced regularly. Permanent toilets shall be properly engineered and the design approved by the Yolo County Building Official prior to installation. All on-site water storage facilities shall be labeled "potable" or "non-potable."

The applicant states that sanitation facilities and potable water supplies would be provided at the plant sites. The project is consistent with Performance Standard 3.5-5.

Action 3.4-5: Require that surface mining operations demonstrate that proposed off-channel excavations extending below the groundwater level will not adversely affect the producing capacity or water quality of local active wells.

PS. 3.5-6: If any off-channel excavation proposes to extend below the groundwater level, then six months prior to the commencement of excavation below the water table, the applicant shall demonstrate in a manner consistent with the Technical Studies that the pit is sufficiently set back from any active drinking water wells within one-thousand (1,000) feet of the proposed pit boundaries, in order to ensure that potential groundwater contamination is prevented.

The application states that there are no off-site wells within 1,000 feet of proposed mining areas. This project is consistent with Performance Standard 3.5-6.

PS. 3.5-8: No wastewater shall be directly discharged to Cache Creek. Sediment fines generated by aggregate processing shall either be used for agricultural soil enhancement or shall be placed in settling ponds, designed and operated in accordance with all applicable regulations, and used for backfill materials in off-channel excavations. Agricultural tailwater shall be diverted to catchment basins prior to its release to the creek.

The project proposes discharge of processing fines to former mining areas (wet pits). Agricultural tailwater would be directed toward settling basins and not into Cache Creek. The proposed project is consistent with Performance Standard 3.5-8.

PS. 3.5-10: The use of motorized watercraft on any pond, lake, or other water body created as part of the approved reclamation plan is prohibited.

The project application does not specifically indicate whether motorized watercraft would be used during or after mining and reclamation. Restriction on these uses are described in Impact 4.4-4.

PS. 3.5-11: The use of off-channel wet pits for the storage and treatment of sewage effluent, or for landfill purposes, is prohibited.

The project would not result in discharge of wastes to wet pits, and is therefore consistent with Performance Standard 3.5-11.

PS. 3.5-12: Reclaimed wet pits shall minimize shallow depths in order to reduce evapotranspiration, unless the shallow areas are being reclaimed to wetland habitat. Wet pits shall be considered shallow when they extend less than ten (10) feet into the groundwater table.

The project proposes steep-sided wet pit slopes and habitat restorations areas around the pits, and is therefore consistent with Performance Standard 3.5-12.

PS. 4.5-1: All off-channel surface mining operations shall be provided with a minimum of 100-year flood protection. Off-channel excavations that extend below the existing streambed elevation of Cache Creek shall be designed to minimize the possibility of levee breaching and/or pit capture, except under controlled circumstances.

PS. 4.5-6: New development (such as buildings, levees, or dikes) located within the floodplain shall conform to all applicable requirements of the Yolo County Flood Ordinance, the Federal Emergency Management Agency (FEMA), and the State Reclamation Board.

The proposed mining sites are protected from 100-year flows in Cache Creek and Willow Slough. Therefore, the proposed project is consistent with Performance Standard 4.5-1 and 4.5-6. Flood-related impacts are further described in Impact 4.4-1.

PS. 4.5-7: Storm water drainage systems shall be designed so as to prevent flooding on surrounding properties and County rights-of-way.

The drainage plan proposed by the project indicates that most of the reclaimed area would be internally drained, using broad sloping fields, conveyance ditches, and settling basins. The project is consistent with Performance Standard 4.5-7.

IMPACTS AND MITIGATION MEASURES

Project-Specific Implementation of Program EIR Mitigations

Possible impacts related to hydrology and water quality were evaluated in the OCMP EIR. Included were discussions of impacts related to groundwater levels, and the direction and rate of groundwater flow (OCMP EIR Impact 4.4-1), degradation of water quality during and after mining (OCMP EIR Impacts 4.4-2 and 4.4-3), loss of water due to evaporation (OCMP

EIR Impact 4.4-4), potential regional groundwater recharge programs (OCMP EIR Impact 4.4-5), storm- and dam failure-related flooding (OCMP EIR Impact 4.4-6 and 4.4-7), and inundation of lowered surfaces by groundwater conditions (OCMP EIR Impact 4.4-8). Each of these impacts are relevant to the proposed project and are evaluated in this section.

The OCMP EIR requires that proposed mining areas are protected from inundation during the 100-year flood (OCMP EIR Impact 4.4-1). The levee protecting the project site does not have three feet of freeboard above the 100-year flood inundation level and is therefore inconsistent with the OCMP EIR. Project Mitigation Measure 4.4-1 requires that the levee be upgraded prior to commencement of mining. The OCMP EIR determined that evaporative losses associated with wet pits was a less-than-significant impact (OCMP EIR Impact 4.4-4). The proposed project is consistent with this determination without implementing mitigation measures. Compliance with mitigation measures for potential impacts to water quality discussed in the OCMP EIR (Impacts 4.4-2 and 4.4-3) is required under Project Mitigation Measures 4.4-3 and 4.4-4).

The OCMP EIR requires that if mining is proposed within 1,000 feet of existing water supply wells then hydrogeological analysis must be conducted to determine if mining operations would impact groundwater levels near the well (OCMP EIR Impact 4.4-1). There are no off-site wells within 1,000 feet of proposed mining, and therefore the project, as discussed in Project Impact 4.4-5) is consistent with the OCMP EIR without implementation of mitigation measures. In addition, there are no wells within 1,000 feet of the plant site where additional pumping of groundwater for the processing plant could affect off-site wells (Project Impact 4.4-8).

The OCMP EIR requires that mining areas proposed to be reclaimed to lowered agricultural surfaces must be reclaimed to at least five feet above average high groundwater levels (OCMP EIR Impact 4.4-8). Based on review of the application, the project may be inconsistent with this requirement in the Solano West mining area. Project Mitigation Measure 4.4-7 requires that the mining plan be revised to include the five foot minimum elevation difference.

Standards of Significance

The project would have a significant effect on hydrology and water quality if it would result in:

- Substantial changes in absorption rates, drainage patterns, or rate and amount of surface runoff.

- Exposure of people or property to water-related hazards, such as flooding (100-year or more frequent flood frequency is the assumed threshold).

- Discharge into surface water or other alteration of surface water quality (e.g., temperature, dissolved oxygen, or turbidity) in excess of applicable waste discharge requirements.

- Substantial changes in the amount of surface water in any water body.
- Substantial changes in currents, or the course or direction of water movements.
- Substantial changes in the quantity of ground waters either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations or through substantial loss of groundwater recharge capability.
- Altered direction or rate of flow of groundwater.
- Impacts to groundwater quality.
- Substantial reduction in the amount of groundwater otherwise available for public water supplies.

Project-Specific Analysis

Impact 4.4-1

Flooding at the site could cause property damage and injury to on-site workers. This is considered to be a significant impact.

Policies contained within the OCMP require that off-channel surface mining operations are provided with a minimum of 100-year flood protection (Performance Standard 4.5-1). Levees providing 100-year flood protection must have three feet of freeboard between the levee top and the 100-year inundation level. The project site is located within the 100-year floodplain of Cache Creek as mapped by U.S. Department of Housing and Urban Development (1980); even though more recent site-specific hydraulic analysis indicates that none of the proposed mining and reclamations areas are located with the 100-year floodplain, the County Flood Ordinance specifically requires acquisition of a Floodplain Development Permit prior to conducting earth-moving activities of construction within the designated floodplain.

Under existing conditions, the project site would not be inundated by events equal to or less than the 100-year storm event. However, portions of the existing levees do not have three feet of freeboard. Therefore, the project is not consistent with flood protection requirements of the OCMP.

Mitigation Measure 4.4-1a

Prior to initiation of mining proposed in this application, the applicant shall increase levee heights to provide three feet of freeboard above 100-year flood elevations in the vicinity of the project site, except as discussed in Mitigation Measure 4.3-4c.

Mitigation Measure 4.4-1b

The applicant must apply for, and receive, a floodplain development permit from Yolo County prior to mining activities within U.S. Department of Housing and Urban

Development designated 100-year floodplains, as required by the County General Plan and Flood Ordinance.

Implementation of these mitigation measures would reduce this impact to a less-than-significant level.

Impact 4.4-2

Evaporation from a wet pit water surface would represent a loss of water from groundwater storage. This is considered to be a less-than-significant impact.

Water continuously moves through the hydrologic cycle; either from the subsurface to the atmosphere through evaporation and evapotranspiration or from the atmosphere to the subsurface as precipitation/infiltration. In general, when it is not raining, moisture moves from the subsurface to the atmosphere through evaporation and evapotranspiration. In addition to water naturally being exchanged through the hydrologic cycle, groundwater and surface water are used for irrigation of crops. In the planning area, the crops are irrigated by both surface water and groundwater.

Impacts of evaporative losses from a wet pit lake are typically evaluated by comparing such losses with historic evapotranspiration losses from agricultural crops. The annual evaporation rate from an open water surface in the vicinity of the planning area is estimated to be 3.92 feet per year (DWR, 1975). Annual evapotranspiration rates for crops typically grown in the area range from 0.95 foot/year to 3.64 feet/year. However, the presence of wet pits could provide valuable habitat. The use of water for habitat purposes in the Cache Creek system is a beneficial use designated in the Basin Plan (RWQCB, 1991). Action 3.4-1 of the OCMP states that evapotranspiration losses shall be considered an acceptable result of exposed groundwater, when reclaimed shallow wet pit areas are included as a part of proposed riparian habitat or recreational facilities. The project proposes to reclaim the wet pits as habitat areas, and is therefore consistent with the OCMP.

Mitigation Measure 4.4-2a

None required.

Impact 4.4-3

Creation of wet pit lakes exposes surface and groundwater to potential degradation of water quality during the mining and reclamation period. This is considered to be a significant impact.

Off-channel aggregate extraction proposed by the project would result in mining below the water table. Mining below the water table results in the creation of wet pits, which tend to be more susceptible to water quality degradation than a groundwater system because the groundwater would be exposed at the surface. The soil and fine-grained deposits that cover an aquifer provide some protection to groundwater quality from chemical inputs. A wet pit, which exposes groundwater at the surface, has no such buffer to chemical inputs.

Potential sources of water quality degradation associated with wet pits include: chemical release from mining equipment, agricultural runoff into the pits, eutrophication,[8] flood water mixing,[9] and illegal dumping/sabotage. Chemical releases from mining equipment and agricultural runoff into the pits are considered mining and reclamation period impacts, and are considered below. Eutrophication and illegal dumping/sabotage are discussed in Impact 4.4-4.

Chemical Releases from Equipment

Operation of mining equipment within and near wet pits exposes surface and groundwater to water quality impacts from potential chemical spills (fuels, lubricants, and hydraulic oil) from mining and reclamation equipment. Refueling and maintenance of the equipment would be required on a regular basis. The project would include the use of a crane-mounted dragline to extract aggregate from below the groundwater table. Scrapers would move the excavated material from the wet pit area to the processing plant. Operation and fueling of this equipment in and near the wet pits could result in releases of petroleum hydrocarbons, adversely impacting groundwater quality.

The regulatory framework and required actions regarding emergency response to chemical releases is discussed in Hazards, Section 4.12, of this DEIR. The potential long-term impacts to groundwater quality resulting from chemical releases are discussed in this section, below.

Agricultural Tailwater and Runoff

The current land use in the proposed mining area and vicinity is agriculture, and therefore, the wet pits would be located near or adjacent to agricultural crops. Irrigation tailwater and storm water runoff tends to drain from agricultural fields toward low-lying areas. The wet pits would represent large low-lying areas. Runoff and tailwater from agricultural fields may contain residual pesticides, organic material, and sediment. If allowed to drain into the wet pits the tailwater could adversely impact groundwater quality.

The project proposed by the applicant includes various components designed to mitigate impacts to water quality, including:

- The drainage plan has been designed to keep runoff out of the wet pits and Cache Creek during all but the most severe storms;
- A fence would be installed to restrict access to the mining and post-reclamation area, reducing the likelihood of illegal dumping into wet pit lakes;

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[8]Eutrophication is defined as the loading of inorganic and organic dissolved and particulate matter to lakes and reservoirs at rates sufficient to increase the potential for high biological production. For further discussion, see Impact 4.4-4.

[9]Flood water mixing is not further discussed because it was determined to be a less-than-significant impact without mitigation in the OCMP Program EIR.

- The wet pits below the groundwater table would be constructed with relatively steep slopes. This would encourage groundwater throughflow and discourage eutrophication.

- The applicant performs all fueling and maintenance operations under a site-specific Spill Prevention and Countermeasure Plan (discussed in more detail in the Hazards section of this EIR).

- The applicant has initiated a surface and groundwater quality monitoring program. The monitoring program proposed by the applicant meets some, but not all, of the groundwater monitoring requirements established in the OCMP.

These actions would minimize water quality impacts; additional mitigation would be required to conform with the OCMP.

Mitigation Measure 4.4-3a

Implement Mitigation Measure 4.4-2a of the OCMP Program EIR.

Implementation of this mitigation would reduce this impact to a less-than-significant level.

Impact 4.4-4

Creation of wet pit lakes exposes surface and groundwater to potential degradation of water quality during the post-reclamation period. This is considered to be a significant impact.

Mining below the water table would occur within the project site, creating wet pit lakes. The proposed reclamation plan includes leaving four wet pit lakes (of 13, 20, 47, and 87 acres, respectively) as permanent features. The potential long-term water quality impacts associated with the wet pit lakes are described below.

Eutrophication/Biological Degradation

Eutrophication is defined as the loading of inorganic and organic dissolved and particulate matter to lakes and reservoirs at rates sufficient to increase the potential for high biological production. Eutrophication could occur during the mining period, but is considered more likely to occur over the long term, especially if the sidewalls of the pit potentially become clogged with fine-grained sediments or biological matter. Eutrophic lakes tend to have colored water (green/brown), high algae content, and very low dissolved oxygen content. Eutrophication can be exacerbated by introduction of nutrients from agricultural operations, poorly designed and/or sited septic systems, and municipal wastewater treatment systems.

A wet pit that penetrates the groundwater table would be continually "freshened" by groundwater flow through the sidewalls, and would therefore not be significantly susceptible to stagnation (David Keith Todd, 1995). The free flow of groundwater could be reduced by clogging of the sidewalls (sedimentation or biological clogging), resulting in a pit more susceptible to eutrophication. Maintaining steep slopes would reduce the potential for clogging, but may conflict with the conditions necessary for high value biotics

habitat and result in hazards to the public. Biotics require gentler slopes and broad shallow water areas. Gentle slopes and increased biological activity could increase the potential for eutrophication. The slopes proposed by the applicant comply with the requirements of the OCMP and the OCMP Program EIR.

Establishment of habitat in the wet pits during and after the reclamation period could introduce additional sources of water quality degradation. These sources may include: 1) fecal material from animals (waterfowl, small mammals, and fish) that may contain microbiological contaminants, 2) surface scum (floating planktonic cells, colonies and filaments of algae), and 3) rooted plant biomass, including nuisance plants.

The following conclusions were made by Bruce Macler, the manager of the development of the Groundwater Disinfection Rule with the U.S. EPA, about potential biological water quality impacts associated with wet pit mining along Cache Creek (Macler, 1996):

> The types of plants and animals discussed above do not represent a source of contamination that would adversely impact drinking water supplies. The primary source of microbial contamination of surface and groundwater supplies is fecal material from humans and other large mammals. The only known microorganism that waterfowl carry and could introduce in small quantities into the wet pits is avian sarcoma, a virus with very little potential for transport in an alluvial aquifer. It is far more likely that domestic and municipal groundwater supplies would be impacted by nearby septic systems than a wet pit lake that supports no livestock grazing or intensive human recreation.

Nearly all research on persistence and transport of pathogens in water begins with a source of the pathogens (i.e., a cesspool, cattle feedlot, sewage sludge application area). Required or recommended setbacks[10] established by the U.S. EPA (1987) and the California Department of Water Resources (1991) are based on a concentrated source of pathogens. As discussed above, wet pit gravel mining and proposed reclamation would not result in creation of this type of a source.

Eutrophication and establishment of habitat in the reclaimed wet pits may reduce groundwater quality in the aquifer near the pits. However, a significant pathogen source would not be present. This potential source of water quality impact is considered less-than-significant.

Illegal Discharge of Chemicals

It is possible that wastes and/or chemicals could be illegally discharged or dumped into the wet pits during the mining and/or reclamation period or after reclamation is complete. It is considered less likely that illegal discharges would occur during the mining and reclamation period because mining and processing personnel would represent a high profile presence.

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[10]Setbacks require that drinking water supply wells are installed at a given distance from a contaminant source, typically 100 to 400 feet, to protect public health from pathogens.

BASELINE conducted an informal survey of several agencies[11] in California that are involved with water quality issues and wet pits created by mining. None of these agencies reported knowledge of any illegal dumping or discharges to wet pits within their jurisdiction. Nevertheless, illegal dumping could occur during mining, the reclamation period, or after reclamation is complete. It is anticipated that the most significant impact would result from a large amount of chemical or waste transported to the wet pit lake by a car or truck. It seems unlikely that a sufficient quantity of material to cause a significant impact would be carried on foot to the lake.

An illegal discharge, depending on the type of chemical and quantity, could cause a significant adverse impact to groundwater quality in the vicinity of the wet pit and downgradient of the discharge. This source of water quality impact is considered significant.

Discharges from Motorized Watercraft

After the completion of mining and reclamation, it is possible that the wet pit lakes could be used for recreational purposes, either legally or illegally. Legal recreational use could result if the lakes were made available to the public (i.e. county park) or private use by permission of the property owner. Illegal recreational users could access the lakes by trespassing. Discharges of fuel, lubricants, and/or bilge water could result in degradation of water quality in the lakes. If this type of discharge occurred on a regular basis, it is possible that groundwater quality in the aquifer adjacent to the wet pit could be impacted. This source of water quality impact is considered significant.

Infiltration of Agricultural Waters

Under the existing condition, the ground surface, where infiltrating rainfall and irrigation waters enter the subsurface, is approximately 10 to 75 feet above the groundwater table. Under some potential mining scenarios, the post reclamation ground surface would be lowered and, therefore, be nearer to the groundwater table, reducing the thickness of the unsaturated zone. Water percolating through soils and sediment is generally improved in quality as organic chemicals are adsorbed to soil particles. Reducing the thickness of this "filter" may reduce its capacity to remove contaminants such as herbicide and pesticide residues from the infiltrating water, reducing groundwater quality.

Topsoil, formerly in agricultural production, may be used to provide a growing medium for reclamation plantings around the reclaimed pits. These soils may contain residual concentrations of persistent pesticides and/or herbicides (e.g., DDT, DDE). Rainfall may leach detectable concentrations of these chemicals into the wet pits, degrading water quality. This source of water quality impact is considered significant.

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[11]The agencies contacted included: the Central Valley Regional Water Quality Control Board, Yuba County Planning Department, Fresno County Public Works, Zone 7 (Alameda County), California Department of Water Resources, Humboldt County Planning Department, San Benito County Planning Department, Tulare County Planning and Development Department.

Bioaccumulation of Mercury

Mercury, a silver-white liquid metal in its elemental form, is a serious potential environmental pollutant. Mercury is a potent neurotoxin, capable of causing brain damage in developing fetuses and mild tremors and emotional disturbances in adults exposed to sufficient concentrations. Compounds of mercury can also be harmful to health. Organic mercury compounds, including methylmercury, are rapidly accumulated by aquatic animals. The concentration of these compounds increases through time in the flesh of fish (bioaccumulation). In addition, the accumulation of organic mercury concentrates along aquatic food chains, reaching high levels at the top predators through a process referred to as biomagnification. Consumption of fish with bioaccumulated levels of methylmercury is the largest source of mercury exposure for humans.

It is possible that if a particular set of physical and chemical conditions are established in the reclaimed wet pits and a sufficient supply of mercury is present in the sand and gravel deposits, that mercury could be introduced to the food chain. The potential for wet pit mining activities to result in adverse environmental impacts associated with mercury is described in more detail in the OCMP Program EIR. This potential source of water quality impact is considered significant.

As discussed previously, the applicant has proposed implementation of a groundwater monitoring program. The proposed program meets some, but not all, of the groundwater monitoring requirements of the OCMP EIR.

Mitigation Measure 4.4-4a

Implement Mitigation Measures 4.4-2a and 4.4-3a of the OCMP Program EIR.

Implementation of this mitigation measure would reduce this impact to a less-than-significant level.

Impact 4.4-5

Creation of wet pit lakes and the subsequent backfilling with fine-grained sediments (processing fines and overburden) could cause impacts to groundwater levels, rate of flow and direction of flow. This is considered to be a less-than-significant impact.

The project proposes off-channel extraction of sand and gravel deposits, including excavation below the groundwater table, creating wet pit lakes. Fine sediments generated during aggregate processing at the plant would be discharged into previously completed wet pit excavations. Overburden, excavated prior to mining to expose the marketable aggregate, would also be used to backfill the wet pits. The backfilling of wet pits with fine sediments introduces zones of reduced permeability to the aquifer. Groundwater continues to flow through the fine sediments, but at a significantly reduced rate. This results in diversion of groundwater flow around the low permeability area.

Introduction of relatively low permeability zones influences groundwater levels in the vicinity of the backfilled pit. Upgradient of the pit, the low permeability zone acts as an inhibitor to flows, raising groundwater levels. Downgradient of the backfilled pit, groundwater levels are lowered because groundwater flows away from the low permeability zone in the native, coarser-grained materials faster than it can be replaced by flow through the low permeability zone. However, due to the high permeability of the surrounding native sand and gravel, groundwater levels equilibrate at a relatively short distance (typically less than 1,000 feet) away from the low permeability zone (David Keith Todd, 1995). Significant alterations in groundwater flow patterns could adversely impact water supply wells in the vicinity of the backfilled pits. The applicant has stated in the permit application that there are no off-site water supply wells within 1,000 feet of the proposed mining areas. Therefore, impacts to groundwater flow and levels in wells would be considered less-than-significant.

Mitigation Measure 4.4-5a

None required.

Impact 4.4-6

Mining of aggregate and subsequent reclamation of the mined areas would result in alteration of the topography and drainage patterns at the site. This is considered to be a less-than-significant impact.

Under ordinary conditions (irrigation and most storms), runoff does not leave the site, but collects on the surface and infiltrates. During large storms, runoff and drainage from the site may enter Cache Creek and Willows Slough which are adjacent to the site. Under existing conditions, drainage from the site does not significantly affect other properties. Upon completion of reclamation, drainage from all of the reclaimed mining areas would be directed to the north to the proposed tree crop production reclamation area adjacent to Cache Creek. Drainage to Cache Creek and/or Willows Slough would be eliminated, except during extreme events when runoff would accumulate in the wooded area. During extreme events, after the water level had receded adequately in Cache Creek, runoff would then be released through a gated culvert from the wooded area to the Creek.

Although on-site drainage patterns would be altered, no significant change in the volume or ultimate destination of the runoff is expected to result from the project. In addition, the quality of storm water or and/or agricultural tailwaters would not be significantly affected as it enters the detention basins since existing land uses and post reclamation land uses would be similar. A period of storage in the detention basins may improve water quality by allowing sediment and residual agricultural chemicals, if any, to settle out of the water prior to release or infiltration.

Mitigation Measure 4.4-6a

None required.

Impact 4.4-7

Reclaimed lowered agricultural surfaces could be inundated during parts of the year by high groundwater conditions, adversely impacting productivity. This is considered to be a significant impact.

Mining and reclamation resulting in the creation of lowered agricultural surfaces is proposed by the project. Shallow mining areas that do not extend below the water table, or deep wet pit mines backfilled with processing fines and overburden may be reclaimed to lowered agricultural surfaces in compliance with County objectives to preserve agricultural lands. These surfaces may be inundated by high groundwater conditions, causing damage to winter crops and delayed access to fields for planting of high-value summer crops. Under extreme conditions, the reclaimed surface could be rendered unfarmable. Figure 4.4-2 shows the relationship between groundwater level fluctuations measured in one water supply well at the site and the existing ground surface.

The permit application indicates that the reclaimed agricultural surface would be a minimum of five feet above average high groundwater, except the Solano West mining area. It is proposed that this mining area be reclaimed to three feet above the average high groundwater. This is inconsistent with the policies of the OCMP and may result in a significant adverse impact.

Mitigation Measure 4.4-7a

All reclaimed lowered agricultural surfaces shall be, at minimum, five feet above average high groundwater. The reclamation plan for the Solano West mining area shall be modified to meet this requirement.

Implementation of this mitigation measure would reduce this impact to a less-than-significant level.

Impact 4.4-8

Increased pumping of groundwater at the processing plant to support the proposed increase in aggregate extraction and processing could adversely affect water supply wells in the vicinity. This is considered to be a less-than-significant impact.

The aggregate processing plant uses water supplied by two on-site groundwater wells. The wells have a combined pumping rate of approximately 3,000 gallons per minute. The proposed increase in aggregate production would require a 50 percent increase in water supplied to the plant. The increased supply would be accommodated by operating the wells for longer periods of time; no new supply wells would be installed (Russo, 1996). Since the pumped groundwater used in processing is discharged back to wet pits or settling basins, all of the water (except that lost to evaporation or wetting of aggregate) is returned to the aquifer relatively near where it was extracted.

Based on mathematical modeling of the groundwater system (David Keith Todd, 1995), local perturbations in water levels caused by pumping wells or backfilled pits generally dissipate to negligible levels within 1,000 feet of the disturbance in the aquifer near Cache Creek. The application states that there are no off-site water supply wells within 1,000 feet of the plant site.

Mitigation Measure 4.4-8a

None required.

4.5 AGRICULTURE

4.5 AGRICULTURE

INTRODUCTION

The climate and soils of the lower Cache Creek basin provide excellent conditions for agricultural production. The proposed project would result in disturbance of existing agricultural fields during mining of aggregate resources. The reclamation plan for the project would result in permanent conversion of agricultural land to nonagricultural uses, including open water and habitat areas. This section of the DEIR describes the agricultural resources at the project site and adjacent areas and evaluates the short- and long-term impacts of the proposed project on these resources.

SETTING

Description of Regional Environment

The project site is located on the western margin of the Sacramento Valley, one of the most productive agricultural regions of the United States. More specifically, the site is located in the lower Cache Creek basin, formed along one of the major regional western tributaries to the Sacramento Valley. The agricultural resources of the region have been described in the OCMP Program EIR (Section 4.5, pp. 4.5-1 to 4.5-11) (EDAW, 1996a). The project site is within the OCMP planning area and was considered as one of six expected mining projects under the environmental analysis for the OCMP. Section 4.5 of the OCMP Program EIR generally describes the agricultural resources of Yolo County as well as the farmland resources within the OCMP planning area. The OCMP Program EIR also presents a discussion of the agricultural soils and the designation of important farmlands within the planning area.

The California Department of Conservation (CDC, 1994) reported that Yolo County had approximately 427,481 acres of "important farmland" and 135,602 acres of grazing land in 1992. The total of 565,178 acres of agricultural land represents approximately 85 percent of the total acreage in the County (661,760 acres). Of the "important farmland" in the County in 1992, 271,534 acres were identified as "prime farmland" by CDC. According to the latest Agricultural Crop Report published by the County Agricultural Commissioner, there were approximately 490,900 acres in Yolo County in agricultural production in 1994. Agriculture accounts for about 74 percent of the total acreage in the County.

Agriculture is the dominant land use within the OCMP planning area. These farmlands are generally flat land composed of irrigated prime and nonprime soils, much of which is currently under intensive row crop or orchard cultivation. Prime agricultural lands are generally considered to consist of lands that do not present significant limitations to agricultural production; these lands have the highest agricultural value. Nonprime agricultural lands are farmlands within agricultural areas that are limited by less than optimal soil conditions, drainage problems, or incompatible adjacent land uses, or a combination of these factors.

Description of Local Environment

The project site is located on the relatively flat terrain of an alluvial terrace formed along Cache Creek. The south bank of the creek forms the northern boundary of the project site. The creek bank supports moderately well-developed riparian vegetation. The proposed mining areas (598 acres) are located on the alluvial terrace surface, which generally slopes eastward from an approximate elevation of 150 feet above mean sea level (msl) at the southwest corner of Mining Area VII to 124 feet (msl) at the northeastern corner of Mining Area V. This general topography of the terrace surface is interrupted by existing mining and reclamation areas within Mining Area I of the project site.

Current Agricultural Use

The agricultural fields at the project site currently support production of crops commonly grown in the lower Cache Creek basin. The common crop types, which are typically planted under crop rotation schedules, are tomatoes, winter wheat, barley, safflower, corn, sunflowers, and alfalfa. The historical and expected crops for the proposed mining areas (Russo, 1996) are shown in Table 4.5-1.

TABLE 4.5-1: **Current Agricultural Activities on the Project Site and Areas Affected by Proposed Mining and Reclamation.**

Mining Area	1996 Crop	Acres of Farmland		
		To be mined	To be reclaimed to agriculture	To be converted to other uses
I	Tomatoes/wheat	40	20	20
II	Tomatoes	65	61	4
III	Tomatoes/wheat	133	90	43
IV	Wheat	119	83	36
V	Wheat/Alfalfa	136	67	69
VI	Wheat	90	15	75
VII	Tomatoes	15	10	5
Site total		598	346	252

Source: Ag West (1995); Solano Concrete (1996).

Tomatoes, which are the most profitable cash crop in the area, have not been grown at the Snyder parcels in recent years. Conditions at these parcels, uneven topography and shallow soils, have discouraged the current farmer from planting tomatoes (Russo, 1996).

Farmland Designations and Soil Types

Different public agencies use various criteria for designating agricultural land as "prime farmland." Applicable definitions of prime farmland include those employed by 1) the State of California in the Williamson Act of 1965, 2) the California Department of Conservation (CDC) Prime Farmland Mapping and Monitoring Program, 3) the U.S. Department of

Agriculture Natural Resources Conservation Service (USDA), and 4) Yolo County Surface Mining Reclamation Ordinance.

The Williamson Act and Yolo County Surface Mining Reclamation Ordinance definitions of prime farmlands are similar. Prime farmlands are defined as:

- All land that qualifies as Class I[1] or Class II in the Soil Conservation Service land use capability classifications.

- Land that qualifies for ratings 80 through 100 in the Storie Index Rating.[2]

- Land that supports livestock used for the production of food and fiber and which has an annual carrying capacity equivalent to at least one animal unit per acre as defined by the USDA.

- Land planted with fruit or nut bearing trees, vines, bushes or crops that have a nonbearing period of less than five years and which will normally return during the commercial period on an annual basis from the production of unprocessed agricultural plant production not less than $200 per acre.

- Land that has returned from the production of unprocessed agricultural plant products an annual gross value of not less than $200 per acre.

In California, the CDC Prime Farmland Mapping and Monitoring Program has been working collaboratively with the USDA since 1980 to map many of the State's agricultural lands, on a county-by-county basis, according to their suitability for agricultural production. CDC defines prime farmland as:

> "[L]and which has the best combination of physical and chemical characteristics for the production of crops. It has the soil quality, growing season and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming methods. Prime farmland must have been used for the production of crops at sometime during the last two

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[1]The USDA capability classification system consists of eight capability classes wherein Class I soils have few limitations for use, Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices, and other classes have progressively greater limitations. Capability subclasses identify a particular limitation, such as the risk of soil erosion; capability units suggest the major limitation responsible for placement of a soil in the capability class and subclass. Class I soils, by definition, have no subclasses because there are few if any limitations, while Class II soils may have any number of limitations.

[2]The Storie Index rating used by the USDA to indicate the relative suitability of a soil (on a scale of 1 to 100) for intensive agriculture is analogous to the soil capability classifications, except that it is based solely on soil characteristics. Grade 1 soils (Storie Index of 80 to 100) have few or no limitations that restrict their use for crops; grade 2 soils (Storie Index of 60 to 80) are suitable for most crops but they have minor limitations that narrow the choice of crops and have few special management needs. Other grades with lower ratings have progressively greater limitations.

update cycles prior to the mapping date. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use."

The most recent Yolo County Important Farmland Map (California Department of Conservation, 1994) indicates that all 598 acres of the proposed mining areas at the project site have been designated as "prime farmland." The previously mined area (approximately 96 acres) of the Hutson parcel, which is included in the proposed reclamation plan, is designated as "other land" by CDC. The farmland designations at and adjacent to the project site are shown on Figure 4.5-1.

The USDA County soil surveys classify farmland by capability and suitability for agricultural use, according to soil types and cropping limitations. While the USDA soil surveys do not designate any land as "prime farmland," both the State Mining and Geology Board Reclamation Regulations (Section 3707 of CCR Title 14) and the Yolo County Interim Criteria reference the USDA definition of prime agricultural lands, and the Interim Criteria specifically identify Capability Classes I and II lands as prime farmlands. Past practice may have been to consider lands in Capability Classes I and II as prime farmland; however, the USDA has recently been using a list that identifies prime farmlands in Yolo County by soil type, qualified by whether or not the lands are irrigated or drained.

According to the Yolo County soil survey (USDA, 1972), all of the acreage of the mining areas proposed by the project is covered by Capability Class I and II soils (Figure 4.3-3). These soils include Brentwood silty clay loam (BrA) and Yolo silt loam (Ya), which cover most of the southern and central portions of the project site. The Sycamore silt loam (So) in the north central portion of the site is only prime farmland when drained.

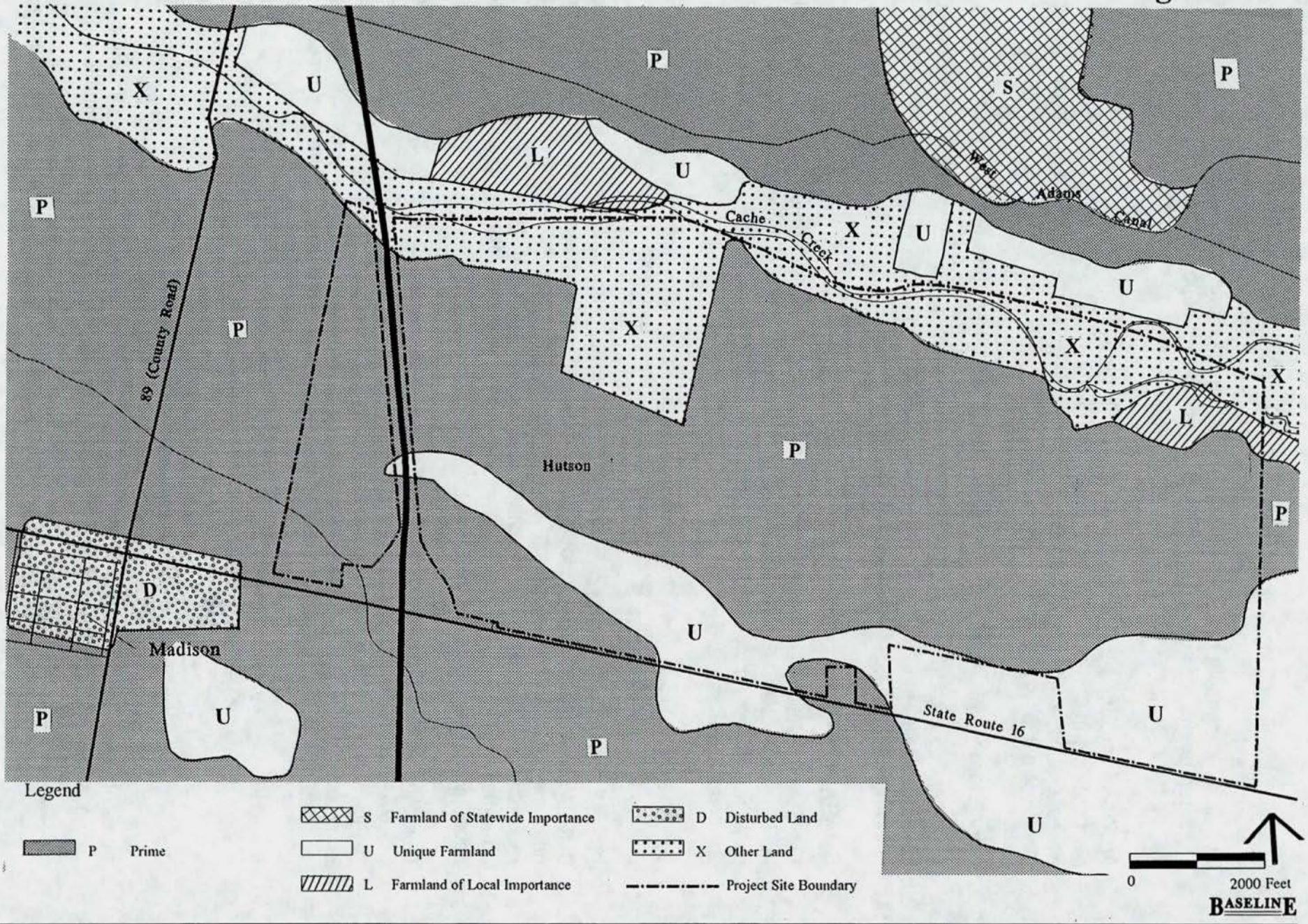
Site-Specific Soil Analysis

The applicant retained Ag West Resources (1995) to prepare a Soils Assessment Report of the area to be mined (598 acres) and reclaimed before developing a site-specific reclamation plan for the proposed project. Based on the on-site soils investigation and laboratory analysis, Ag West Resources concluded that the soil type boundaries shown on the USDA Soil Survey map for the proposed mining area did not reflect actual observed soil conditions.

In general, the site-specific soil investigation indicated that the agricultural capability of the soils throughout the site is limited by the presence of boron. Boron is a naturally occurring element found throughout the Cache Creek watershed. Significant levels of boron are consistently detected in surface waters within the watershed and in lesser amounts in the groundwater within the region. Boron accumulation occurs in the area as the result of irrigation with the affected waters. Boron levels above 2.0 parts per million (ppm) have an adverse effect on crop germination and may cause injury to certain crops. Moderate to excessive (above 2.0 ppm) levels of boron have been detected in soils within the upper six feet throughout most of the mining areas proposed by the project. The Ag West Resources study concluded that the excessive levels of boron present moderate limitations to agricultural capability, including soils identified as Capability Class I soils identified by SCS (USDA, 1972).

FARMLAND DESIGNATION

Figure 4.5-1



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In addition, soil profiling conducted as part of the site-specific analysis indicated that the shallow depth to sand and gravel deposits (i.e., thin agricultural soils) present significant limitations to agricultural capability for the northern portions of most of the mining areas proposed by the project. The shallow sand and gravel deposits promote rapid drainage and poor moisture retention. These are adverse conditions for agricultural productivity.

Additional limitations to the agricultural capability of the soils include clayey soils (limiting permeability) in portions of Mining Areas IV, V, and VI. The site-specific analysis of soil agricultural capability is summarized in Table 4.5-2. The site-specific soil capability map (Ag West, 1995) is presented in Figure 4.5-2.

Consistency with Applicable Policies, Plans, and Regulations

The following section presents the regulatory context for reclamation of the project site to agriculture following aggregate extraction. Applicable requirements are contained in the following regulations, policies, and plans.

SMARA and Related Regulations

The State of California regulates reclamation of surface-mined areas through the Surface Mining and Reclamation Act (SMARA) of 1975, as amended. While SMARA does not contain detailed provisions concerning the reclamation of mined land for agricultural purposes, it states:

> Sec. 2712 It is the intent of the Legislature...to assure that...mined lands are reclaimed to a usable condition which is readily adaptable for alternative land uses.

Section 2773 specifies that site-specific reclamation plans are required and also mandates that statewide reclamation standards be established, including standards for "[p]rime and other agricultural land reclamation" and standards for "[t]opsoil salvage, maintenance, and redistribution." The section further states that "[t]hese standards shall apply to each mining operation, but only to the extent that they are consistent with the planned or actual subsequent use or uses of the mining site."

Guidelines for implementation of the surface mining and reclamation provisions contained in SMARA were promulgated by the State Mining and Geology Board in CCR Title 14. The regulations provide detailed requirements pertaining to reclamation, including performance standards for prime agricultural land reclamation and performance standards for other agricultural land. The following performance standard applies to the proposed project.

> Sec. 3707(a) Mining operations which will operate on prime agricultural lands, as defined by the U.S. Soil Conservation Service, shall return all disturbed areas to a fertility level specified in the approved reclamation plan.

This standard applies to reclamation plans where agriculture is the approved end use for mined areas within prime farmlands. The proposed project includes approximately 522 acres of land mapped as containing Capability Class I and II soils (defined by the SCS as prime soils) and are designated as prime farmland by CDC. The reclamation plan

TABLE 4.5-2: **Summary of Site-Specific Soil Characteristics, Solano Concrete.**

Mining Area	SCS Soil Capability Classification[1]	Site Specific Soil Capability Classification	Area (acres)	Storie Index[2]	Observed Site-Specific Soil Capability Limitations
I	I	III(s)-4	14	60	Significant shallow sand and gravel; excessive boron
		II(w)-9	26	75	Excessive boron (>2.0 ppm) levels
II	I, II	III(s)-4	33	68	Significant shallow sand and gravel
		II(w)-9	32	80	Excessive boron levels
III	I, II	IV(s)-4	40	32	Significant shallow gravel in eastern portion
		III(s)-5	31	66	Significant shallow sand and gravel in northern portion
		II(w)-9	62	74	Excessive boron levels
IV/VI	I, II, VIII	IV(s)-4	90	32	Significant gravel in northern portion
		III(w)-3	25	69	Slow or very slow permeability in subsoil
		II(w)-9	94	77	Excessive boron levels
V	I, II	III(s)-54	12	70	Clayey soil
		II(w)-9	124	79	Excessive boron levels
VII	I, VIII	III(s)-5	3	70	Significant shallow sand and gravel in northern portion
		II(w)-9	12	81	Excessive boron levels.

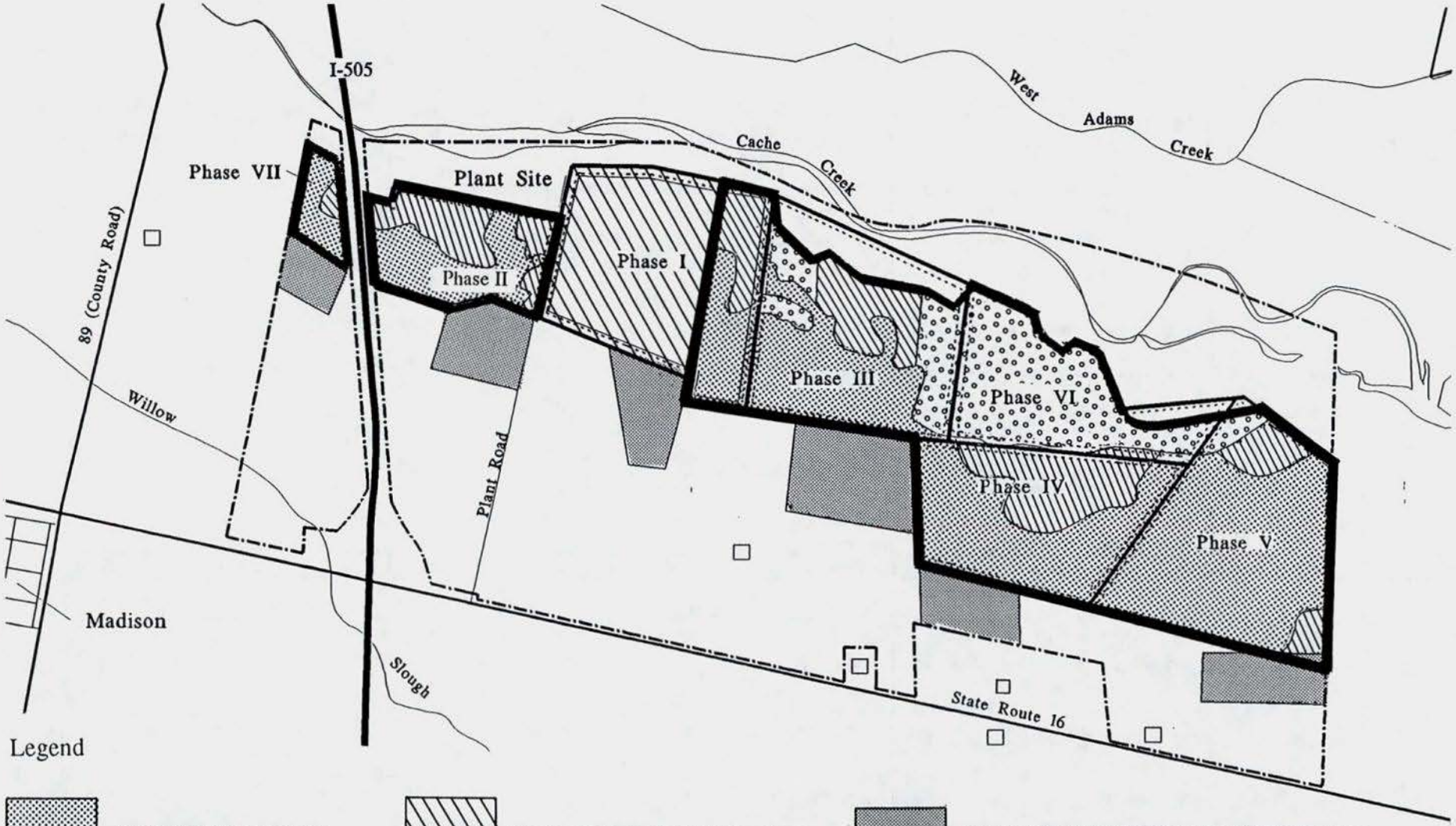
[1] The Capability Class of a soil is a designation assigned by the Soil Conservation Service to describe the general suitability of the soil to support most kinds of crops. The following capability classes have been identified at the project site:

Class I - few or very minor limitations for agricultural production;
Class II - moderate limitations that reduce the choice of plants or require moderate conservation practices;
Class III - severe limitations that reduce the choice of plants or require special conservation practices or both;
Class IV - very severe limitations that reduce the choice of plants or require special conservation practices.

[2] The Storie Index is a numerical expression of the suitability of a soil for intensive agriculture reflecting soil profile characteristics, soil texture, slope of agricultural surface, and other conditions.

SITE-SPECIFIC SOIL MAP

Figure 4.5-2



Source: AGWest, 1995

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proposes to reclaim 223 acres to row crop production and 223 acres to tree crop production at a level equal to or exceeding current production levels at the site and on adjoining properties. The remaining acreage would be reclaimed to nonagricultural uses. The reclamation of prime farmland to nonagricultural uses would be consistent with this provision of the SMARA regulations, provided that the mined lands were not under a Williamson Act contract. The impact of the permanent conversion of prime farmland to nonagricultural uses is described in Impact 4.5-2.

Sec. 3707(b) When distinct soil horizons are present, topsoil shall be salvaged and segregated by defined A, B, and C soil horizons. Upon reconstruction of the soil, the sequence of horizons shall have the A atop the B, the B atop the C, and the C atop graded overburden.

The reclamation plan specifies that A-, B-, and C-horizon (undifferentiated overburden) soils would be excavated separately in succession and either used immediately for soil placement in a reclamation area, or stored in segregated stockpiles.

Sec. 3707(c) Reclamation shall be deemed complete when productive capability of the affected land is equivalent to or exceeds, for two consecutive crop years, that of the premining condition or similar crop production in the area. Productivity rates, based on reference areas described in the approved reclamation plan, shall be specified in the approved reclamation plan.

The reclamation plan for the proposed project specifies that the productivity of the crop yields for the reclaimed lands would be monitored for five years following the completion of physical reclamation. The crop yields for the reclaimed areas would be compared to crop yields on existing reference fields adjacent to or near the project site that are planted to a similar crop. Historic data are not available for the project site for annual yields of crops similar to those proposed by the reclamation plan. The proposed reference fields are, however, representative for the soil conditions and farm management proposed for the project reclamation.

Sec. 3707(d) Use of fertilizers or other soil amendments shall not cause contamination of surface or ground water.

Conventional farming of the reclaimed fields would include the use of fertilizers and other agricultural chemicals. The potential for these chemical compounds to affect water quality during mining and reclamation are addressed in Impact 4.4-3 and 4.4-4.

Sec. 3708 The following standards shall apply to agricultural lands, other than prime agricultural lands, when the approved end use is agriculture. In addition to the standards for topsoil salvage, maintenance, and redistribution, nonprime agricultural lands shall be reclaimed so as to be capable of sustaining viable production of crops commonly grown in the surrounding areas.

The project proposes reclamation of approximately 90 acres of lands determined to contain Capability Class III and IV soils to row crop production. The standards for reclamation of these lands would be similar to areas of Capability Class II soils. Approximately 42 percent of the areas with nonprime soils would be reclaimed to tree crop production. The cultivation of tree crops is not currently practiced within the vicinity of the project. The

success of reclamation of this area would be based on a net income comparison with historical yields of tomato crop production on adjacent fields.

Yolo County General Plan

Several goals and numerous policies and elements of the Yolo County General Plan are relevant to the application for a surface mining permit to operate an off-channel gravel extraction operation at the project site. In particular, the General Plan's stated goals include:

- Wise land use based on both physical and social characteristics of the County;
- Protect prime and other agricultural land from urban development;
- Establish natural and wildlife areas (preserves);
- Provide long-term assurance of the terms of permits and approvals.

Land use policies of the General Plan that are especially relevant to the proposed off-channel gravel mining and reclamation to farmland are listed below. The majority of the policies are provided verbatim; some lengthy policies are summarized and, if so, are indicated as such.

LU 6: It is the policy of Yolo County to vigorously conserve and preserve the agricultural lands in Yolo County. Yolo County shall protect and conserve agricultural land use especially in areas presently farmed or having prime agricultural soils and outside of existing planned urban communities and outside of city limits.

LU 7: Non-agricultural land use activities are prohibited from agriculturally designated areas in Yolo County except as defined in policies LU 12, LU 17, LU 18, LU 19 (reserved for future use), and LU 46.

The exceptions defined in policies LU 12, LU 17, LU 18, and LU 46 do not directly apply to the proposed project. However, aggregate mining is a permittable use for agricultural lands under the County Reclamation Ordinance and County Resolution 94-82.

LU 8: (Williamson Land Conservation Program) and LU 9 (Agricultural Preserve Zoning). In summary, these policies provide for adoption by the County of the Williamson Act and Conservation Program, and for application of Agricultural Preserve (A-P), zoning to all lands which qualify for an agricultural preserve contract.

Six of the seven parcels proposed for mining within the project site are currently zoned Agricultural Preserve. The Hutson and Farnham West parcels are not under a Land Conservation contract. The OCMP proposes amendments to the Yolo County Zoning Ordinance that would permit mining of lands zoned Agricultural Preserve and under Williamson Act contract. If this amendment to the current zoning regulations is not adopted, the applicant requests rezoning of the AP-zoned properties to General Agricultural prior to the commencement of mining. Under this condition, the Williamson Act contracts would expire before mining could begin. See further analysis of Williamson Act and zoning issues below.

Open space policies of the General Plan that are particularly relevant to the proposed project include:

OS 1: Yolo County shall preserve appropriate open space land through available means of land use controls, regulations, and advice or guidance and through coordination with the other elements of this General Plan, as amended, and with other agencies.

OS 2: In summary, this policy states that Yolo County shall use diverse policies and other regulatory means to preserve open space. This policy defines "open space" to include areas used for managed resource production including agricultural land and areas containing major mineral deposits, including sand and gravel clays.

OS 3: Yolo County shall preserve agricultural land as the principal component of open space.

Following mining, approximately 42 percent of the project site would be returned to agricultural use under the reclamation plan. The remaining area of the reclaimed site would support wildlife habitat. The open space use of the reclaimed land for agriculture and habitat would generally conform with these policies.

Conservation policies of the General Plan that are particularly relevant to the proposed project include:

CON 5: This policy states, in part, that "Yolo County shall require conservation of natural resources in the development and managed utilization including... the reclamation of lands and waters."

CON 6: Yolo County shall plan, encourage, and regulate to ensure that natural resources are maintained for their long-term ecological values as well as for their more direct and immediate benefits.

CON 11: Yolo County shall encourage the highest agricultural use of good agricultural soils and the development of acceptable agricultural industry.

CON 12: Yolo County shall regulate land use and encourage and cooperate with appropriate agencies to conserve, study, and improve soils. Prime soils shall be preserved outside of designated urban areas.

The proposed project would result in disturbance of prime soils on portions of the project site. Portions of the site would be reclaimed to nonagricultural use, including areas that were determined by the site-specific soil investigation to contain prime (Class I and II) and nonprime (Class III and IV) soils. Potential impacts on prime farmland and agricultural soils are described in Impacts 4.5-1, 4.5-2, and 4.5-3.

CON 13: This policy states, in part, that "Yolo County shall regulate development to avoid degradation of land forms through non-agricultural grading..."

The OCMP requires specific measures for reclamation to agricultural lands disturbed by grading during mining and reclamation. Compliance of the project with these requirements would represent conformance with this policy.

CON 41: Yolo County may require a review and report from a qualified Resource Conservation person on all permit approvals for land use or land division in designated agricultural areas.

The requirement of a Soil Assessment Report for Long-term, Off-Channel Mining permits by the County and the requirement by the County that all surface mining/reclamation projects comply with the SMARA regulations conform with this policy. The proposed project includes technical reports, prepared by professional consultants in specific fields, (including soil science, engineering geology, hydraulic engineering, groundwater hydrology, and others). The environmental review of the proposed project in this DEIR evaluates the possible environmental impacts of the activities proposed by the project.

OCMP and Implementing Ordinances

In October 1995, Yolo County released the OCMP and subsequently released ordinances in support of the plan. The OCMP and the ordinances are undergoing environmental review concurrently with the proposed project and four other long-term mining and reclamation plan proposals. The ordinances, upon adoption, would require compliance of all mining/reclamation projects with the policies of the OCMP. The OCMP Program EIR evaluates the general conformance of proposed off-channel surface mining operations, including the proposed project, with the provisions of the OCMP. The Agricultural Resources Element of the OCMP includes several Performance Standards that are pertinent to individual mining projects, including the proposed project:

PS. 5.5-2: Topsoil stockpiles shall not exceed (40) feet in height, with slopes no steeper than 2:1 (horizontal:vertical). Stockpiles shall be seeded with a vegetative cover to prevent erosion and leaching. The use of topsoil for purposes other than reclamation shall not be allowed without the prior approval of the Community Development Director.

The project proposes maximum stockpile height of 40 feet, maximum slope of 2:1, and vegetation of stockpiles with wheat. No off-site use of topsoil is proposed. These project elements conform with the OCMP standard.

PS. 5.5-1: Soil shall be cut in maximum depths in order to minimize traffic and limit compaction. The handling and transportation of soil shall be minimized. All handling of topsoil shall be accomplished when the soil is dry in order to avoid undue compaction.

PS. 5.5-3: The operator shall resurvey any areas reclaimed to agricultural usage after the first two (2) crop seasons have been completed. Any areas where settling has occurred shall be re-leveled to the field grade specified in the approved reclamation plan.

PS. 5.5-4: Where areas are to be reclaimed to agricultural usage, all A and B horizon soils shall be ripped to a depth of three (3) feet after every one (1) foot layer of soil is laid down, in order to minimize compaction.

The project application proposes that soil horizons would be ripped during placement in reclamation areas for agriculture. The application proposes that the reclaimed agricultural fields will be resurveyed after completion of reclamation. The potential impacts related to settlement are discussed in Impact 4.3-1.

Project-Specific Implementation of the Program EIR Mitigations

The OCMP EIR evaluated seven potential impacts related to agricultural resources. The program-level EIR evaluated the consistency of off-channel mining on contracted land with the provisions of the Williamson Act (OCMP EIR Impact 4.5-1). The impacts of the permanent conversion of agricultural land to nonagricultural uses (OCMP EIR Impact 4.5-2) and the temporary loss of agricultural production during mining and reclamation (OCMP EIR Impact 4.5-3) were also evaluated. The OCMP EIR also analyzed the potential loss of agricultural soils caused by erosion (OCMP EIR Impact 4.5-3), potential impacts on agricultural productivity caused by management of soils disturbed during mining and reclamation (OCMP EIR Impact 4.5-5), and the potential impacts of lowering reclaimed land surfaces on agricultural productivity (OCMP EIR Impact 4.5-6). The cumulative loss of agricultural land related to mining and reclamation considered under the OCMP (OCMP EIR Impact 4.5-7) was also evaluated.

Mitigation measures to reduce the impacts on agriculture were presented in the OCMP EIR. Mitigation for consistency with the Williamson Act was not required (OCMP Mitigation Measure 4.5-1a). This impact is discussed for the proposed project in Project Impact 4.5-6. Although mitigation measures were presented for the permanent loss of agricultural land (OCMP Mitigation Measure 4.5-2a) and temporary loss of agricultural productivity (OCMP Mitigation Measure 4.5-2b), these impacts would not be reduced to a less than significant level and were, therefore, found to be significant and unavoidable. Although the proposed project would result in improvement of agricultural soils in portions of the reclaimed site, permanent loss of agricultural land would occur. Offset for all agricultural lands lost as a result of the project, required by the OCMP, is not provided by the project (Project Impact 4.5-1). The project is consistent with OCMP Mitigation Measure 4.5-3a in providing a phased mining and reclamation plan that would minimize the temporary disturbance of agricultural productivity (Project Impact 4.5-2). The proposed project is generally consistent with the OCMP mitigation measures for impacts related to lowering of reclaimed agricultural surfaces but requires minor modification (Project Mitigation Measure 4.6-5a) to be completely consistent with the OCMP EIR. The project is consistent with requirements of the OCMP EIR for management of soils during mining and reclamation (Project Impact 4.5-3).

Significance Criteria

The project would have a significant effect on agriculture if it would:

- Permanently convert prime agricultural soils to a nonagricultural use.
- Cause the loss of agricultural productivity or crop values that represent a major proportion of the County's production or value of crops.
- Impair or degrade the existing productivity of agricultural soils, or adversely affect agricultural resources or operations, in the planning area or County.

- Conflict with adopted plans or policies of State and other agencies that seek to preserve or protect agricultural soils, lands, and operations.

Project-Specific Analysis

Impact 4.5-1

The proposed project would result in the temporary loss of agricultural production during mining and reclamation. This is considered to be a less-than-significant impact.

The proposed project would result in the disturbance of approximately 585 acres[3] of land currently in agricultural production. Disturbance of the land would suspend agricultural production during the mining period and until reclamation to agriculture was completed. The disturbance of all the land within the project would not occur simultaneously. The site would be mined in a sequential pattern and reclamation would occur concurrently with mining. However, the phasing plan for the proposed project indicates that, on average, approximately 17 acres would be mined and eight acres would be reclaimed annually. The phasing plan indicates that the maximum disturbance (approximately 71 acres) would occur near the middle of the project (fifteenth year). Assuming that the stockpiles proposed for use would be located closest to the active mining and reclamation activities during this period, an additional 55 acres of agricultural land would be taken out of production to accommodate stockpiling of soil.

For the purposes of estimating the temporary loss of crop acreage, it is assumed that a maximum of 126 acres (71 + 55 acres) would be out of production in any given year. All of this acreage is conservatively assumed to be capable of producing tomatoes, the most profitable crop typically grown in the area.

The Yolo County 1994 Agricultural Crop Report states that 69,700 acres of tomatoes were harvested in the County in 1994. Thus, the temporary loss of 126 acres while mining occurs would represent approximately 0.18 percent of the 1994 tomato acreage.

The Yolo County 1994 Agricultural Crop Report states that 2,346,000 tons of tomatoes were harvested in the county last year, with an average yield of 33.7 tons per acre and an average price of $50.35 per ton, for a total value to the County of $118,121,000. The annual loss of production on the 126 acres during the mining and reclamation period, assuming a tomato yield of 33.7 tons per acre, would total approximately 4,246 tons ($213,786), equivalent to 0.18 percent of the County's 1994 production and returns from tomatoes.

The above analysis indicates that the temporary loss of tomato acreage and economic value while the project site is being mined and reclaimed would be minor, in comparison

[3]A recent aerial photo (11 November 1995) indicates that approximately 13 acres of agricultural land on the Farnham West parcel (Mining Area I) has been disturbed by current mining activities.

to the total acreage and annual economic returns of tomato production in Yolo County. Therefore, implementation of the proposed project would result in less than significant impacts to agricultural production and no additional monitoring or mitigation measures are required.

Mitigation Measure 4.5-1a

None required.

Impact 4.5-2

The proposed project would result in permanent conversion of 252 acres of prime farmland to nonagricultural uses. This is considered to be a significant and unavoidable impact.

The reclamation plan for the project would result in conversion of approximately 252 acres of land currently under agricultural production to nonagricultural uses, including open lakes (161 acres), habitat (65 acres), and perimeter slopes and access roads (26 acres). These areas would be permanently removed from agricultural production. All of the agricultural land is identified as either "Prime Farmland" or "Other Land" (mined lands) by the California Department of Conservation (1994). OCMP EIR Mitigation Measure 4.5-2a requires that permanent conversion of agricultural land to nonagricultural uses be mitigated by providing offset for lost agricultural land at a 1:1 ratio. This offset can be provided through improvement of nonprime soils, placement of agricultural preserve easements on prime farmlands not currently protected, or irrigation of nonprime lands limited only by lack of irrigation water supply.

The site-specific agricultural soil report (Ag West, 1995) indicates that approximately 60 percent of the proposed mining areas have Class II soils (350 acres) located primarily in the areas in the southern half of the site. Approximately 67 acres of the proposed open lakes (including surrounding perimeter lakes) would be created in areas with Capability Class II soils (Mining Area V). The remaining lake areas would be within areas with Class III and IV soils, which are limited in their suitability for agricultural production by shallow sand and gravel deposits.

The reclamation plan for the proposed project results in improvements to the agricultural capability of the soils in the northern portion of the proposed mining area by providing a thicker soil, limiting the adverse impact of shallow sand and gravel deposits on agricultural use, which affect approximately 211 acres of the proposed mining areas. The mixing of soils during reclamation would also reduce the adverse affects of clayey soils and low permeability conditions found on approximately 37 acres. These improvements would increase the success of proposed reclamation of mined lands to row crop and tree crop production on approximately 90 acres of land identified as currently having soil limitations. Although soil conditions would be improved, the permanent loss of productive agricultural land to nonagricultural uses cannot be avoided.

Mitigation Measure 4.5-2a

Compliance of the project with Mitigation Measure 4.5-2a of the OCMP Program EIR would reduce the impact of the permanent loss of agricultural land. Compliance with the mitigation may be phased to track with the phasing of the mining. Compliance shall be verified by phase.

Aspects of the reclamation plan that would increase the capability of the soils on approximately 90 acres of the site would reduce the impact, but would not meet the offset requirements of OCMP Mitigation Measure 4.5-2a. Offset of an additional 162 acres would be required. Following implementation of the mitigation measure, the impact would remain significant and unavoidable.

Impact 4.5-3

Water or wind erosion of stockpiles of agricultural soils at the project site could result in permanent loss of an important agricultural resource. This is considered to be a less-than-significant impact.

The project proposes the removal of agricultural soils from approximately 585 acres. The project proposes that upon removal from each mining area, the excavated soil would be transported directly to reclamation areas for reuse or stored in stockpiles adjacent to the mining areas. The proposed project generally meets the requirements of the OCMP and SMARA for soil management and erosion control. The stockpiles would be a maximum of 40 feet high with maximum side slopes of 2:1. Erosion of the stockpiles would be expected, particularly when nonvegetated soil is exposed to runoff and wind. However, the stockpiles would be located on relatively level topography and the distance that eroded soil is transported by runoff away from the piles would be minimal. Soil eroded from the piles would likely be recovered by grading following removal of the stockpile. Although segregated soils could be mixed during erosion, the mixing of the soils would not significantly impact their appropriateness for reuse in reclamation.

Soil exposed during excavation could also be subject to erosion by runoff. However, the creation of a depression during these operations would result in an internal drainage condition (i.e., runoff would flow to the interior of the mining area instead of away from it). Eroded soils would be transported to the center of the mining area and recovered during subsequent excavation.

During excavation, the soils within the mining areas would also be subject to wind erosion. Initial disturbance of the surface would be similar to that caused by current seasonal agricultural plowing. As mining progresses and the mining pit is deepened, the potential impact of wind erosion would be generally decreased as the area would be depressed relative to surrounding areas. The potential loss of agricultural soil exposed during excavation would, therefore, be minimal. The suppression of dust generation required by Mitigation Measure 4.7-1 would further reduce the potential loss of agricultural soils by wind erosion.

Mitigation Measure 4.5-3a

None required.

Impact 4.5-4

Proposed post-reclamation uses could result in impacts to agricultural lands and operations on- and off-site. This is considered to be a less-than-significant impact.

The reclamation plan for the proposed project includes reclamation of mined lands to both agricultural and nonagricultural uses. Agricultural uses at the site and in adjacent areas could be impacted by changes in topography and/or habitat restoration proposed by the project. The lowering of reclaimed agricultural land under the proposed project could cause erosion of perimeter slopes, which could cause erosion of adjacent land (e.g., headward erosion of gullies formed on the perimeter slopes). However, the proposed reclamation plan presents a grading plan which would prevent runoff into the mining areas and reclaimed areas. Erosion of the perimeter slopes would be managed during and after mining through standard erosion controls measures (including management of runoff/runon and vegetation of slopes). The potential for erosion of off-site areas is minimized by these provisions.

A second potential impact on agriculture at or adjacent to the proposed mining and reclamation area is the promotion of wildlife habitat. The project proposes, as a "net gain" to the existing biotic environment, the restoration of 35 acres of habitat outside the proposed mining area. In addition, the proposed reclamation of 223 acres of mining area to tree crop production could promote the use of the tree crops as roosting or nesting habitat. Vegetated perimeter slopes could also provide wildlife habitat. These changes to the existing environment could result in an increase in populations of agricultural pests (including, but not limited, to rodents and insects). However, the tree crop areas, presenting a limited habitat, would provide a buffer between habitat restoration areas and the proposed reclaimed row crop agricultural fields. The resulting environment would not present a significant increase in potential conflicts between agricultural use and the existing riparian corridor along Cache Creek.

Mitigation Measure 4.5-4a

None required.

Impact 4.5-5

Lowering of reclaimed agricultural fields could result in adverse conditions for agricultural production. This is considered to be a significant impact.

The removal of aggregate resources (a significant volumetric loss of subsurface material) proposed by the project would result in the lowering of any reclaimed surface. The effect of lowering of reclaimed surface for agricultural use presents two conditions that could impact the agricultural productivity of lowered reclaimed surfaces.

The first condition results from the lowering of the ground surface, causing a reduction in the vertical distance between the reclaimed surface and the groundwater table. Crops planted closer to the groundwater table could be subject to saturated soil conditions that could limit productivity. Prolonged saturation of soils within the rooting depth of crops can cause severe problems for plant growth.

The net lowering of agricultural fields proposed under the reclamation plan for the project would range from eight feet in Mining Area V to 19 feet in Mining Area VII; the weighted average lowering would be approximately 10 feet. To evaluate the potential impact of reducing the distance between the surface and the groundwater table, it is necessary to consider fluctuations in the groundwater level and the relationship of that fluctuation to agricultural practices. Groundwater levels in the unconfined aquifer beneath the project site rise in the winter and spring in response to increased precipitation and infiltration. The level of the groundwater falls during the summer in response to decreased precipitation and pumping of groundwater for irrigation. The average fluctuation of seasonal high to seasonal low groundwater levels is approximately 13 feet at the project site.

Conventional summer crops grown in the vicinity of the project site would generally be tolerant of saturated soil at depths greater than five feet below the ground surface during the growing season (Southard, 1996). The height of the proposed reclaimed lowered agricultural surfaces above average seasonal high groundwater ranges from 13 feet in Mining Area II to three feet in Mining Area VII. With the exception of Mining Area VII, the height of the reclaimed agricultural surfaces are five feet or more above the seasonal high groundwater. The seasonal high groundwater would typically occur in the winter or late spring, prior to the growing season for summer crops. Winter crops typical of the area generally have shallower rooting depths (two to three feet) and are, therefore, more tolerant of high groundwater conditions.

With the exception Mining Area VII, the proposed reclamation plan would provide sufficient separation between the reclaimed agricultural surfaces and the groundwater table. The potential impact of late spring saturation of soils within the rooting depth of summer crops in Mining Area VII could significantly impact agricultural productivity on the field. The proposed reclaimed field may not be suitable for some crops, particularly during years with high late spring precipitation.

The second potential impact of lowering of agricultural field is the possibility that the lowered field may provide a "sink" for colder air. The higher density of colder air would cause that air to preferentially flow into lower topographic areas. This condition could result in a greater potential for frost damage or inhibited growth for crops grown on the lowered agricultural fields. However, cold damage to crops planted on portions of mined areas of the Hutson parcel (located within Mining Area I) reclaimed to lowered agricultural fields has not been observed. The fields were lowered between 8.5 and 14 feet below the pre-mining surface. The agricultural productivity of these reclaimed fields have been monitored since 1989 and has been shown to be similar to productivity on adjacent agricultural fields. The potential for cold damage to crops on the lowered agricultural fields is, therefore, considered to be a less-than-significant impact.

Mitigation Measure 4.5-5a

Compliance with Mitigation Measure 4.4-8a of the OCMP Program EIR would mitigate the potential impacts of high seasonal groundwater on crop productivity. The mitigation requires that all reclaimed agricultural surface are a minimum of five feet above the average seasonal high groundwater level. To meet this standard, the elevation of the reclaimed agricultural fields within Mining Area VII shall be raised two or more feet above the proposed reclaimed surface elevation.

Impact 4.5-6

The nonrenewal of current Williamson Act contracts for land affected by mining could result in a reduction of land under conservation for agriculture or open space uses. This is considered to be a less-than-significant impact.

The project site includes 1,788 acres of land that is currently under Williamson Act contracts. Under these contracts, made between the County and the landowner, the land owner pays reduced property taxes in exchange for the landowner's conservation of agricultural or open space uses on the property. The contracts have an annually renewing term of ten years. At any time, the landowner can decide whether or not to renew the contract. The applicant has filed notices of nonrenewal of the Williamson Act contracts for the six parcels under contract within the project site. Under current Yolo County zoning regulations, parcels under contract cannot be rezoned from A-P to A-1. The applicant, therefore, has filed notices of nonrenewal of Williamson Act contracts to avoid future conflicts with current zoning restrictions that would preclude mining of A-P zoned lands.

Termination of the contracts would reduce the amount of land on which agricultural and open space uses are conserved. The conservation of agricultural uses within Yolo County is an important control to prevent the loss of agricultural land to nonagricultural uses. During the period 1990 to 1992, approximately 2,258 acres of important farmland was converted to other uses (CDC, 1994). However, the effect of termination of the contracts and rezoning of the project areas to A-1 would not result in the conversion of these lands to uses that are inconsistent with agricultural or open space uses. The reclamation plan would result in reclamation of the mined lands to agriculture or open space areas. Unmined areas of the project site would remain in agricultural use. Therefore, the termination of the contracts would not result in a change of total acreage within the County that is under agricultural or open space use. However, the expiration of the existing contracts would reduce the amount of land currently protected by the Williamson Act.

The OCMP proposes a change (Action 5.4-2) in the Yolo County Zoning Ordinance that would allow commercial aggregate mining within A-P zones. Any mining in areas under Williamson Act contract would need to comply with the provisions of the Williamson Act that address surface mining on contracted lands (California Code of Regulations sections 51238.1 and 51238.2).

Mitigation Measure 4.5-6a

None required. However, permanent conservation of the project site for agricultural and open space use would be better assured if all parcels within the site were re-enrolled in Williamson contracts upon completion of mining.

Impact 4.5-7

Proposed reclamation of portions of mined areas to tree crop agriculture could potentially conflict with adjacent agricultural uses. This is considered to be a less-than-significant impact.

The reclamation plan for the project proposes reclamation of 223 acres of mined lands to tree crop production on lowered agricultural field. In general, hybrid poplar tree crop production areas would be located between areas of row crop production in the central and southern portions of the project site and reclaimed open water bodies and wildlife habitat in the northern portions of the project site. The crops would be planted in undifferentiated B- and C-horizon soils on surfaces which are five feet or more above the average seasonal high groundwater level. The proposed poplar trees have a high tolerance for wet soil conditions. The trees would be harvested for biomass products and/or lumber products. The harvesting cycle would vary from three years for the biomass products to five years for lumber.

The viability of tree crop agriculture within the project site boundaries was evaluated in the Environmental Impact Report prepared for the Solano Concrete Short-Term, Off-Channel Mining Permit Application (BASELINE, 1995b). The evaluation identified expected benefits associated with tree crop production including:

- increased soil organic content input from tree crops relative to conventional row crops:
- potential reduction in soil erosion related to canopy development, greater litter production, windbreak effectiveness, and extensive root system development;
- reduced agricultural chemical use and beneficial uptake by tree root systems of excess nutrients in agricultural runoff, and
- potential production of mulch, a valuable soil amendment, for on- or off-site use.

The analysis also discussed potential adverse impacts. The root systems of the tree crops could potentially invade adjacent agricultural lands, possibly affecting crop production or farm management. However, the proposed tree crops would be planted on surfaces that are lower than surrounding agricultural fields (including reclaimed row crop production areas). In this topographic position, the tree crop root systems would not likely present problems on adjacent fields. The potential for the tree crop areas to serve as a reservoir for agricultural pests is limited. No specific agricultural pests are known to favor the environment of poplar tree crop plantations. The use of herbicides and pesticides is not

generally required for the poplar plantations. Pests which could affect adjacent row crop areas are not known to proliferate in poplar plantations. The tree crops would also provide a buffer between wildlife areas along the riparian corridor of Cache Creek and around the perimeter of the proposed open-water bodies.

No significant environmental impacts to agriculture would result from the proposed tree crop production. Potential environmental benefits could result. The productivity of the tree crop areas would be required to meet the productivity (measured in value) of adjacent unmined agricultural fields.

Mitigation Measure 4.5-7a

None required.

Impact 4.5-8

Implementation of the proposed project would contribute to the cumulative loss of agricultural land. This is considered to be a significant and unavoidable impact.

The proposed project would result in the conversion of approximately 252 acres of agricultural land to nonagricultural land over a 30-year period. This loss would contribute to future cumulative losses of agricultural lands to nonagricultural uses. The implementation of six long-term mining projects, including the proposed project, within the OCMP planning area would result in a permanent conversion of approximately 1,135 acres of land to nonagricultural uses. The average rate of conversion would be approximately 38 acres per year. The loss of agricultural land related to the proposed project would be approximately 22 percent of the expected loss of agricultural land associated with proposed off-channel mining activities within the next 30 years.

The expansion of the urban areas within Yolo County will also result in the conversion of farmland to nonagricultural uses. The Woodland General plan indicates that between 2,108 and 2,296 acres of agricultural land will be converted to nonagricultural uses. Approximately 2,200 acres of farmland is expected to be lost due the expansion of Esparto and Madison. A cumulative loss of farmland to urban expansion would amount to almost 5,000 acres. Assuming all of these losses would occur by 2015, the average annual conversion of farmland to nonagricultural use would be approximately 263 acres per year.

The combined total annual average loss of agricultural land to nonagricultural uses due to expected urban expansion and proposed off-channel mining would be approximately 301 acres per year. The average rate of conversion of agricultural land at the project site to nonagricultural use would be 8.4 acres per year or 2.8 percent of average annual loss.

The conversion of important farmlands on a countywide basis can be estimated from recent data compiled by the California Department of Conservation (1994). During the period from 1990 to 1992, approximately 2,258 acres (1,129 acres per year) of important farmlands were converted to nonagricultural uses. The average annual loss of agricultural

land resulting from implementation of the proposed project would be approximately 0.7 percent of countywide annual loss recorded from 1990 to 1992.

Mitigation Measure 4.5-8a

Implementation of Mitigation Measure 4.5-2a would reduce the impact of the cumulative loss of agricultural land in Yolo County.

Implementation of the mitigation measure would not reduce the impact to a less-than-significant level. The impact of the cumulative loss of agricultural land would remain significant and unavoidable.

4.6 BIOLOGICAL RESOURCES

4.6 BIOLOGICAL RESOURCES

INTRODUCTION

This section evaluates the potential impacts of the project on biological resources, including removal of existing vegetative cover, effects on the extent of sensitive natural community types, disturbance to wildlife habitat and disruption of movement corridors, impacts on populations of special-status species, and modification to jurisdictional wetlands or other waters.

The biological resource assessment performed during preparation of this section of the EIR involved: a preliminary literature review, interpretation of existing mapping, and a field reconnaissance. Prior to conducting the field reconnaissance, available literature and resource mapping were reviewed to provide information on vegetation and wildlife habitat, wetlands, and the distribution of special-status species and sensitive natural communities on the site and vicinity. Literature and mapping reviewed included: the biological assessments and habitat restoration plans prepared as part of the five long-term mining applications currently being considered by the County; environmental documentation for previous projects in the vicinity, such as the EIRs prepared for three interim off-channel mining applications; the *Biological Resources Study* (EIP Associates, 1995) of the *Technical Studies and Recommendations for the Lower Cache Creek Resource Management Plan*; the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Vascular Plants* (CNPS, 1994); and records on occurrences of special-status species and sensitive natural communities from the California Natural Diversity Data Base (CNDDB) inventory which is maintained on the County's GIS system.

Of this preliminary review, reports and mapping prepared by the applicant's biologist, Zentner and Zentner, provided the most detailed information on biological resources occurring on the site. These consist of: *Vegetation and Wildlife Analysis* (VWA), which is included as Appendix 2 to the Mining and Reclamation Plan application; mapping of jurisdictional wetlands and other waters of the U.S.; and a *Habitat Restoration Plan* for the project (Zentner and Zentner, 1995). The VWA, prepared in 1993, describes existing vegetation and habitat types, wildlife species associated with the site, and potential for occurrence of special-status species. The *Habitat Restoration Plan* (HRP) provides a comprehensive plan with the goals of restoring mined lands to agriculture, restoration and enhancement of the Cache Creek corridor, and reclamation of mined lands for primarily agricultural production with habitat enhancement through use of integrated agriculture and extensive hedge row plantings along the margin of reclaimed lands.

On 7 March 1996 a field reconnaissance survey of the site and surrounding area was conducted for this DEIR. The conditions described in the VWA and HRP were reviewed in the field during the reconnaissance, confirming mapping by the applicant's biologist of vegetative cover, elderberry shrub locations, and wetlands. With the exception of individual oaks which were not mapped by Zentner and Zentner, independent review of the VWA and HRP indicates in general that the biological resources and habitat features on the site were accurately mapped and described by the applicant's biologist.

SETTING

Relevant Regulatory Background

In addition to the California Environmental Quality Act (CEQA), other State and Federal regulations have been enacted to provide for the protection and management of sensitive biological resources. Relevant policies of the State Mining and Reclamation Act (SMARA) serve to protect important habitat and establish minimum reclamation standards for mined lands. Implementation of policies contained in the Yolo County General Plan also serves to regulate development and provide for conservation of important resources on a local level. The consistency of the proposed mining and reclamation plan with the SMARA and provisions of the County General Plan is reviewed at the end of this setting discussion, before the impact analysis of this section.

State and federal agencies have a leading role in the protection of biological resources through their authority as set forth in various statues and regulations. The U.S. Fish and Wildlife Service (USFWS) is responsible for implementation of the federal Endangered Species Act and the Migratory Bird Treaty Act, while the U.S. Army Corps of Engineers (Corps) has primary responsibility for protecting wetlands under §404 of the Clear Water Act. At the State level, the California Department of Fish and Game (CDFG) is responsible for administration of the California Endangered Species Act, and for protection of streams, water bodies, and riparian corridors through the Streambed Alteration Agreement process under §1601-1606 of the California Fish and Game Code. The OCMP EIR provides a detailed discussion of relevant regulatory background, which is summarized below.

Special-Status Species and Sensitive Natural Communities

Special-status species[1] are plants and animals that are legally protected under the State and/or Federal Endangered Species Acts[2] or other regulations, as well as other species that are considered rare enough by the scientific community and trustee agencies to warrant special consideration, particularly with regard to protection of isolated populations, nesting or denning locations, communal roosts, and other essential habitat. Species with

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[1]Special-status species include:

- Officially designated (rare, threatened, or endangered) and candidate species for listing by the CDFG.
- Officially designated (threatened or endangered) and candidate species for listing by the USFWS.
- Species considered to be rare or endangered under the conditions of Section 15380 of the CEQA Guidelines, such as those identified on lists 1A, 1B, and 2 in the *Inventory of Rare and Endangered Vascular Plants of California*.
- And possibly other species which are considered sensitive or of special concern due to limited distribution or lack of adequate information to permit listing or rejection for State or Federal status, such as those included on lists 3 and 4 in the CNPS *Inventory* or identified as animal "Species of Special Concern" by the CDFG. Species of Special Concern have no legal protective status under the State Endangered Species Act but are of concern to the CDFG because of severe decline in breeding populations in California.

[2]The Federal Endangered Species Act (FESA) of 1973 declares that all federal departments and agencies shall utilize their authority to conserve endangered and threatened plant and animal taxa. The California Endangered Species Act (CESA) of 1984 parallels the policies of FESA and pertains to native California taxa.

legal protection under the Endangered Species Acts often represent major constraints to development, particularly when they are wide ranging or highly sensitive to habitat disturbance and where proposed development would result in a "take"[3] of these species.

In addition to species-oriented management, preserving habitat on an ecosystem-level is increasingly recognized as vital to the protection of natural diversity in the state. The CDFG maintains occurrence information in the CNDDB inventory of those natural communities which are considered particularly rare or threatened, comprising about 125 of the approximately 375 described as occurring in the state. Although these natural communities have no legal protective status under the State or Federal Endangered Species Acts, they are provided some level of protection under the CEQA Guidelines. Based on Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if it would "substantially diminish habitat for fish, wildlife or plants." Further loss of a sensitive natural community could be interpreted as substantially diminishing habitat, depending on the relative abundance, quality and degree of past disturbance, and the anticipated impacts to a known occurrence of a specific community type with a high inventory priority.

Wetlands

Although definitions vary to some degree, wetlands are generally considered to be areas that are periodically or permanently inundated by surface or ground water, and support vegetation adapted to life in saturated soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and flood waters, and water recharge, filtration, and purification functions. Technical standards for delineating wetlands have been developed by the Corps and the USFWS, which generally define wetlands through consideration of three criteria: hydrology, soils, and vegetation.

The CDFG and Corps have jurisdiction over modifications to stream channels, river banks, lakes, and other wetland features. Jurisdiction of the Corps is established through the provisions of §404 of the Clean Water Act, which prohibits the discharge of dredged or fill material into "waters" of the United States without a permit, including wetlands and unvegetated "other waters."

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[3]"Take" as defined by the FESA means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect" a threatened or endangered species. "Harm" is further defined by the USFWS to include the killing or harming of wildlife due to significant obstruction of essential behavior patterns (i.e., breeding, feeding, or sheltering) through significant habitat modification or degradation. The CDFG also considers the loss of listed species habitat as "take", although this policy lacks statutory authority and case law support under the CESA.

Two sections of FESA contain provisions which allow or permit "incidental take." Section 10(a) provides a method by which a state or private action which would result in "take" may be permitted. The applicant must provide the USFWS with an acceptable conservation plan and publish notification for a permit in the Federal Register. Section 7 pertains to a federal agency which proposes to conduct an action which may result in "take," requiring consultation with USFWS and possible issuance of a jeopardy decision. Under the CESA, "take" can be permitted under Section 2081 of the Fish and Game Code. The applicant must enter into a habitat management agreement with the CDFG, which defines the permitted activities and provides adequate mitigation.

Jurisdictional authority of the CDFG over wetland areas is established under §1601-1606 of the Fish and Game Code, which pertains to activities that would disrupt the natural flow or alter the channel, bed, or bank of any lake, river, or stream. The Fish and Game Code stipulates that it is "unlawful to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake" without notifying the Department, incorporating necessary mitigation, and obtaining a Streambed Alteration agreement. The Wetlands Resources Policy of the CDFG states that the Fish and Game Commission will "strongly discourage development in or conversion of wetlands...unless, at a minimum, project mitigation assures there will be no net loss of either wetland habitat values or acreage." The Department is also responsible for commenting on projects requiring Corps permits under the Fish and Wildlife Coordination Act of 1958.

Description of Regional Environment

In the last century, grazing, agricultural production, and mining activities have substantially altered the vegetative cover on the project site and surrounding area along the lower Cache Creek corridor. The introduction of livestock grazing in the mid-1800s, followed by removal of oak woodlands, and eventual irrigation and year-round farming in the 1900s have resulted in the elimination of most of the native plant communities. In-channel aggregate mining during the past 90 or more years has resulted in substantial modification to the historic riparian cover along Cache Creek. Most of the original native riparian forest, oak woodland, and perennial native grassland communities have been replaced by agricultural crops, with remnants of the native communities generally limited to small segments along the creek and scattered mature oaks on the upper terraces. The Program EIRs on the OCMP and CCRMP provide a discussion of the vegetation and other biological resources along the lower Cache Creek corridor planning area.

Description of Local Environment

Vegetation

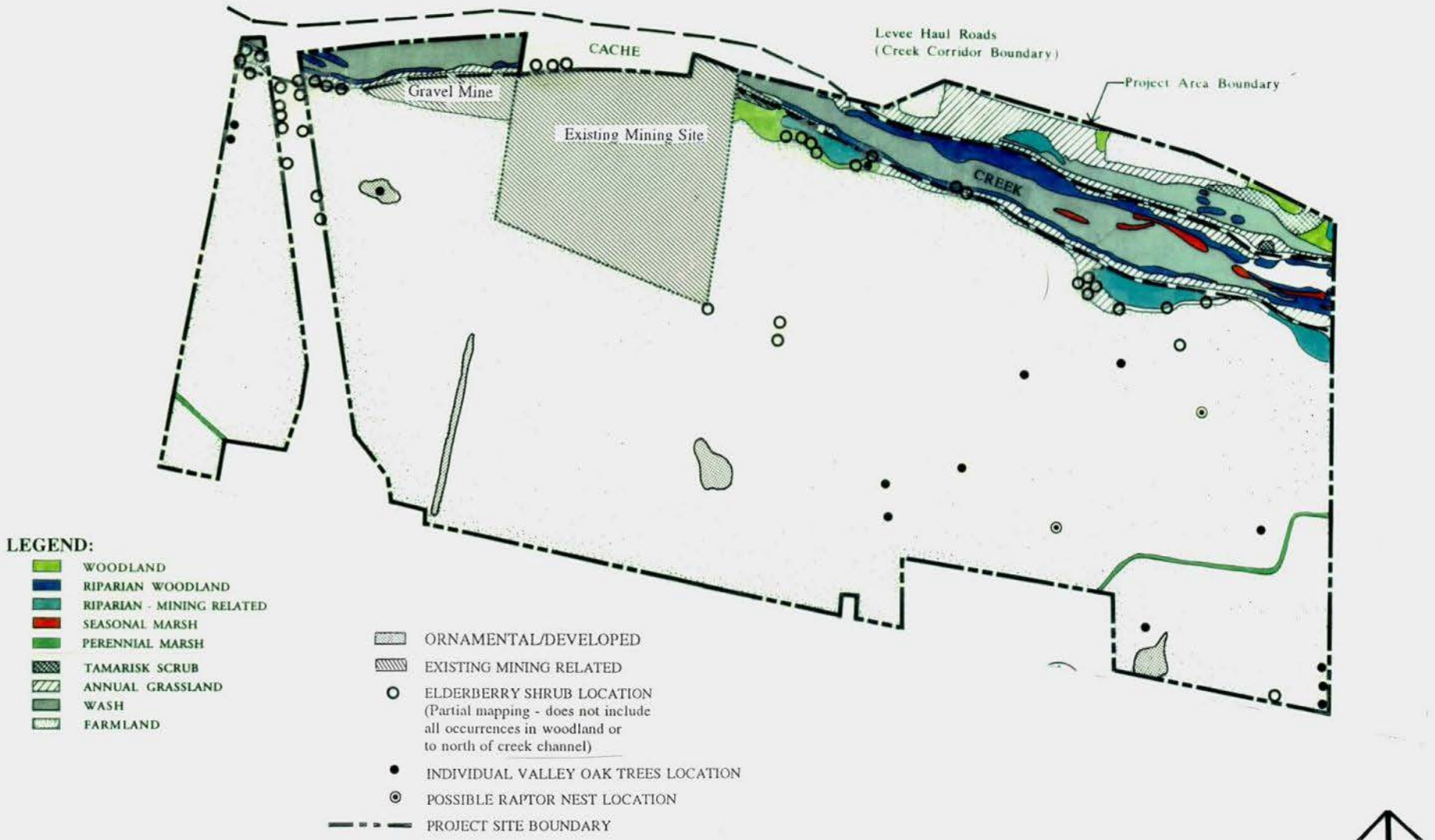
Most of the project site is under cultivation with field crops, with riparian and marshland vegetation generally restricted to the active creek channel. Non-native grassland occurs along portions of the channel bank where riparian cover is absent, and as narrow bands along the edge of the actively managed agricultural fields. Individual native oaks and a few native elderberry shrubs occur in scattered locations in the agricultural fields. Ornamental landscaping surrounds the two existing farm residences on the site and three outbuildings associated with a former residence on the Kaupke parcel that has been removed. Figure 4.6-1 indicates the extent of the existing plant cover and location of important biological features on the site.

Agriculture

Agricultural cover extends from the southern edge of the Cache Creek corridor to the southern limits of the project site, occupying a total of approximately 584 acres. Crops observed during the field reconnaissance in March of 1996 were limited to alfalfa (*Medicago sativa*) and wheat (*Triticum aestivum*). Much of the site was devoid of vegetation through tilling and preparation for planting with wheat.

VEGETATIVE COVER AND BIOLOGICAL FEATURES

Figure 4.6-1



Source: Zentner and Zentner, 1995.
Environmental Collaborative, 1996.

Grassland

Non-native grassland and ruderal or weedy cover occurs on portions of the upper bank of Cache Creek and along the margins of the agricultural fields. The grassland cover in these areas consists of non-native annual grasses and forbs. Common species include: wild oat (*Avena fatua*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus mollis*), foxtail barley (*Hordeum leporinum*), wild radish (*Rhaphanus sativus*), bindweed (*Convolvulus arvensis*), mallow (*Malva nicaensis*), bur clover (*Medicago polymorpha*), and yellow-star thistle (*Centaurea solstitialis*). Ruderal species and bare ground dominate areas that are frequently disturbed by grading and equipment operation associated with active mining, such as the gravel extraction areas, processing plant, haul roads, and other access roads on the site.

Woodland

Remnants of woodlands occur on the upper terrace at the fringe of the riparian corridor and as scattered oaks in the agricultural fields. Black walnut (*Juglans hindsii*) forms the dominant tree species in the remnant woodlands along the fringe of Cache Creek, together with Fremont cottonwood (*Populus fremontii*), a few valley oak (*Quercus lobata*), and scattered elderberry shrubs (*Sambucus mexicana*). Black walnut is a native species, but these trees appear to be from an agricultural source as a root-stock for orchards of English walnut. Many of the trees in the remnant woodlands are in poor health, possibly due to the effects of the past drought. Non-native grassland species form the understory of the woodland, together with a few scattered shrubs, such as wild rose (*Rosa californica*).

A total of 27 valley oaks occur to the south of Cache Creek on the project site, with trunk diameters ranging in size from approximately 6 inches to 46 inches (measured at about 4.5 feet above grade). The trees are generally mature specimens, with only five (19 percent) having trunk diameters of 12 inches or less. Most of the trees occur at the edge of the agricultural fields, along roadways, or surrounding the existing residences. Seven large trees in the southeastern portion of the site occur as isolated specimens within agricultural fields, all with trunk diameters exceeding 24 inches. Given their size and age, these and the other mature trees were most likely once part of the oak woodland and savanna which extended across the upper terrace of Cache Creek.

Riparian Corridor

The Cache Creek corridor in the northern portion of the site forms a mosaic of riparian scrub and woodland, non-native grassland, remnant woodlands, seasonal and perennial marsh, and wash habitat. Vegetation in the corridor reflects the degree of past disturbance and relationship to available surface water, with wash habitat occurring at the lowest elevations and the remnant woodlands at the highest elevations.

Wash habitat is created by active channel mining and severe storm flows which tend to scour the channel bottom, stripping away emergent and woody vegetation and leaving bare substrate.

Marsh habitat tends to be restricted to small depressions in the wash or where water ponds for longer periods, supporting species such as flat-sedge (*Cyperus eragrostis*), willow-weed (*Polygonum lapathifolium*), three-square (*Scirpus americanus*), and clumps of cattail (*Typha* sp.).

Riparian scrub and forest form a narrow band along the lower to middle elevations of the creek bank, composed of young re-establishing trees and shrubs, such as Fremont cottonwood, willow (*Salix* sp.), wild blackberry (*Rubus ursinus*), wild rose, and poison oak (*Toxicodendron diversilobum*), and an herbaceous cover of introduced grasses and forbs. Where forest habitat occurs, most of the trees are young to moderate in age, with relatively few mature trees.

Two highly invasive weedy species, tamarisk (*Tamarix tetranda*) and giant reed (*Arundo donax*), also occur along the creek corridor. The degree to which these species pose long-term management concerns varies greatly along the different subreaches of Cache Creek (EIP, 1995a). Giant reed occurs in small clumps along the lower banks of the creek on the site. Tamarisk occurs in two thickets on the project site; one on the Farnham East parcel just south of the haul road, and a second on the north side of the creek. The thicket on the north side of the creek is part of a large infestation that covers the slopes of a previously mined area. Until recently, the thicket on the Farnham East parcel extended across the Farnham West parcel as well, but this portion was removed as part of the restoration effort associated with the Interim Off-Channel Mining Permit. Both tamarisk and giant reed tend to replace native grassland and riparian cover, and have limited wildlife habitat value.

Ornamental Landscaping

Landscaping surrounds the two remaining residences, on the Orrick and Snyder East parcels, and the cluster of outbuildings to a third residence which was once located on the Kaupke parcel. Landscaping consists primarily of non-native trees and shrubs, such as acacia, eucalyptus, and walnut, although valley oaks also occur in the vicinity of each residence. A total of nine mature oaks surround the residence on the Snyder East parcel.

Wetlands

A wetland delineation of the project site was conducted by the applicant's biologist, and was reviewed and verified by the Corps in 1995. A total of 184.09 acres of verified "waters of the U.S." (which includes both vegetated wetlands and unvegetated channels) occurs on the site, generally restricted to the Cache Creek corridor (Corps, 1995). Most of the drainage and irrigation ditches on the site support some wetland indicator plant species, but these areas were not considered to be jurisdictional wetlands because they were constructed in uplands and were supported by irrigation water. Two exceptions to this are the drainage ditches which pass through the southeastern portion of the Snyder East parcel and the southern portion of the Solano West parcel, both indicated as supporting perennial marsh habitat in Figure 4.6-1. The ditches were determined to contain 0.83 acre and 0.99 acre of jurisdictional wetlands, respectively, during the delineation. The ditches had been recently dredged prior to the March 1996 field reconnaissance, and emergent vegetation was completely absent along this feature.

Wildlife

Although native vegetation on the site has been substantially altered, the Cache Creek corridor remains a feature of regional importance and contributes to the value of the surrounding agricultural lands, collectively supporting a diverse assemblage of resident and migrant wildlife species. In general, each habitat differs in its relative value to specific species, although the majority of wildlife species use more than one habitat type. The transition between different vegetation types tends to be particularly important to wildlife, creating an edge effect where wildlife can use the resources particular to each habitat type such as the cover provided by woodland trees and shrubs and forage provided by grasslands and agricultural fields. The relative value and wildlife species typically associated with each of the habitat types on the site are described below.

Agricultural

Agricultural practices tend to eliminate important cover for wildlife, but the relative size of the site and limited human activity permits use by smaller mammals and birds as well as larger predatory species. Insect and rodent populations fluctuate with the seasons as the hay and grain crops mature in early summer. When prey population levels are high, they provide an abundant food source for mammalian predators such as long-tailed weasel, raccoon, and coyote, as well as avian predators such as white-tailed kite, American kestrel, red-tailed hawk, barn owl, great horned owl, common egret, and great blue heron. Because of the four-year average lifespan of alfalfa, it tends to provide a relatively stable foraging base for rodents such as California meadow vole, Bottae pocket gopher, and western harvest mouse, and can provide important foraging habitat for raptors, including Swainson's hawk, a State-listed threatened species.

Grasslands, Hedgerow, and Developed Areas

The lack of protective cover in the agricultural fields intensifies the importance of the remaining grassland, fence rows, isolated trees, remnants of woodland vegetation, and ornamental landscaping. The features serve as nesting, denning, and retreat areas for a variety of birds and mammals. Undisturbed fence rows, grasslands, and landscaped areas provide protective cover and permit recolonization of agricultural fields.

Species commonly associated with fence rows, ruderal grassland, and fringes of agricultural fields include ring-necked pheasant, American kestrel, California ground squirrel, California vole, striped skunk, black-tailed jackrabbit, gopher snake, and western fence lizard.

Species typically associated with the rural residences include: mourning dove, northern mockingbird, American robin, house finch, rock dove, house sparrow, Norway rat, and house mouse. The older structures on the Orrick and Snyder East parcels may also provide roosting habitat for a number of bat species, but these structures would not be affected by mining or reclamation activities.

Woodlands

The scattered oaks and remnant woodlands provide nest sites, roosting substrate, and cover for wildlife, particularly for raptors and other birds. The large crops of acorns and walnuts in the fall provide an important source of food for numerous woodpeckers, jays, squirrels, and black-tailed deer. Numerous magpie nests were observed in the mature trees on the site, and two possible raptor nests of sticks and twigs were observed in isolated oaks in the southeastern portion of the site (Figure 4.6-1). Due to the timing of the survey in early spring, it was not possible to confirm whether these nests were in active use by raptors, and it is possible that they are in fact the remains of abandoned magpie nests.

Riparian

The Cache Creek corridor is an important habitat feature for wildlife, providing a source of drinking water, protective cover and nesting substrate, and serving as a movement corridor. The creek channel is used as a movement corridor for larger wildlife species, such as grey fox, black-tailed deer, striped skunk, muskrat, beaver, raccoon, and opossum.

The creek supports aquatic amphibians, reptiles, and resident and migratory fish species. Species dependent on aquatic habitat of the creek include: carp, green sunfish, bluegill, bass, perch, pacific treefrog and bullfrog. Areas with emergent vegetation and seasonal ponding are particularly attractive features to waterfowl and colonial nesting birds, such as herons, egrets, and red-winged blackbird. Several species of swallow use the varied habitat along the creek corridor for foraging and nesting, including bank swallow, a state-listed threatened species. Bluffs along the edge of the upper terrace on the Snyder East parcel provide a relatively unique habitat of exposed vertical faces up to 10 feet in height which could be used by bank swallow and other bank nesting species.

Mammals typically found in adjacent grasslands and agricultural fields, such as California vole, California ground squirrel, and numerous species of birds, most likely use areas of dense riparian growth as protective cover and refuge from summer heat and drought. Blue elderberry shrubs along the riparian corridor provide suitable habitat for a federally-listed threatened insect, valley elderberry longhorn beetle.

Special-Status Species and Sensitive Natural Communities

Review of records maintained by the CNDDB, together with other relevant information indicates that occurrences of several plant and animal species with special-status have been recorded from or are suspected to occur in western Yolo County. A number of natural communities in the lower Cache Creek area have a high inventory priority with the CNDDB due to rarity and threats, and are considered sensitive resources. A background discussion of the regulatory framework regarding special-status species and sensitive natural communities is provided in the OCMP EIR and summarized at the beginning of this section.

Special-Status Species

Surveys were conducted by the applicant's biologist in September and November of 1992, January, February, and March of 1993, and on a monthly basis between May and October

of 1994, and September of 1995 to map vegetation and wildlife resources, inventory bird use, and determine whether any species with special status occur on or frequent the site.

A total of 55 species with special-status were initially considered by the applicant's biologist to possibly occur on the site (Zentner and Zentner, 1995). These include: four invertebrates, seven fish, four amphibians, four reptiles, 26 birds, five mammals, and five plant species of concern. A complete list of the species of concern considered by the applicant's biologist is contained in the VWA and updated in the HRP, indicating their status and potential for occurrence on the site or suitability as a possible target species in restoration associated mining reclamation. The applicant's biologist concluded that most of these species do not occur on the site due to the degree of past disturbance, which eliminates the potential for occurrence of any plant species of concern, or absence of essential habitat. Of those considered to possibly use the site, most activity was believed limited to foraging by a number of bird species.

While the list of species of concern prepared by the applicant's biologist is extensive, several additional species are known from or suspected to occur in the lower Cache Creek area. These include: Sacramento anthicid beetle (*Anthicus sacramento*), valley oak ant (*Proceratium californicum*), ancient ant (*Smithistruma reliquia*), loggerhead shrike (*Lanius ludovicianus*), white-tailed kite (*Elanus caeruleus*), and ringtail (*Bassariscus astutus*). Suitable essential habitat for Sacramento anthicid beetle, valley oak ant, ancient ant, and ringtail is absent from the site, although ringtail may occasionally disperse along the creek corridor. As discussed below, white-tailed kite and loggerhead shrike most likely forage on the site.

Based on the survey effort by the applicant's biologist, occurrence information maintained by the CNDDB, and presence or absence of suitable habitat, eight special-status animal species are suspected to have a high likelihood of using the site as essential breeding habitat or frequenting it for foraging. A list of these species, their current status, and typical habitat used by each species is presented in Table 4.6-1. It should be noted that there remains a potential for occasional use of the site by other species of concern as well, such as:

- ferruginous hawk (*Buteo regalis*)
- long-billed curlew (*Numenius americanus*)
- mountain plover (*Charadrius montanus*)
- merlin (*Falco columbarius*)
- American peregrine falcon (*Falco peregrinus anatum*)
- prairie falcon (*Falco mexicanus*)
- osprey (*Pandion haliaetus*)
- golden eagle (*Aquila chrysaetos*)
- bald eagle (*Haliaeetus leucocephalus*)
- Cooper's hawk (*Accipiter cooperi*)
- sharp-shinned hawk (*Accipiter striatus*)
- pale big-eared bat (*Plecotus townsendii pallescens*)
- Townsend's western big-eared bat (*Plecotus townsendii townsendii*)
- pallid bat (*Antrazous pallida*)

TABLE 4.6-1: **Special-status Taxa Known or Suspected to Occur in the Project Vicinity.**

Species	Status Federal/State	Habitat Type
Insects:		
Valley elderberry longhorn beetle (*Desmocerus californicus* ssp. *dimorphus*)	FT/-	Riparian, fencerows with elderberry
Birds:		
Swainson's hawk (*Buteo swainsoni*)	-/ST	Riparian, grassland, agricultural
Northern harrier (*Circus cyaneus*)	-/CSC	Grasslands, marshland
Loggerhead shrike (*Lanius ludovicianus*)	C/CSC	Grasslands, agricultural
White-tailed kite (*Elanus caeruleus*)	-/CP	Riparian, grassland, agricultural
Burrowing owl (*Athene cunicularia*)	-/CSC	Grassland, agricultural
Tricolored blackbird (*Agelaius tricolor*)	-/CSC	Marshland, agricultural
Bank swallow (*Riparia riparia*)	-/ST	Riparian, agricultural

Federal Status

FE = Listed as Endangered under the Federal Endangered Species Act.
FT = Listed as Threatened under the Federal Endangered Species Act.
C = A candidate species under review for Federal listing.

State Status

SE = Listed as Endangered under the California Endangered Species Act.
ST = Listed as Threatened under the California Endangered Species Act.
CP = California fully protected species; individual may not be possessed or taken at any time.
CSC = Considered a species of special concern by the California Department of Fish and Game; taxa have no formal legal protection but nest sites and communal roosts are generally recognized as significant biotic features.

Occurrence of these species would, however, tend to be restricted to occasional wintering activity by migratory bird species, use by species for which suitable nesting habitat is absent, or possible foraging activity by bat species for which essential breeding habitat would not be affected by mining or reclamation activities.

The following discussion presents relevant information on the status, distribution, and habitat preferences for each of the eight animal species of concern suspected to most likely occur on or frequent the site.

Swainson's Hawk. Swainson's hawk is a summer breeding resident of the Central Valley, generally occurring in areas where riparian woodland and surrounding agricultural lands provide roosting, nesting, and foraging habitat. Records maintained by CDFG indicate that nesting territories occur within five or more miles to the east of the site. The majority of these sightings are isolated nests in agricultural fields. Biological assessments conducted for individual mining applications detected additional nests in the surrounding area, including one in an isolated tree approximately one half mile west of I-505, midway between the creek and Road 19 (Jones & Stokes Associates, 1993a), and a nest in the dense riparian forest along Gorton Slough to the east of the site (Jones & Stokes Associates, 1993b). Based on the concentration of recorded nesting activity to the east, the lower Cache Creek area may represent the western fringe for nesting pairs in this part of Yolo County.

With the exception of the ornamental landscaping surrounding the rural residences and dense cover along the riparian corridor, all of the site meets the two basic criteria used by the CDFG in determining presence of potential foraging habitat for Swainson's hawk (CDFG, 1994). These criteria include: location within a ten-mile radius of an active nest, and suitable foraging habitat type. All of the site falls within a ten-mile radius of numerous known nesting territories in the Woodland vicinity and the nest location to the west of I-505. The CDFG considers all agricultural land within an active nesting territory not devoted to unsuitable crop types (i.e., vineyards, mature orchards, and cotton) to be potential foraging habitat, including plowed or fallow lands and fields under crop rotation which are currently planted with a crop where prey are inaccessible.

Bank swallow. The CNDDB records indicate that several active colonies of bank swallows have been observed along Cache Creek from the late 1980's, including colonies within a few thousand feet of either side of the I-505 crossing. The CNDDB records indicate that the quarry face above the pit on the Hutson parcel was used for nesting in 1987, with approximately 300 burrows of which an estimated eleven percent appeared to be occupied. In their comments on the Draft EIR for the Solano Concrete Interim Off-Channel Mining Permit (BASELINE, 1994), the Yolo Audubon Society stated that members have observed nesting activity on the Hutson parcel in 1991, 1992, 1993, and 1995, indicating that the quarry face has provided a relatively stable nesting location for this species.

Valley elderberry longhorn beetle. Detailed mapping of elderberry shrubs and evidence of VELB was performed by the applicant's biologist in September and November 1992, July 1994, and September 1995. Substantial revisions have been made to information on

elderberry occurrences contained in Appendix C of the VWA. These changes have been incorporated into an updated table of occurrences contained in Appendix B of the HRP (Bresnick, 1996). Based on the updated information, 152 elderberry shrubs were mapped on or immediately adjacent to the site, 31 reportedly with characteristic exit holes. Most of the mapped shrubs occur along the riparian corridor and fringe of the upper terrace along Cache Creek. Of this total, 14 occur outside the riparian corridor and the adjacent woodland or grassland habitat, seven of these occur along the unlandscaped margin of I-505 and one along SR 16. Two of these (map #140 and #141) along the western edge of the Solano West parcel had been removed by the time of the March 1996 reconnaissance, and an isolated shrub (map #15) in the agricultural field on the Snyder West parcel had been severely browsed by ground squirrels.

Tricolored blackbird. Although it has declined substantially in recent years, tricolored blackbird is widespread in marshes and agricultural fields of the Central Valley. It usually nests in cattails or tules, sometimes in thickets of willow, blackberry and other riparian habitat near available surface water. Due to the absence of well-developed marshland vegetation, suitable nesting habitat is absent from the project site. In 1992, a colony of approximately 1,000 tricolored blackbird was reported from the active channel near the Coors parcel on Teichert Aggregates property west of Road 94B (Jones & Stokes Associates, 1993a). Emergent wetlands associated with reclaimed wet pits could provide suitable nesting habitat for this species in the future.

Other birds and raptors. Several other bird species of concern are known to forage and may nest in the agricultural fields and remaining grasslands of the project vicinity, including: loggerhead shrike, white-tailed kite, northern harrier, and burrowing owl. Of particular concern for these species, which have no legal protective status under the Endangered Species Acts, is the protection of active nest locations. Raptor nests in active use are protected under the provisions of the Migratory Bird Treaty Act[4] and the State Fish and Game Code. Information on each of these species is summarized below:

- White-tailed kite is a fairly common permanent resident of annual grasslands and agricultural fields of the Central Valley. The CDFG gives special consideration to communal roosts and nests of this species when reviewing environmental documents.

- Northern harrier is a fairly common resident of grasslands, marshlands, and agricultural areas of the Central Valley.

- Loggerhead shrike is most likely a resident of the lower Cache Creek area, foraging in grasslands and agricultural areas, and nesting in areas with dense cover.

[4]The Migratory Bird Treaty Act does not provide protection for habitat of migratory birds, but does prohibit the destruction or possession of individual birds, eggs, or nests in active use without a permit from the USFWS.

- Burrowing owl is a ground nesting species, which tends to occupy burrows of ground squirrels and other rodents. Suitable habitat occurs throughout the site, although no records of established colonies have been reported.

Rare or Unique Environmental Resources

The remnant riparian forest, riparian scrub, and valley oak woodland natural community types on the site are considered to have a high inventory priority with the CNDDB. These communities have been designated as sensitive due to rarity and continuing loss as a result of development, flood control improvements, and other factors. Although the remaining areas of these natural communities on the site have been substantially altered by past mining and agricultural activities, they still function as an important resource to wildlife and should receive appropriate recognition in mining and reclamation planning for the site.

Consistency with Applicable Plans, Policies, and Regulations

State Mining and Reclamation Act

Minimum acceptable practices and performance standards have been developed as part of the State Mining and Reclamation Act (SMARA) to provide for the protection of important fish and wildlife habitat and the successful revegetation of mined lands. The following standards apply to the proposed project.

§3503(c) All reasonable measures shall be taken to protect the habitat of fish and wildlife.

The proposed mining activities would affect primarily agricultural fields, generally avoiding the more sensitive habitat features of the Cache Creek corridor. The agricultural fields provide important foraging habitat for raptors such as Swainson's hawk, a state-listed threatened species. The significance of the loss of agricultural habitat on Swainson's hawk and other impacts on wildlife are discussed in Impacts 4.6-3, 4.6-4, and 4.6-5. Reclamation and restoration components of the project would provide for considerable enhancement of the creek corridor and margins of agricultural fields.

§3503(g) When the reclamation plan calls for revegetation, the available research addressing revegetation methods and the selection of species having good survival characteristics, for the topography, resoiling characteristics, and climate of the mined areas shall be used.

Proposed revegetation components of the reclamation plan generally appear appropriate for the conditions on the site. Revegetation methods include planting of row crops, tree crops, winter wheat on stockpiles, and grasses and hedgerow vegetation on reclaimed slopes, and oak woodlands in areas proposed for habitat restoration. Row crops, wheat, and grasses have been successfully grown on reclaimed mined lands of the site. The proposed tree crop, hybrid poplars, are a proven, hardy species for rapid growth in conditions less favorable than at the project site.

§3703(a) Rare, threatened or endangered species as listed by the California Department of Fish and Game, (California Code of Regulations, Title 14, sections 670.2-670.5) or the U.S. Fish and Wildlife

Service, (50 CFR 17.11 and 17.12), or species of special concern as listed by the California Department of Fish and Game in the Special Animals List, Natural Diversity Data Base, and their respective habitat, shall be conserved as prescribed by the Federal Endangered Species Act of 1973, 16 U.S.C section 1531 et. seq., and the California Endangered Species Act, Fish and Game Code section 2052 et seq. If avoidance cannot be achieved through the available alternatives, mitigation shall be proposed in accordance with the provisions of the California Endangered Species Act, Fish and Game Code section 2050 et seq., and the federal Endangered Species Act of 1973, 16 U.S.C. section 1531 et seq.

Mining and reclamation activities would affect habitat for a number of special-status species, including Swainson's hawk, bank swallow, and valley elderberry longhorn beetle. This would include at least temporary disturbance of approximately 598 acres of suitable foraging habitat for Swainson's hawk, 384 acres of which would be permanently lost when converted to tree crops and open lakes. Individual elderberry shrubs, which provide suitable habitat for valley elderberry longhorn beetle, could be removed by proposed activities. Stockpiles of fine-grained materials and other conditions created by mining could attract bank swallow and result in their inadvertent injury or death. The potential impact of the project on these and other special-status species is discussed under Impact 4.6-4 and 4.6-5. No provisions have been included in the proposed project and Habitat Restoration Plan (HRP) by the applicant's biologist to specifically address loss of essential habitat for special-status species.

§3703(b) Wildlife habitat shall be established on disturbed land in a condition at least as good as that which existed before lands were disturbed by surface mining operations, unless the proposed end use precludes its use as wildlife habitat or the approved reclamation plan establishes a different habitat type than that which existed prior to mining.

In general, habitat restoration proposed as part of the project would serve to enhance the wildlife habitat value of the site. Most of the site would remain in agricultural use, and habitat along Cache Creek would be protected and enhanced. The tree crops, hedgerow plantings, and wetlands and open water habitat associated with the lakes would improve the habitat diversity available to wildlife. As indicated above, aspects of the project could affect habitat for a number of special-status animal species, and adequate mitigation would be required. A detailed discussion of the potential impacts of the project on general wildlife resources is provided under Impact 4.6-3.

§3703(c) Wetland habitat shall be avoided. Any wetland habitat impacts as a consequence of surface mining operations shall be mitigated at a minimum of one to one ratio for wetland habitat acreage and wetland habitat value.

§3704(g) Permanent placement of piles or dumps of mining waste and overburden shall not occur within wetlands unless mitigation... has been proposed to offset wetland impacts and/or losses.

Disturbance to wetland habitat due to mining activities would generally be limited to a portion of the drainage canal on the Snyder East parcel, affecting an estimated 0.21 acres of jurisdictional wetlands. This feature would be relocated as part of the project, reestablishing the wetlands at a one to one ratio as called for in the performance standard. It is possible that levee improvements could affect jurisdictional areas along the Cache

Creek corridor, depending on their final design. In addition, installation of the culvert which would discharge runoff from one reclaimed mining area could affect a small area of the channel bank and jurisdictional habitat. Overburden placement should not affect any wetland resources. The potential impacts of these activities are described in greater detail under Impact 4.6-6.

§3704(b) Where backfilling is required for resource conservation purposes (e.g. agriculture, fish and wildlife habitat, and wildland conservation), fill material shall be backfilled to the standards required for the resource conservation use involved.

§3704(c) Piles or dumps of mining waste shall be stockpiled in such a manner as to facilitate phased reclamation. They shall be segregated from topsoil and topsoil substitutes or growth media salvaged for use in reclamation.

Prior to each phase of mining, topsoil and overburden material would be removed and stockpiled. Following completion of mining, the overburden and topsoil would be used in reclaiming land to its ultimate use, including agriculture and wildlife habitat.

§3705 Revegetation shall be part of the approved plan, unless it is not consistent with the approved end use.

§3705(a) A vegetative cover suitable for the proposed end use and capable of self-regeneration without continued dependence on irrigation, soil amendments or fertilizer shall be established on disturbed land unless an artificially maintained landscape is consistent with the approved reclamation plan...

Most of the land disturbed by mining and reclamation activities would be reclaimed to agriculture in compliance with County Resolution 94-82, consisting of row crops and tree crops. The row crops would be irrigated and fertilized, as required. The tree crops would require irrigation during the dry season. Areas restored to natural habitat would be vegetated with appropriate native species, with short-term irrigation provided as necessary to ensure establishment.

§3705(b) Test plots conducted simultaneously with mining shall be required to determine the most appropriate planting procedures to be followed to ensure successful implementation of the proposed revegetation plan. The lead agency may waive the requirement to conduct test plots when the success of the proposed revegetation plan can be documented from experience with similar species and conditions or by relying on competent professional advice based on experience with the species to be planted.

§3705(c) Where surface mining activities result in compaction of the soil, ripping, disking, or other means shall be used in areas to be revegetated to eliminate compaction and to establish a suitable root zone in preparation for planting.

§3705(e) Soil analysis shall be required to determine the presence or absence of elements essential for plant growth and to determine those soluble elements that may be toxic to plants, if the soil has been chemically altered or if the growth media consists of other than the native topsoil.

Establishment of test plots to determine appropriate revegetation during mining is not proposed as part of the project and does not appear to be warranted. Reclamation of filled

mining pits to row crop production has been successfully implemented by the applicant, using similar techniques to those proposed by the project. Tree crop production proposed by the project has not been previously practiced in the area, but is an expanding crop type in the Central Valley. Revegetation of areas to be restored as natural habitat are based on recommendations of a restoration specialist and defined in the proposed Habitat Restoration Plan (HRP) for the project. The HRP indicates that test plots would be established to monitor revegetation and to determine the success of the proposed habitat restoration efforts. The restoration plan was developed based on analyses of local soil types, slopes, revegetation species mixtures, gene pools, and naturally fluctuating water levels.

§3705(g) Native plant species shall be used for revegetation, except when introduced species are necessary to meet the end uses specified in the approved reclamation plan.

Most of the site would be planted with agricultural crops following reclamation. As discussed above, the project would include establishing native trees, shrubs, and grasslands in areas identified for natural habitat and creek restoration. Most of the site which would be disturbed by mining and reclamation activities currently support agricultural cover, not native species.

§3705(h) Planting shall be conducted during the most favorable period of the year for plant establishment.

The Preliminary Habitat Construction Specifications in the HRP for the project indicate that plantings should occur between late fall and early spring, which would be appropriate for the revegetation efforts using native species. The proposed reclamation plan does not specify when tree crops and row crops would be planted.

§3705(j) If irrigation is used, the operator must demonstrate that vegetation has been self-sustaining without irrigation for minimum of two years prior to release of the financial assurances by the lead agency, unless an artificially maintained landscape is consistent with the approved end use.

The Preliminary Habitat Construction Specifications of the HRP indicate that drip irrigation would be provided for all new plants and cuttings in habitat restoration areas, with the exception of willows, cottonwoods, and similar low-terrace species which would be planted where surface water is readily available. The Monitoring and Management provisions in the HRP specify that post-construction monitoring of created natural habitat would occur for a minimum of five years after reclamation of each mining area. Both the row crops and tree crops would require irrigation, but this is consistent with the proposed agricultural end use on these portions of the site.

§3705(k) Noxious weeds shall be managed: (1) when they threaten the success of the proposed revegetation; (2) to prevent the spreading to nearby areas; and (3) to eliminate fire hazard.

The Preliminary Maintenance Guidelines of the HRP for the project includes provisions for weed abatement as part of maintenance of revegetation efforts.

§3705(l) Protection measures, such as fencing of revegetated areas and/or the placement of cages over individual plants, shall be used in areas where grazing, trampling, herbivory, or other causes threaten the success of the proposed revegetation. Fencing shall be maintained until revegetation efforts are successfully completed and the lead agency authorizes removal.

No specific provisions for exclusionary fencing have been included in the HRP for the project. Grazing by domestic livestock is not proposed on the site and should not be a factor in the condition of native plantings. It is possible that browsing by rabbits and rodents, such as ground squirrels, could destroy young plantings and even damage the drip irrigation system to be used in the habitat restoration areas. Remedial action to be provided as part of the Monitoring and Management component of the HRP would include protective measures to ensure viability of plantings, if determined necessary.

§3705(m) Success of revegetation shall be judged based on effectiveness of the vegetation for the approved end use, and by comparing the quantified measures of vegetative cover, density, and species-richness of the reclaimed lands to similar parameters of naturally occurring vegetation in the area...

The HRP for the project includes a detailed monitoring program to evaluate compliance of the revegetation component with relevant permit requirements and to ensure that existing and created vegetation is developing as intended. Annual monitoring reports would be prepared and submitted to the County for five years after reclamation.

Yolo County General Plan

The County's General Plan sets the goal of establishing natural and wildlife areas. The General Plan presents the following policies in support of that goal:

OS 11 Yolo County shall plan to safeguard existing and encourage additional areas of wildlife habitat as part of its open space preservation program.

In compliance with County Resolution 94-82, the project proposes preservation and enhancement of 35 acres of the site to oak woodland habitat along the Cache Creek corridor. This "net gain" of enhanced habitat along Cache Creek meets the intent of this policy.

CON 28 Yolo County shall establish a tree planting program. Yolo County shall adopt a tree preservation ordinance and shall require extensive use of trees on private and public lands.

As discussed under Impact 4.6-2, although the project would result in the loss of at least five mature oak trees, revegetation and restoration components of the project would compensate for the anticipated loss. Over 1,000 valley oaks as well as other native trees and shrubs would be planted as part of revegetation and the restoration effort.

CON 30 Yolo County shall safeguard existing and encourage development and protection of additional wildlife habitat and shall coordinate with other agencies and programs to enhance and create wildlife preserves and to preserve and rehabilitate wildlife habitat areas suitable for ecological education sites.

In general, the project would serve to improve the habitat diversity of the site for wildlife, providing new open water and wetlands, tree crops, and hedgerow plantings and grassland cover along the margins of reclaimed agricultural fields. Remnants of woodland and riparian habitat along the Cache Creek corridor on the site would be preserved and enhanced. As discussed previously and under Impact 4.6-4, conversion of agricultural row crops would affect suitable foraging habitat for Swainson's hawk and other raptors.

CON 33 ... Existing natural vegetation shall be conserved where possible, integrated into new development and its life and continuity shall be assured by means of Conditional Use Permit procedures applied to permit approvals for new or reconstruction work.

The Cache Creek corridor would be retained and enhanced as part of the project, with mining activities generally restricted to areas of agricultural use. Planting provisions in the proposed HRP would serve to enhance the diversity of native species on the site, as discussed under Impact 4.6-1.

Yolo County Surface Mining Reclamation Ordinance

The existing County Reclamation Ordinance applies to reclamation of all existing mining sites. The Ordinance requires that all practicable measures be taken to protect fish and wildlife habitat. The following requirements for habitat protection apply to the proposed project.

§10-5.505 All reasonable and practicable measures shall be taken to protect the habitat of fish and wildlife.

Protection and restoration of sensitive wildlife habitat on the site is addressed in the HRP for the project. Loss of the existing wildlife habitat associated with the project is discussed under Impact 4.6-3.

§10-5.603c)2 The reclamation plan shall include a site plan which identifies the location of significant vegetation existing before reclamation is undertaken.

The HRP for the project includes a map of vegetative cover on the site, including the extent of riparian vegetation. The canopy of existing vegetation and individual oak trees are indicated on the mining and reclamation plans for the project.

Off-Channel Mining Plan

Most of the policies in the Biological Resources Elements of the OCMP are directed toward defining goals, objectives, and performance standards for the protection, enhancement of important habitat along the Cache Creek corridor. These include policies addressing protection of riparian vegetation and important wildlife habitat, control and eradication of noxious weeds, enhancement of wet pits and recognition of groundwater fluctuation in designing improvements to permanent lakes, and need to coordinate the restoration efforts with jurisdictional agencies and interested groups.

In general, provisions in the HRP for the project would be consistent with the relevant policies of the OCMP pertaining to biological resources. These include relevant Objective 6.3-1, Actions 6.4-3, 6.4-5, 6.4-9, 6.4-10, and 6.4-11, and Performance Standards 6.5-2, 6.5-4, 6.5-5, 6.5-6, and 6.5-9, all of which are listed in the OCMP EIR. Specific policies of the OCMP to which the project would conflict or only partially conform are identified below, together with a discussion of project consistency.

PS 6.5-1 ... Existing vegetation and habitat to be retained shall be enclosed by temporary fencing to restrict access, protect against damage, and/or provide buffers to reduce the impact of dust. Temporary fencing shall be a minimum four (4) feet high.

Performance Standard 6.5-1 of the OCMP requires the use of fencing to protect vegetation to be retained. While the Preliminary Habitat Construction Specifications in the proposed HRP state that the boundaries of habitat areas would be located and marked by an Ecological Monitor prior to any grading on the site, they do not specify use of fencing to protect sensitive resource areas. Mitigation Measure 4.6-2c addresses this concern.

Action 6.4-4 Require that all proposed off-channel surface mining operations that will result in the short-term loss of row crop agricultural lands and/or grasslands, obtain a 2081 Permit from the California Department of Fish and Game. The 2081 Permit will provide mitigation for the temporary effects of mining on Swainson's hawk habitat.

Action 6.4-7 Encourage reclamation plans to include the creation of permanent tall banks in loamy and sandy soils near open bodies of water, to provide nesting habitat for bank swallows.

PS. 6.5-3 If any vertical slopes are inadvertently created on soil and/or overburden stockpiles, in excess of ten (10) feet, the slopes shall be immediately regraded after verification that no bank swallows have begun nesting activities in the slope areas.

Several policies of the OCMP address protection, enhancement, or replacement requirements for habitat of special-status species which could be affected by mining activities. Action 6.4-4 requires that each mining operation affecting suitable foraging habitat for Swainson's hawk obtain an individual 2081 Permit from the CDFG. An estimated 384 acres of suitable foraging habitat on the site would be eliminated as a result of the project, converted to tree crops where prey would be inaccessible and open water habitat of the proposed lakes. Action 6.4-7 and Performance Standard 6.5-3 of the OCMP pertain to bank swallow and the importance of creating nesting habitat and preventing inadvertent take of this species. The proposed HRP for the project does not contain any specific provisions addressing habitat for special-status species. The HRP mentions that the creek restoration program provides an opportunity for creating new bank swallow habitat, but it contains no details on whether and how this would be accomplished as part of the project. Impact 4.6-5 addresses these concerns.

Draft Off-Channel Surface Mining Ordinance

The draft Off-Channel Surface Mining Ordinance addresses future surface mining applications in the County. The purpose of the ordinance is to allow for the continued extraction of sand and gravel, while considering a number of important constraints,

including wildlife habitat. The following policies call for the conduct of a biological assessment of proposed mining areas and implementation of measures to protect existing vegetation.

§10-4.430 Existing vegetation and habitat to be retained shall be enclosed by temporary fencing to restrict access, protect against damage and/or provide buffers to reduce the impact of dust. Temporary fencing shall be a minimum of four (4) feet high. Riparian vegetation, including off-channel vegetation, shall be retained or replaced according to a habitat restoration plan prepared by a qualified biologist, consistent with the goals of this plan.

No specific provisions for exclusionary fencing have been included in the HRP for the project. Mitigation Measures 4.6-2b and 4.6-2c address the need for protective fencing.

§10-4.502(b)(1) A biological inventory and analysis to evaluate the on-site habitat value of the proposed mined area, as well as the potential impacts to species of concern, both on-site and within the immediate area. The analysis shall propose appropriate measures to reduce any potential adverse impacts to species of concern or significant habitat. The analysis shall also include a wetlands delineation study for any potential on-site wetlands. If landscaping is proposed to screen the surface mining operations from adjoining public rights-of-way or public lands, then the biological analysis shall include an evaluation of the feasibility of the species, weed control, and irrigation methods to be used;

A *Vegetation and Wildlife Analysis* prepared by the applicant's biologist provides a discussion of the biological resources occurring on the site. The HRP defines the proposed approach to habitat restoration, summarizes the results of a wetland delineation for the site, and includes information on landscape screening along I-505. No assessment of the potential impacts of the project on biological resources has been prepared by the applicant's biologist, but these issues are addressed in detail in Impacts 4.6-1 through 4.6-6.

Draft Surface Mining Reclamation Ordinance

The draft Surface Mining Reclamation Ordinance addresses reclamation of mined lands to prevent or minimize adverse effects on the environment and to protect public health and safety. The following policies address appropriate provisions and components of reclamation plans relevant to reclamation efforts of proposed mining areas, including the project site.

§10-5.507 All surface mining operations and reclamation plans shall conform with the requirements of the Yolo County Habitat Management Plan.

The above section of the Ordinance calls for compliance with the County-wide "Habitat Management Plan," which is now referred to as the Habitat Conservation Plan (HCP). One of the primary purposes for the draft HCP is to establish a managed take permit under Section 2081 of the Fish and Game Code, addressing all anticipated urban development but not aggregate mining activities. The Ordinance implies that the draft HCP contains provisions with which individual mining/reclamation applicants must comply, which is not the case. Mitigation Measure 4.6-4a requires that the applicant obtain a Section 2081 authorization from the CDFG.

§10-5.514 If any wet pit is proposed to be reclaimed for recreational and/or wetland habitat, the applicant shall design the facility to account for fluctuations in the groundwater table.

§10-5.521 Off-channel excavations that are proposed to be reclaimed to wetland habitat shall include appropriate features, such as: scalloped basin perimeters with extended peninsulas, islands, and stepped benches of various widths at approximately three (3) foot vertical intervals both above and below the groundwater table.

The fringe of the proposed wet pits would be reclaimed as wetland habitat on the site. As discussed under Impact 4.6-1, fluctuations in water levels and resulting influence on plant distribution and establishment would be inherent to any created marshland or riparian habitat system, and annual fluctuations of ten feet should not pose a significant constraint to establishment of viable wetland habitat around the perimeter of the proposed lakes. Features incorporated into the fringe of the proposed lakes include scalloped basins and artificial islands, but natural islands have not been proposed due to the volume of material which would be required to create these features. Mitigation Measure 4.6-3a calls for the creation of permanent islands as a component of reclaiming the wet pits.

§10-5.513 Site-specific planting plans shall be developed for proposed habitat restoration projects along Cache Creek. The plans shall generally follow the Riparian Habitat Planting Guidelines described in the Technical Studies.

§10-5.601(c)(1) A biological analysis to evaluate the feasibility of proposed revegetation efforts, including detailed plans describing planting methods, appropriate planting times, species to be used, irrigation requirements, erosion control, weed control, and proposed success rates for plant cover and density. The analysis shall also include cross-sections for those areas proposed to be revegetated, including slopes, visual screens, and wildlife habitat;

The HRP provides a detailed description of the proposed approach to revegetation, including visual screening and restored habitat. Variations in the planting prescriptions of the CCRMP are a refinement to site-specific conditions and would be appropriate for the restoration effort, as indicated in Mitigation Measure 4.6-2a of the CCRMP Program EIR.

Cache Creek Resources Management Plan

Most of the policies in the Biological Resources Elements of the CCRMP are directed toward defining goals, objectives, and performance standards for the protection, enhancement, and restoration of riparian and woodland habitat along Cache Creek. These include policies addressing restoration standards for vegetation plantings and monitoring provisions, control and eradication of noxious weeds, recognition of groundwater fluctuation in designing improvements to permanent lakes, and need to coordinate the restoration efforts with jurisdictional agencies and interested groups. Other provisions include the need to protect important wildlife habitat, essential habitat for special-status species, and wetland resources.

In general, provisions in the HRP for the project would be consistent with the relevant policies of the CCRMP pertaining to biological resources. These include Action 4.4-3, and Performance Standards 4.5-3, 4.5-5, 4.5-8, 4.5-9, 4.5-10, 4.5-11, 4.5-12, and 4.5-23.

Specific policies of the CCRMP to which the project would conflict or only partially conform are identified below, together with a discussion of project consistency.

PS. 4.5-13 The following guidelines shall be followed when developing wetland habitat areas:

(a) Limit dense stands of aquatic vegetation in shallow areas to lower mosquito harborage and enhance wave action. This will also serve as substrate for mosquito predators.

(b) The banks of areas that retain water after June 1 (the beginning of the optimal mosquito breeding season) shall be steep enough to prevent isolated pooling as the water level recedes, to allow for wave action and to provide access by mosquito predators. Shorelines shall be configured so as not to isolate small channels or shallow ponding areas from the main body of water, to provide continuous access by predators, especially mosquito fish.

(c) Seasonal marshes shall be designated to have at least four months of soil saturation or shallow inundation. Water depths shall not exceed two (2) feet of water.

(d) Marsh species shall be planted every six (6) feet, using plugs salvaged from marshes in the immediate vicinity or obtained from a nursery. Transplanting shall take place within twelve (12) hours after salvage and the root masses shall be kept continuously inundated from the time of transplanting.

(e) Wetland areas shall cover a minimum of one (1) acre. Side slopes shall be no steeper than 3:1 (horizontal:vertical). Small islands and complex shorelines shall be provided to create a diverse environment. Wetland designs shall include provisions for the wetlands to be partially drained periodically, in order to allow for the reseeding of aquatic plants and to promote the decay of built up organic debris.

(f) Pit bottoms should be contoured to create areas for waterfowl nesting and depressions to provide a more permanent water feature. Islands should generally be located on the upwind side of the water body to minimize exposure to the prevailing winds. Island slopes above the water level should be no steeper than 2:1 (horizontal:vertical). Emergent vegetation shall be placed around the edges of islands to reduce wave-related erosion. Shrubs shall be widely spaced. Trees and tall shrubs shall not be planted on the islands, since predators perch in them to prey on waterfowl.

(g) Appropriate species and densities for marsh restoration may include the following:

Species (common name)	Density (plugs per acre)
Creeping spikerush	200
Creeping wild rye	100
Baltic rush	100
Three-square	10
Slender wheatgrass	5
Reed canary grass	5
Beaked sedge	5
Scouring rush	5
Yerba mansa	5
Buttonbush	5

PS. 4.5-14 The following guidelines shall be followed when developing riparian woodland habitat areas:

(a) Riparian woodland shall be established only where there are coarse slopes, containing soil types such as cobbly loam, gravelly loam, or other loamy textures. Where slopes contain significant clay layers, open woodlands or grasslands shall be restored instead.

(b) Trees and shrubs shall be planted in clusters, to create alternate patterns of open and enclosed spaces.

(c) Appropriate species and densities for riparian woodland restoration may include the following:

Species (common name)	Density (number or pounds/acre)
Valley oak	33
Wild rose	36
Creeping wildrye	16
Blue elderberry	12
Native blackberry	19
Mule fat	6
Wild grape	16
Box elder	18
Dogwood	16
Fremont cottonwood	26
Black willow	23
Red willow	23
Arroyo willow	23
Sandbar willow	23
Goodings willow	23
Mugwort	10

PS. 4.5-15 The following guidelines shall be followed when developing oak woodland habitat areas:

(a) Trees and shrubs shall be planted in clusters of six (6) to seven (7) individuals, typically consisting of a single species. Some mixed groupings, such as valley oak and elderberry may occur where appropriate. Gray pine, however, shall be planted singly (not in clusters) at the higher elevations of the site. Clusters of trees and shrubs shall be planted from twenty-five (25) to fifty (50) feet apart, with native grasses in-between.(b)Appropriate species and densities for oak woodland restoration may include the following:

Species (common name)	Density (number or pounds/acre)
Gray pine	3
Interior live oak	6
Valley oak	20
California buckeye	5
Blue elderberry	10
Native blackberry	8
Coyote brush	10
Wild rose	15
Purple needlegrass	5
Creeping wildrye	16
California brome	10
California barley	5
Pine bluegrass	5

Native species and planting densities identified in the proposed HRP for riparian, woodland, and wetland restoration on the site vary from those contained in Performance Standards 4.5-13, 4.5-14, and 4.5-15 of the CCRMP, which provide general planting prescriptions for restoration efforts. Variations in the planting prescriptions of the CCRMP are a refinement to site-specific conditions and would be appropriate for the restoration effort. Mitigation Measure 4.6-2a of the CCRMP Program EIR includes an additional policy recognizing the need for flexibility in designing site-specific restoration guidelines.

Obj. 4.3-5 Encourage the use of alternative methods and practices for stream and erosion control that incorporate riparian vegetation in the design.

Action 4.4-1 Encourage the use of riparian vegetation and other "soft-engineering" methods in bank or channel protection. Methods may include willow spiling (retaining walls constructed of woven willow stems from which trees will sprout); spur dikes to deflect the current away from the bank and create areas for vegetation; and cabling dead trees along the bank to provide both bank stabilization and additional habitat.

Objective 4.3-5 and Action 4.4-1 of the CCRMP call for the use of biotechnical slope stabilization in controlling erosion along the active channel bank of Cache Creek. Use of riprap is proposed as part of the project to control erosion along approximately 1,400 linear feet of the active channel bank on the Kaupke parcel, which would be inconsistent with these policies of the CCRMP.

Action 4.4-6 Favor projects that establish riparian woodlands over emergent wetlands, in appropriate areas within the Cache Creek channel. Riparian forest and scrub habitat have largely disappeared regionally, and are much more difficult to recreate than are emergent wetland habitats. Emergent wetlands can also be established in a greater range of environmental conditions, whereas riparian woodlands require specific considerations in order to thrive.

Specific restoration recommendations from the *Technical Studies and Recommendations for the Lower Cache Creek Resource Management Plan* which have been incorporated into the CCRMP are limited to treatment of an approximately 3.07-acre area supporting riparian habitat on the Snyder East parcel (mapped as mining-related riparian habitat in Figure 4.6-1). As indicated in Figure 7 of the CCRMP, the recommendation calls for creating depressions for freshwater marsh habitat and selectively removing tamarisk. The 3.07-acre area, which is separated from the active channel by the existing haul road, currently supports a dense cover of willow and cottonwood, and appears to be regenerating naturally with no intervention. This area has also been identified as a jurisdictional wetland, and major modifications would most likely require Corps approval. Implementation of this recommendation would replace the existing riparian habitat with marshland habitat. Action 4.4-6 of the CCRMP recognizes the importance of establishing riparian rather than marsh habitat along the creek corridor, but this is intended for disturbed or degraded habitat, not areas that are naturally regenerating. Proposed habitat restoration cross-sections in the HRP (shown in Section C in Figure 4.6-4) indicate that seasonal marsh would be created in the depression area. Although this approach would be consistent with the recommendations in the *Technical Studies*, the benefits of the proposed modifications do not appear to warrant the short-term disturbance and long-term maintenance and monitoring that would be required for implementation.

Action 4.4-5 Establish a series of wildlife preserves (see Figure 10 [of the CCRMP]) to provide core areas for maximizing wildlife and fish habitat, to help protect areas of high habitat quality from future degradation, and to provide sources areas from which native plants and wildlife can colonize other reaches of the creek. Wildlife preserves should emphasize the preservation of high quality existing habitat; areas with high species diversity, areas supporting unique species or biotic communities; and habitat for rare, threatened, and endangered species.

Figure 10 of the CCRMP identifies the vicinity of the creek corridor on the Orrick and Snyder West parcels, and extending to the north bank of the creek, as one of five "Preliminary Wildlife Preserve Areas." Action 4.4-5 of the CCRMP states that the series of wildlife preserves would provide core areas for maximizing wildlife and fish habitat, help protect areas of high habitat quality from future degradation, and provide source areas from which native plants and wildlife can colonize other reaches of the creek. The proposed 35-acre habitat restoration area on the site would serve to preserve and enhance the southern portion of the creek corridor, consistent with the intent of Action 4.4-5.

IMPACTS AND MITIGATION MEASURES

Project-Specific Implementation of Program EIR Mitigations

The OCMP EIR evaluated potential impacts on biological resources, focusing on six major areas of concern. These consisted of: impacts on general vegetative cover (OCMP EIR Impact 4.6-1) and sensitive natural community types (OCMP EIR Impact 4.6-2); disturbance to wildlife habitat and disruption of movement corridors (OCMP EIR Impact 4.6-3); affect on special-status species(OCMP EIR Impact 4.6-4); modifications to jurisdictional wetlands and other waters (OCMP EIR Impact 4.6-5); and compatibility and consistency of restoration provisions (OCMP EIR Impact 4.6-6). Cumulative impacts on biological resources was also addressed in the program-level EIR (Section 5.1).

The OCMP EIR included measures to mitigate identified impacts on biological resources. Mitigation for general impacts on existing vegetative cover, consisting primarily of agricultural crops, was not required (OCMP EIR Mitigation Measure 4.6-1a). This impact is discussed for the proposed project in Project Impact 4.6.1. Mitigation for the other impacts assessed in the OCMP EIR included revisions to the proposed policies of the OCMP, and in some instances required new policies. Many of these mitigation measures from the OCMP EIR apply to the protection or restoration of sensitive biological resources on the project site. Implementation of OCMP EIR Mitigation Measure 4.6-2a would serve to alleviate impacts on mature oaks and riparian habitat on the site (Project Impact 4.6-2). OCMP EIR Mitigation Measure 4.6-3a addresses protection of fencerow (hedgerow) habitat, and avoidance to important wildlife habitat features (Project Impact 4.6-3). OCMP EIR Mitigation Measure 4.6-4a would ensure protection of essential habitat for special-status species (Project Impacts 4.6-4 and 4.6-5). OCMP EIR Mitigation Measure 4.6-5a would provide for protection and replacement of jurisdictional wetlands affected by mining activities (Project Impact 4.6-6).

As discussed above in the setting section, the proposed project is inconsistent with a number of the policies in the OCMP and OCMP EIR. These include the need for: use of fencing to protect sensitive resources; providing appropriate protection, enhancement, or replacement for habitat of special-status species; and provisions for enhancement of the wet pits as wetland habitat. Specific measures recommended in this EIR to mitigate impacts of the project would serve to ensure consistency with the OCMP and OCMP EIR, alleviating identified impacts on biological resources to a level of less than significant.

Standards of Significance

The project would have a significant effect on biological resources if it would:

- Substantially fragment, eliminate, or otherwise disrupt foraging areas and/or access to food sources.
- Substantially limit or fragment range and movement (geographic distribution of animals and/or seed dispersal routes).
- Disrupt critical time periods (nesting, breeding) for fish and other wildlife species.
- Reduce the numbers of any rare, threatened, or endangered species or their habitats (including, but not limited to, the removal of any healthy oak tree or tree containing Swainson's hawk nests).
- Substantially impact locally designated species or locally designated natural communities.
- Remove wetland habitat (e.g., marsh, riparian, and vernal pool).

Project-Specific Analysis

Impact 4.6-1

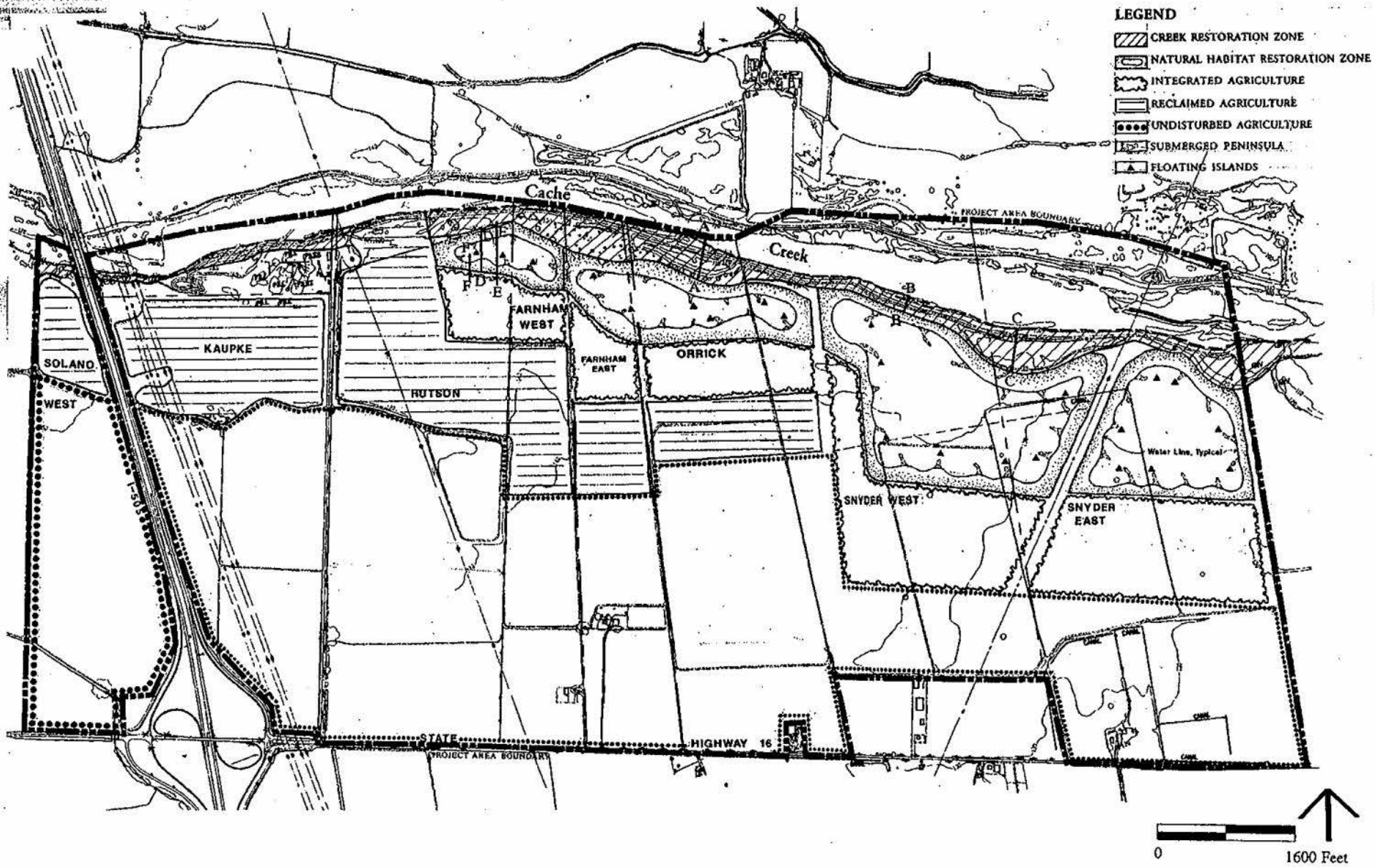
Project implementation would result in approximately 598 acres of primarily agricultural cover, revegetation of disturbed areas, and enhancement of native habitat. This is considered to be a less-than-significant impact on general vegetation resources.

Mining activities would ultimately require removal of approximately 598 acres of existing vegetative cover from the site, composed primarily of alfalfa fields and wheat crops. Riparian scrub and forest habitat along the creek corridor would not be directly affected by grading and gravel extraction activities. Limited disturbance to areas of non-native grassland cover would occur within the 35-acre habitat restoration area along the creek corridor due to installation of new plantings, irrigation improvements, and removal of noxious weeds, but no major grading is proposed in this area. The remaining tamarisk thicket on the Farnham East parcel would be removed and revegetated as part of the habitat enhancement effort.

In addition to conventional agricultural uses, the reclamation plan for the project proposes tree crops, native habitat restoration and enhancement, and permanent lakes for groundwater storage and wildlife habitat. Figure 4.6-2 shows the proposed restoration plan for the project from the HRP. A combination of row crop and biomass tree farming is proposed for agricultural reclamation, each occupying an estimated 223 acres of the reclamation area. Four permanent lakes would collectively occupy 161 acres, with the tree crops serving as a buffer from conventual agriculture uses. Perennial marsh vegetation

PROPOSED RESTORATION PLAN

Figure 4.6-2



Source: Zentner and Zentner, 1995.

BASELINE

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would be planted in shallow areas of the lakes below the average low groundwater level. Low terrace riparian woodland and seasonal marsh species would be planted between the average low and high groundwater levels. Oak woodland would be established on the upper elevations of the side slopes of the lakes and throughout the uplands of the creek restoration zone. As an alternative, the applicant has offered to substitute additional oak woodland reclamation for some or all of the proposed tree crops. Grassland cover and hedgerow plantings dominated by valley oak trees and elderberry shrubs would be established on the transitional slopes between the finished grade of reclaimed agriculture fields and the surrounding unmined areas. Cross-sections from the HRP (Figures 4.6-3 through 4.6-6) depict the proposed approach to revegetation of native habitat.

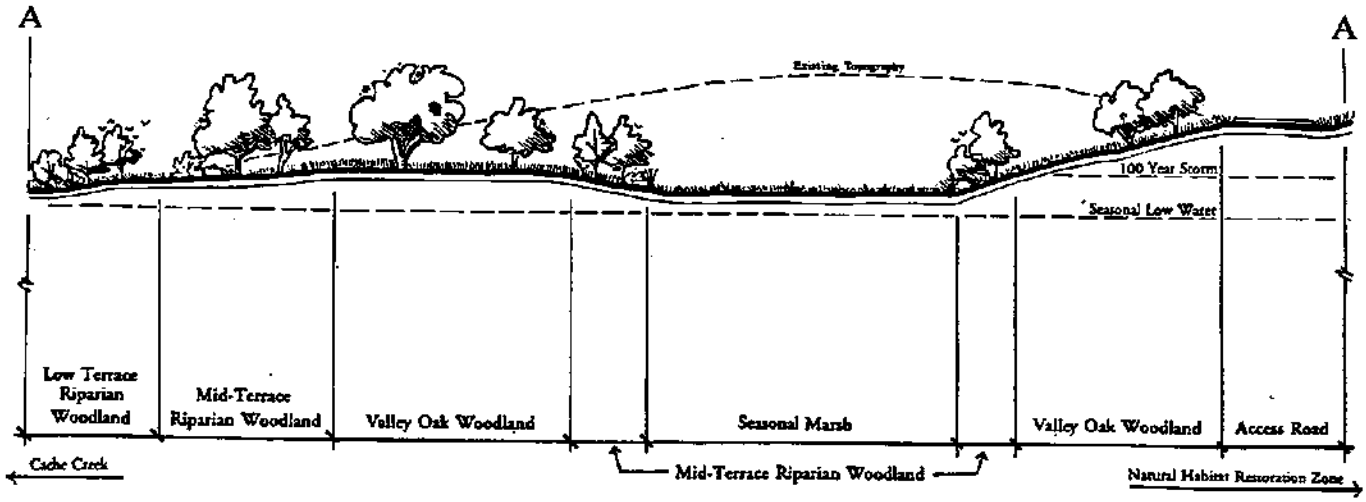
The HRP provides detailed information on the proposed approach to habitat restoration, including plan descriptions for each habitat type, information on monitoring and management, preliminary habitat construction specifications, and preliminary maintenance guidelines. Planting lists for each habitat type include a diverse mix of representative native species, and specify planting densities and spacial distribution within the restoration area. In general, the HRP provides an acceptable approach to revegetation and habitat enhancement, consistent with SMARA and OCMP and CCRMP policies.

Numerous policies in the OCMP and CCRMP pertain to the importance of protecting and enhancing sensitive riparian and woodland habitat, address reclamation to wetland and open water habitat, and specify appropriate species and planting densities to use in restoration efforts. Species lists and plantings densities specified in Performance Standards of the CCRMP for restoration vary from those identified in the HRP. However, Mitigation Measure 4.6-2a of the CCRMP Program EIR recognizes that alternative restoration plans which vary from these performance standards would be appropriate, if prepared by a qualified biologist, which is the case for the proposed project.

In addition, fluctuations in groundwater levels may limit the degree to which transitional wetland habitat plantings (depicted in Section E of Figure 4.6-5) become established along the margin of the proposed lakes on the site. Groundwater levels are estimated to range up to about ten feet annually, with highs through the winter months and lows in the summer. At a proposed slope of 4:1, water levels would fluctuate and the transitional wetland area could extend over a horizontal distance of up to 40 feet. Prolonged high water levels could preclude establishment of perennial and riparian vegetation at lower levels of the wetland habitat, favoring species more indicative of seasonal wetlands after water levels recede. However, fluctuations in water levels and resulting influence on plant distribution and establishment would be inherent to any created marshland or riparian habitat system, and annual fluctuations of ten feet should not pose a significant constraint to establishment of viable wetland habitat around the perimeter of the lakes on the site.

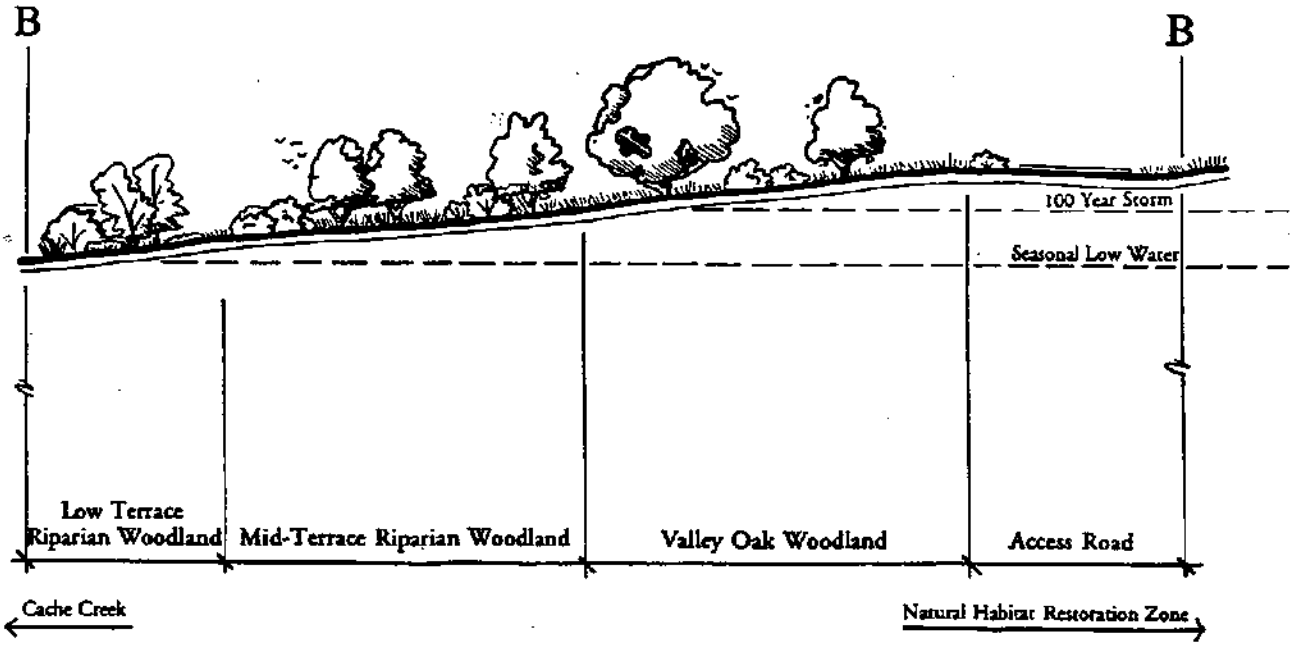
The loss of existing agricultural cover would not be a significant impact on vegetation resources. The proposed oak woodland, wetland, and hedgerow restoration plantings would eventually improve the habitat value of the site, improving its relationship to Cache Creek and greatly increasing the diversity of native plant species on the site, which would be a beneficial impact of the project.

PROPOSED RESTORATION CROSS-SECTIONS Figure 4.6-3



CREEK BANK RESTORATION

Cross-Section After Reclamation
Section A-A
Refer to Figure 4.6-2



CREEK BANK RESTORATION

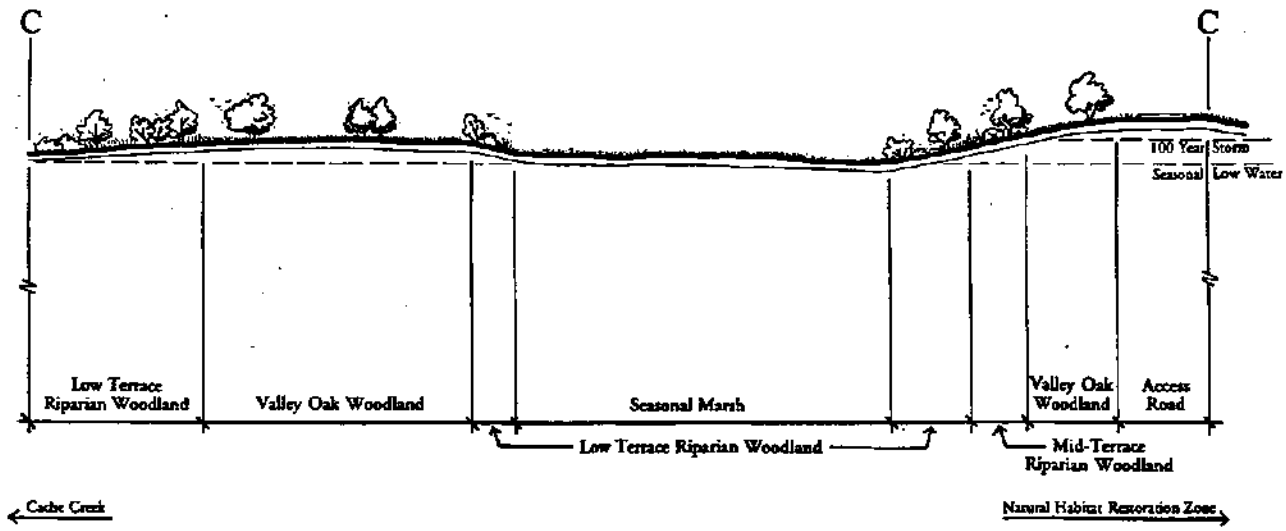
Cross-Section After Reclamation
Section B-B
Refer to Figure 4.6-2

Not to Scale

Source: Zentner and Zentner, 1995.

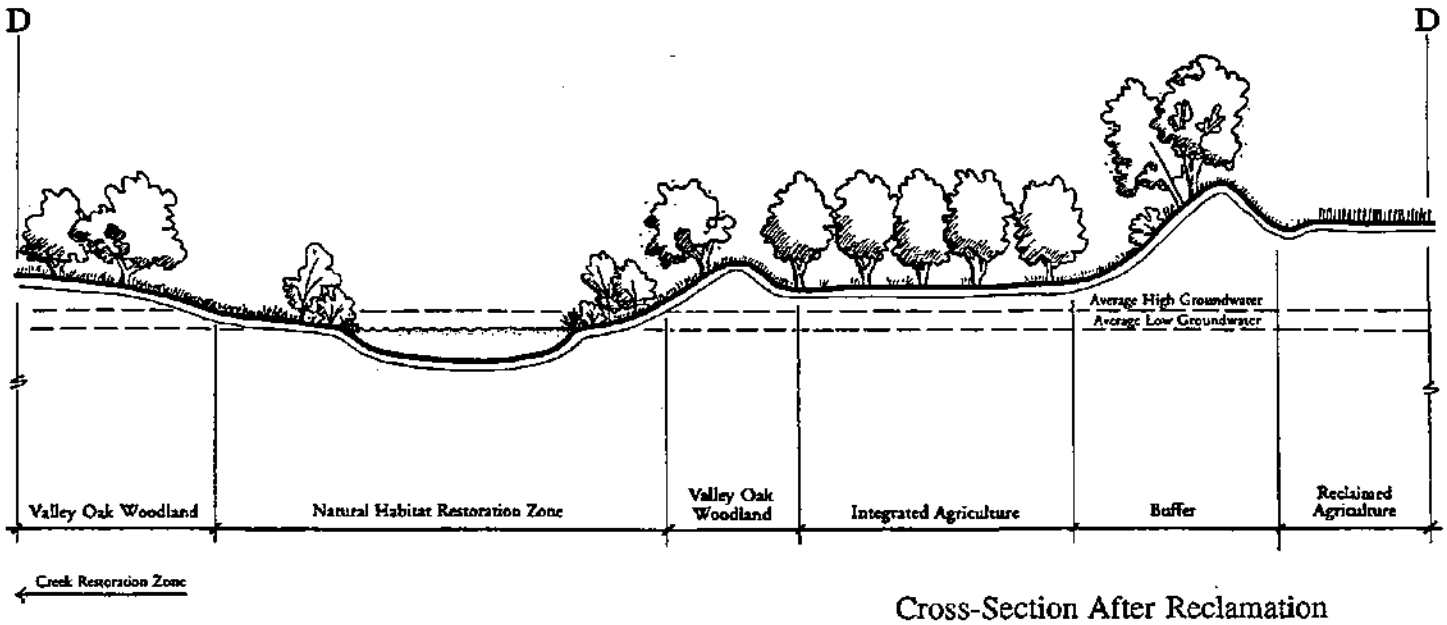
BASELINE

PROPOSED RESTORATION CROSS-SECTIONS Figure 4.6-4



Cross-Section After Reclamation
Section C-C
Refer to Figure 4.6-2

CREEK BANK RESTORATION



Cross-Section After Reclamation
Section D-D
Refer to Figure 4.6-2

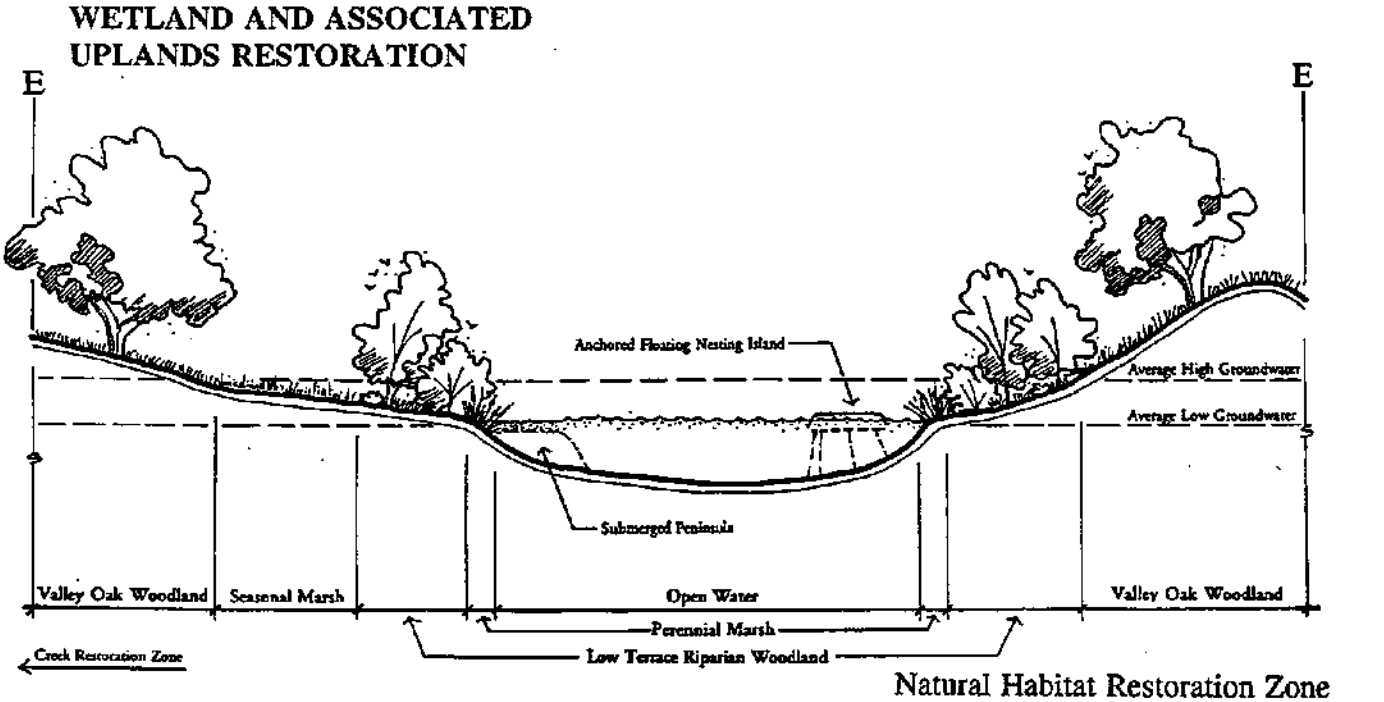
WETLAND AND ASSOCIATED UPLANDS RESTORATION

Not to Scale

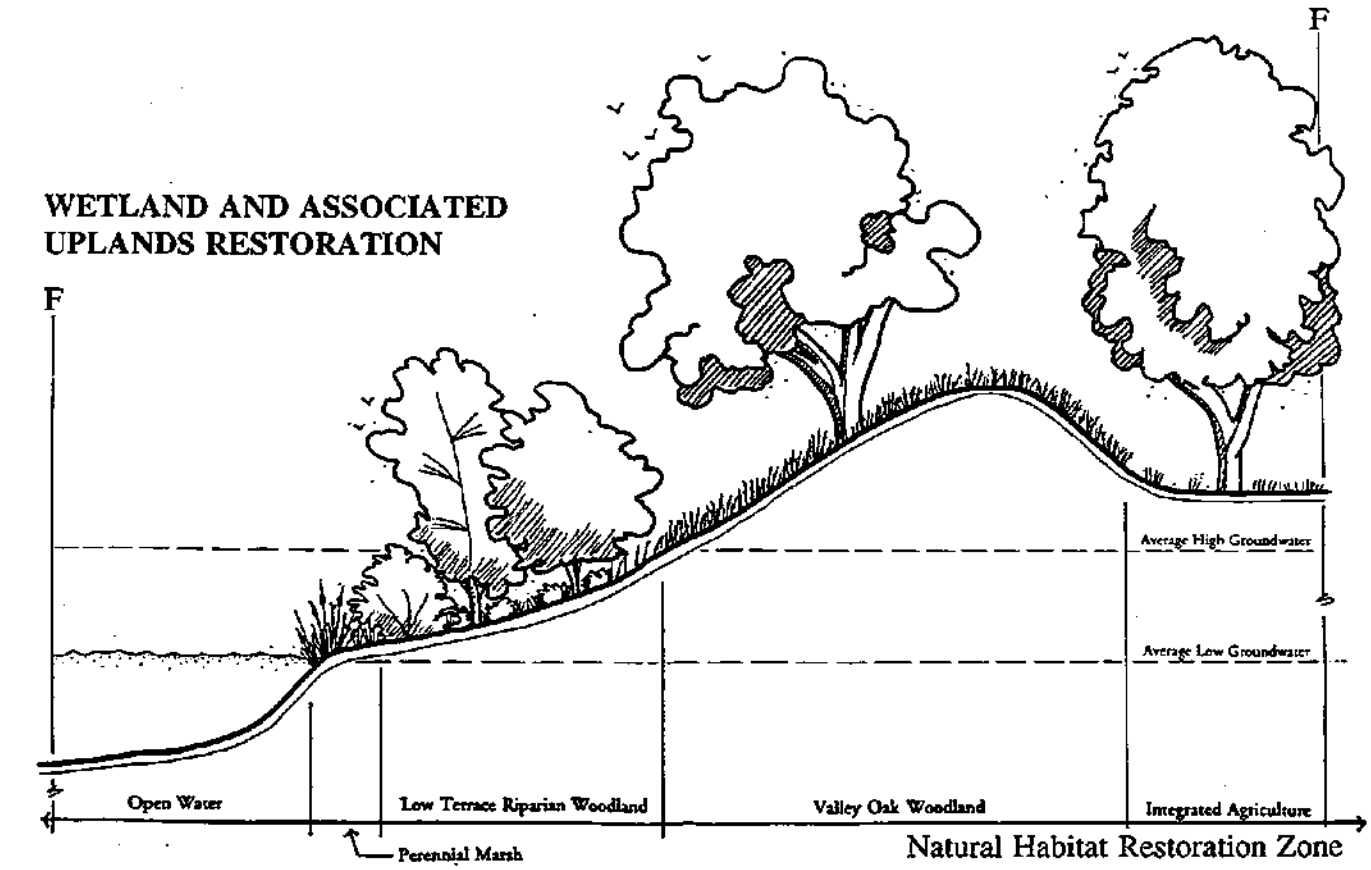
Source: Zentner and Zentner, 1995.

BASELINE

PROPOSED RESTORATION CROSS-SECTIONS Figure 4.6-5



Natural Habitat Restoration Zone
Section E-E
Refer to Figure 4.6-2



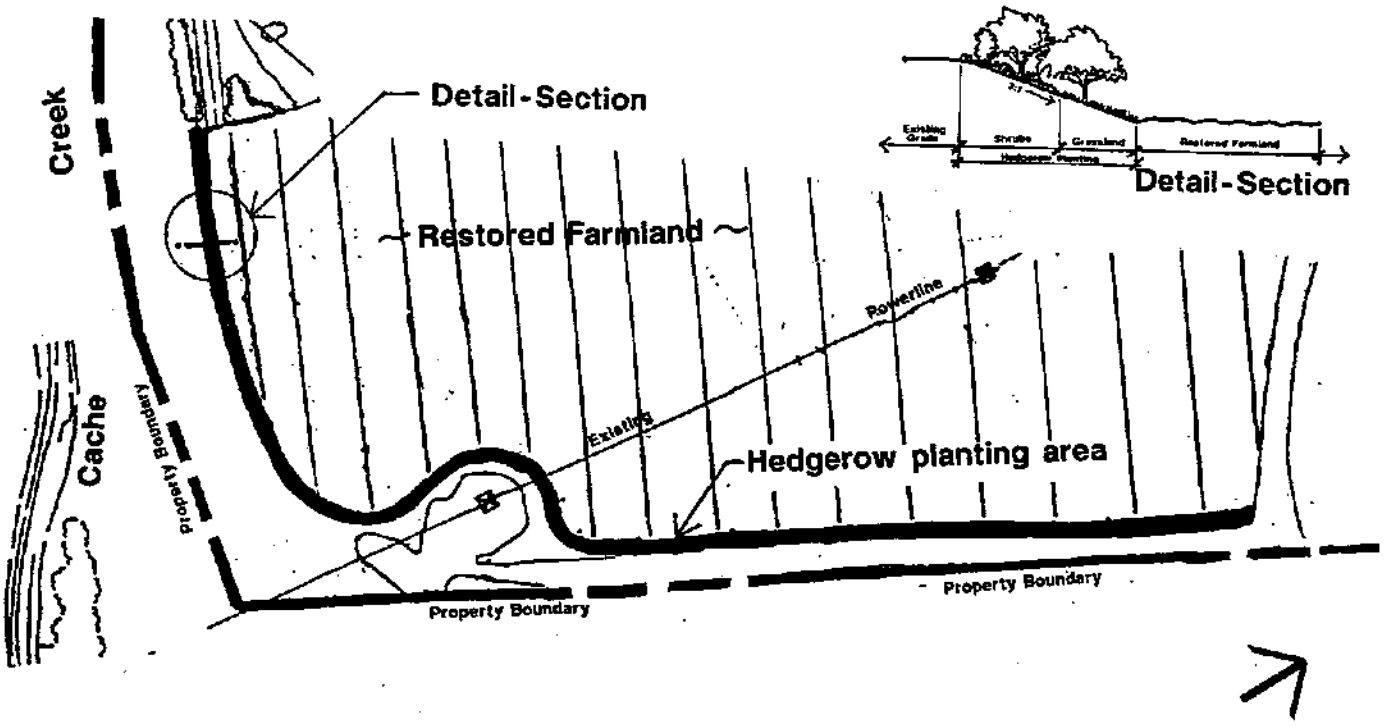
Natural Habitat Restoration Zone
Section F-F
Refer to Figure 4.6-2

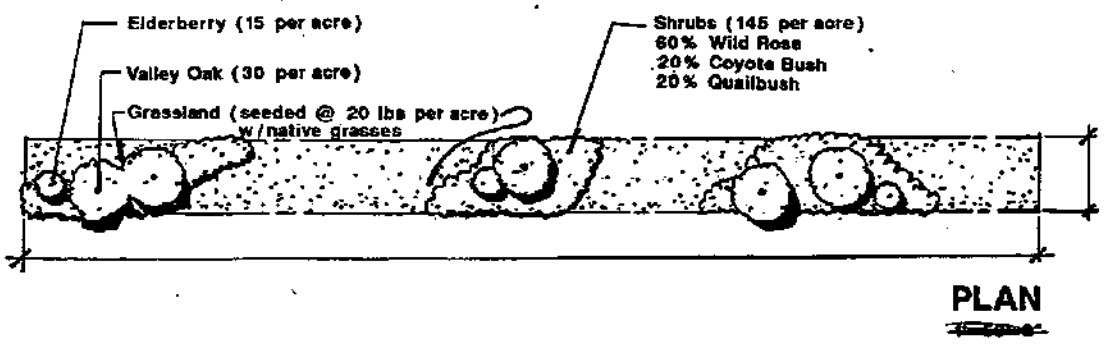
Not to Scale

Source: Zentner and Zentner, 1995.

BASELINE

PROPOSED HEDGEROW PLANTING DETAILS Figure 4.6-6





TYPICAL HEDGEROW PLANTING

ELEVATION

Not to Scale

Source: Zentner and Zentner, 1995.

BASELINE

Mitigation Measure 4.6-1a

None required.

Impact 4.6-2
Grading in the proposed mining area would result in the loss of mature oaks and could result in inadvertent disturbance to remnant sensitive natural communities along the Cache Creek corridor. This is considered to be a significant impact.

Although most of the major disturbance associated with the project would affect agricultural crops, a limited number of mature oaks and possibly riparian habitat along the creek corridor could be affected. Five of the isolated specimen oaks in the agricultural fields would be removed to accommodate mining activities. An additional five oaks would be located at the periphery of the mining pits or within the limits of proposed stockpile areas, and could be removed or damaged, unless specific protection measures were implemented. The proposed creek restoration effort, establishment of oak woodland on the upper slopes of the lakes, and hedgerow plantings with valley oak along transitional slopes in the agricultural fields would adequately compensate for the few trees to be removed. Based on estimates of habitat areas and proposed planting densities from the HRP, over 1,000 valley oaks would be planted on the site as part of revegetation and restoration.

Proposed levee improvements along the edge of the upper creek terrace could affect portions of the remnant woodlands and riparian habitat. A 3:1 fill slope is proposed along the outboard side of the levee. The fill would extend up to 50 feet into areas of riparian habitat on the Snyder West parcel and possibly the edge of riparian habitat on the Snyder East parcel. Proposed riprap immediately downstream from the I-505 overcrossing would affect approximately 1,400 linear feet of limited riparian cover along the edge of the active channel on the Kaupke parcel. It is also possible that riparian habitat could be unintentionally disturbed at some point during mining and reclamation, particularly as activities are completed in one location and expand to the next scheduled extraction area. New access roads between the existing haul road and mining areas could affect woodland or riparian vegetation, unless the roads were sensitively sited in areas of non-native grassland, and fencing were used to define haul roads and the limits of grading in the adjacent mining areas.

Establishment of seasonal marsh in the depressions on the Snyder East parcel, as depicted in Section C of Figure 4.6-4, would be consistent with recommendations in the *Technical Studies* but would require removal of the riparian scrub and woodland which has naturally reestablished itself. Given the site conditions, the benefits of the proposed modifications do not warrant the short-term disturbance and the potential for long-term improvement to the habitat value of the depression area.

Mitigation Measure 4.6-2a of the OCMP Program EIR includes policies for the protection of mature oaks and riparian vegetation, with replacement provided where complete avoidance is not possible. Performance Standard 6.5-1 of the OCMP specifies use of

temporary fencing to protect existing vegetation to be retained. The HRP for the project does not specifically address mitigation for loss of mature oaks and possible incursion into sensitive habitat along the creek corridor. Preliminary Habitat Construction Specifications in the HRP state that the boundaries of habitat areas would be located and marked by an Ecological Monitor, but do not include use of fencing to protect sensitive resource areas.

Mitigation Measure 4.6-2a

Figure 8 of the HRP shall be revised to indicate the location of hedgerow plantings, proposed by the applicant, on any side slopes around the perimeter of areas identified as "Integrated Agriculture" (tree crops) and "Reclaimed Agriculture."

Mitigation Measure 4.6-2b

Mature oak trees at the fringe of proposed mining areas shall be preserved. These shall include: the two oaks at the southwestern corner of the mining area on the Solano West parcel; the two oaks at the southwest corner of the mining area along the boundary between the Farnham West and Hutson parcels; and the single oak at the southeastern edge of the mining area on the Snyder West parcel. Stockpiling of topsoil and overburden proposed in the vicinity of these five trees shall be restricted to beyond the tree driplines. As required by Performance Standard 6.5-1 of the OCMP, temporary fencing shall be provided around the dripline of these trees to prevent possible construction-related damage. Fencing shall remain in place until stockpiles are removed and the surrounding lands are returned to agricultural production.

Mitigation Measure 4.6-2c

As required by Performance Standard 6.5-1 of the OCMP, temporary fencing shall be installed at the boundary of the habitat restoration area along the Cache Creek corridor, prior to initiation of any mining activity for each phase of the project. The fencing shall remain in place throughout the duration of active mining until reclamation has been completed for each project phase.

Mitigation Measure 4.6-2d

Proposed levee and channel stabilization improvements shall be designed to avoid impacts to riparian habitat on the site. Levee improvements on the Snyder East and West parcels shall be set back from the edge of the upper terrace to eliminate fill slopes which would extend into the riparian habitat. The proposed project shall be revised to provide a biotechnical bank protection design to replace the proposed placement of riprap on that section of the south bank of Cache Creek extending 1,500 feet downstream from the I-505 bridge.

Mitigation Measure 4.6-2e

The proposed HRP shall be revised to include provisions to remove tamarisk and giant reed from the site as part of the creek restoration effort and to modify

restoration plans for the depression on the Snyder East parcel to enhance the existing riparian woodland rather than establishing seasonal marsh at this location.

Implementation of these measures would mitigate impacts on mature oaks and sensitive natural communities to a less-than-significant level.

Impact 4.6-3
Mining and reclamation activities would disturb existing wildlife habitat and components of the proposed HRP would be of limited habitat value. This is considered to be a significant impact.

Wildlife habitat, affected by mining activities, would be largely limited to agricultural fields, since disturbances would generally be restricted to areas outside the sensitive riparian corridor. Species adapted to areas of agricultural cover already experience routine disturbance and population fluctuations due to agricultural practices. The small mammal and reptile populations collectively provide an important foraging base for Swainson's hawk and other raptors, as discussed below under Impact 6.4-4, but are themselves common to the area and tend to rapidly recolonize disturbed areas. This adaptability, however, assumes that the limited retreat habitat provided by fencerows, roadway margins, and isolated trees would be replaced as part of reclamation. As discussed under Impact 4.6-2, hedgerow plantings proposed along the edge of the reclaimed agricultural row and tree crops would increase the extent and value of the field margins on site. This provision would also be consistent with Mitigation Measure 4.6-3a of the OCMP Program EIR, which recommends incorporating fence row habitat as part of reclamation to agricultural use.

In addition to the enhancement provided by the proposed hedgerow plantings, other components of the proposed HRP, such as the 35-acre restoration area along the creek, and the open water, wetland, and woodland habitat associated with the permanent lakes would improve the habitat diversity of the site for wildlife. The cross-sections shown in Figures 4.6-3 through 4.6-6 show the varied habitat associated with the natural habitat restoration proposed as part of the HRP.

Regarding the habitat value of the proposed lakes, the HRP acknowledges that islands are an important component of open water habitat. However, the HRP has proposed using floating artificial islands rather than creating natural ones due to the substantial volume of sand and gravel that would be required to create natural islands. The proposed artificial islands would be approximately 20 x 20 feet in size and covered with gravel and sand to reduce vegetation growth. As indicated in Figure 4.6-2, the floating islands would be positioned around the perimeter of each lake, generally near the end of submerged peninsulas which are intended to provide greater shoreline complexity.

Although the artificial islands may provide resting and roosting substrate for shorebirds and waterfowl, the lack of any vegetative cover and exposed condition would severely limit their habitat value. This would be particularly true during inclement weather, periods of intense summer heat, or during flyovers by foraging raptors when cover becomes an essential habitat component. The artificial islands would be tethered in place by cables, and could

become stranded on shore as water levels recede during the summer months. Eventually, the wooden structures would disintegrate and anchoring cables would break, stranding them along the shorelines. Creating a few vegetated natural islands would provide permanent, secure nesting and roosting habitat for a variety of species. This would also provide greater consistency with the intent of Performance Standard 4.5-13 of the CCRMP which calls for creating vegetated islands for wildlife habitat as part of reclamation of permanent wet pits.

Mitigation Measure 4.6-3a

At least one permanent island shall be created on each of the proposed lakes to improve their wildlife habitat value. The permanent islands would replace the proposed artificial islands. Characteristics of the permanent island shall include the following:

- *The elevation of the islands shall extend a minimum of five feet above the average high groundwater level (approximately 125-foot elevation) to prevent complete inundation during the winter months. Slopes of the island shall not exceed 3:1 above the average low groundwater level.*

- *The channel of water separating the island from the mainland shall have a minimum distance of 20 feet and a depth reaching at least 5 feet during the average summer low groundwater level to prevent predators from wading to the island during the summer months.*

- *Each island shall be revegetated according to the HRP, with perennial marsh at the lowest elevations and low terrace riparian species up to the average high groundwater level, with a cover of grassland and scattered shrubs provided over the top of the island.*

Mitigation Measure 4.6-3b

The unique bluff habitat between the upper terrace and the existing haul road on the Snyder East parcel shall be preserved. Mitigation Measure 4.3-4a in the Geology section provides appropriate mitigation for this impact.

Implementation of this mitigation measure would reduce impacts on wildlife resources to a less-than-significant level.

Impact 4.6-4
Mining activities and aspects of the proposed reclamation would result in the loss of suitable foraging habitat for Swainson's hawk. This is considered to be a significant impact.

Proposed activities would result in a reduction of Swainson's hawk foraging habitat. Habitat loss is the most significant threat to the remaining populations of Swainson's hawk, as agricultural practices change or agricultural lands are converted to other uses and nest

trees are destroyed. While no known nest trees would be directly affected by the project, the site meets the two criteria used by CDFG in determining suitable foraging habitat mitigation for Swainson's hawk if habitat is converted or modified by proposed development.

Removal of the existing agricultural fields in the proposed mining and stockpiling areas would result in the loss of suitable foraging habitat for Swainson's hawk until reclamation is completed. A total of 598 acres of suitable foraging habitat would eventually be disturbed by mining activities and 101 acres by stockpiles. The maximum disturbance in any year is estimated to be 126 acres (see Impact 4.5-1). Eventually all of the mining area except that devoted to tree crops and the open water habitat of the permanent lakes would be reclaimed to row crops and natural habitat. Areas of tree crops and the open water habitat would be unsuitable for foraging, resulting in the net permanent loss of approximately 384 acres of suitable foraging habitat. Trees and shrubs planted in the 100 acres devoted to natural habitat may eventually preclude foraging in these areas as well; however, the enhanced nesting and perching habitat to be created along the Cache Creek corridor would be of greater benefit to Swainson's hawk.

In the absence of adequate mitigation, CDFG may consider the loss of foraging habitat to constitute "take" under Section 2081 of the CESA. The *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California* was prepared by CDFG (1994) to provide information on recommended management, natural history and population status, nesting and foraging requirements, and mitigation criteria for Swainson's hawk, with a general goal of no net loss of breeding or foraging habitat. The report is intended to provide lead agencies and project sponsors with an interim framework for developing adequate measures to mitigate the loss of habitat until a comprehensive Swainson's Hawk Habitat Resource Plan is completed by CDFG. The mitigation criteria specified in the report include: consultation with representatives of CDFG; restrictions on disturbance within one half mile of a known nest site from March 1 through August 15; prevention of loss of nest trees; maintenance of sufficient foraging habitat to support breeding pairs and successful fledging of young; and restoration and enhancement of nesting and foraging habitat.

The County currently considers even the temporary loss of suitable foraging habitat for Swainson's hawk to be a significant impact requiring mitigation. Adequate mitigation could include preparation of a project-specific plan to provide for replacement habitat or payment of mitigation fees. Action 6.4-4 of the OCMP requires that all off-channel mining operations which result in a loss of suitable foraging habitat obtain a 2081 Permit from the CDFG, with which the project must comply.

In 1992, the County entered into a Memorandum of Understanding with CDFG, USFWS, and the cities of Davis, West Sacramento, Winters, and Woodland to develop a framework to address potential impacts of development on special-status species, particularly Swainson's hawk. A draft Habitat Conservation Plan (HCP) was recently completed and is undergoing public review and comment (EIP Associates, 1995b). The draft HCP addresses impacts of anticipated urban development and agricultural facilities on 29

"target" species of concern. The HCP is intended to form the basis of an "incidental take permit" to be issued by the Federal Government under §10(a)(1)(B) of the ESA, and a "managed take permit" under §2081 of the Fish and Game Code. The HCP is also intended to fulfill mitigation requirements related to significant impacts on biological resources from local development projects requiring CEQA review, exclusive of aggregate mining/reclamation applications. Mitigation options in the draft HCP include payment of a mitigation fee, land dedication, or other in-kind resources such as habitat restoration services. While mining activities within the Cache Creek Mineral Resource Zone have not been included as part of the anticipated development considered in the HCP, the Cache Creek corridor has been designated as having a high preservation or restoration level for mitigation areas. The site could be used for mitigation required under the HCP, possibly coordinated with restoration efforts proposed as part of the project (such as expansion of the proposed hedgerow plantings to the undisturbed agricultural fields). This would provide consistency with the intent of Mitigation Measure 4.6-4a of the OCMP Program EIR which encourages mining operators to participate in the Developer Participation Options of the HCP.

Mitigation Measure 4.6-4a

As required by Action 6.4-4 of the OCMP, a CDFG Code Section 2081 authorization, or the posting of a reclamation bond or letter of credit naming CDFG as the beneficiary, or other alternative mechanism acceptable to CDFG shall be executed prior to project approval.

Implementation of the mitigation measure would reduce the potential impacts on loss of suitable Swainson's hawk foraging habitat to a less-than-significant level. It is anticipated that the 1:1 offset mitigation required for loss of prime agricultural land (OCMP EIR Mitigation Measure 4.5-2a) would apply as mitigation for this impact as well.

Impact 4.6-5
Mining activities would affect suitable habitat for special-status species, such as valley elderberry longhorn beetle, bank swallow, and other species of concern. This is considered to be a significant impact.

Essential habitat for other special-status species occurs on the site, and would be affected by proposed mining and reclamation activities. Of particular concern is the direct loss of elderberry shrubs, which are considered suitable habitat for VELB by USFWS. About 12 elderberry shrubs would be removed to accommodate mining activities, four of which were determined to have characteristic exit holes indicating use by VELB. Numerous other elderberry shrubs occur in close proximity to excavation areas, levee improvements, haul routes, and within the proposed restoration area along the creek corridor. These shrubs could be adversely affected by mining-generated dust or inadvertent destroyed by other activities. There also remains a possibility that new elderberry shrubs could become established along the margins of agricultural fields during the estimated 30-year life of mining activity. While the proposed HRP would provide for extensive plantings of elderberry shrubs in the woodland restoration and hedgerow habitat areas, it does not

define how the restoration efforts would provide consistency with the USFWS *Compensation Guidelines for the Valley Elderberry Longhorn Beetle.*

The loss of the artificial nesting habitat for bank swallow on the Hutson parcel and the potential for inadvertent take of this species is also of concern. The vertical quarry face on the Hutson parcel has been used for nesting by bank swallows since at least 1987. While the proposed HRP mentions that the creek restoration program provides an opportunity for creating new bank swallow habitat, it contains no details on whether and how this would be accomplished as part of the project. In addition, while final grades for stockpiled topsoil would not exceed to 2:1 to prevent erosion and possible use by bank swallow, even temporary storage piles of topsoil (for one or more days) with a vertical face could allow for colonization by swallows. Ensuring that no vertical faces are created in the stockpile areas would prevent use by bank swallow and possible take of this species if grading activities were to inadvertently destroy a nesting colony. Mitigation Measure 4.6-4a of the OCMP Program EIR defines appropriate treatment of stockpiles to preclude possible impacts on bank swallow.

Potential impacts on other special-status species of concern would be limited to possible loss of raptor nests, which are protected under the Migratory Bird Treaty Act and the State Fish and Game Code. Although no nests have been observed on the site during past surveys by the applicant's biologist, two potential raptor nests were observed during the March 1996 field reconnaissance. It is possible that one or more species of raptor may establish an active nest in the vicinity of proposed improvements at some time in the future, which could be destroyed or abandoned as a result of construction activities. A preconstruction survey would be necessary to confirm absence of any raptor nesting activity before each phase of mining proceeds.

Mitigation Measure 4.6-5a

The proposed HRP shall be revised to include specific provisions to ensure compliance with the USFWS "General Compensation Guidelines for the Valley Elderberry Longhorn Beetle". This shall include measures to: protect all elderberry shrubs to be retained; transplanting shrubs that cannot be avoided; planting replacement elderberry seedlings and associated riparian vegetation at appropriate ratios; and defining short and long-term maintenance, monitoring, and protection methods for the designated mitigation areas. A preconstruction survey for elderberry shrubs shall be performed by a qualified biologist prior to each phase of mining. The survey shall serve to confirm previous mapping of elderberry locations and determine whether any new shrubs have become established within the new mining area for which protection or replacement shall be provided. The results of the survey shall be submitted to the USFWS as a report summarizing the purpose, findings, and recommendations consistent with the provisions of the revised HRP. All elderberry shrubs to be retained shall be flagged and fencing provided where necessary to preclude possible damage or loss of shrubs.

Mitigation Measure 4.6-5b

Implement Mitigation Measure 4.6-4a of the OCMP Program EIR to prevent inadvertent take of bank swallows.

Mitigation Measure 4.6-5c

The proposed HRP shall be revised to include specific provisions to replace the artificial bank swallow nesting habitat created by past mining activities on the Hutson parcel. These provisions shall include design, construction, and maintenance activities necessary to implement one or more of the following options: establishing suitable nesting habitat on designated side slopes of the permanent lakes, replicating the conditions on the Hutson parcel at a new location; restoring the vertical bluffs above the mining-related riparian habitat in the northern portion of the Snyder East parcel; and/or creating and perpetuating a vertical bank along a designated segment of the active channel of Cache Creek.

Mitigation Measure 4.6-5d

A pre-construction raptor survey shall be conducted by a qualified wildlife biologist prior to initiation of each phase of mining to determine the presence or absence of active raptor nests which could be disturbed or lost within the new mining area. The results of the survey shall be submitted to the CDFG as a report summarizing the purpose, findings, recommendations, and status of any nests encountered. Elements of the required pre-construction nesting survey and construction restrictions shall include the following:

- *Conduct the survey 30 days prior to any grading or other habitat modifications if proposed during the breeding season for tree nesting raptors (from March 1 through August 15). Confirmation surveys on presence or absence of burrowing owl ground nesting colonies shall be required prior to initiation of a particular phase of mining at any time of the year to ensure absence of any resident owls.*

- *If an active raptor nest is encountered, establish an appropriate buffer around the nest location, as determined in consultation with representatives of CDFG. The perimeter of the buffer zone shall be flagged in the field at 50-foot intervals, and all construction activities, including grading, tree removal, equipment storage, and stockpiling of soils, shall be prohibited within this buffer zone.*

- *Prohibit construction activities within the designated buffer zone until the consulting wildlife biologist has determined that breeding was unsuccessful, that the young have fledged from the nest, or that a CDFG-approved relocation plan has been successfully implemented.*

- *Prohibit construction activities, including removal of any nest tree or burrow, within the designated buffer zone unless written confirmation from the wildlife biologist on the status of nesting activity has been submitted in writing to CDFG.*

Implementation of these mitigation measures would reduce the impacts on other special-status species to a less-than-significant level.

Impact 4.6-6
Proposed mining and reclamation activities would affect jurisdictional wetlands or other waters of the United States. This is considered to be a significant impact.

Mining activities on the Snyder East parcel would require relocation of approximately 1,000 linear feet of the drainage ditch which passes through the southeastern portion of the site, affecting an estimated 0.21 acres of jurisdictional wetlands. This feature would be relocated as part of the project, reestablishing the wetlands at a 1:1 replacement ratio. This ditch was devoid of any emergent vegetation during the March 1996 field reconnaissance due to routine maintenance. The ditch currently has limited habitat value and relocation of the ditch would mitigate potential impacts on this feature.

Proposed levee modifications could result in disturbance to the bank of Cache Creek below the ordinary high water mark unless improvements were restricted to the inboard side of the existing levee. As discussed under Impact 4.6-2, fill slopes associated with the levee along the edge of the upper terrace on the Snyder parcels could affect the jurisdictional wetlands delineated within the riparian habitat. Active erosion along approximately 1,400 linear feet of the active channel bank on the Kaupke parcel is to be controlled through the use of bank protection. This would require placement of fill within the channel bottom and recontouring of the channel bank to create a 3:1 slope. In addition, installation of the culvert which would discharge runoff from the reclaimed mining areas could affect a small area of the channel bank and jurisdictional habitat.

Mitigation Measure 4.6-6a

Proposed channel bank modifications shall be coordinated with the Corps and California Department of Fish and Game. If required by jurisdictional agencies, appropriate authorization to modify jurisdictional habitat shall be obtained prior to grading or other modifications. Consistent with Action 4.4-1 of the CCRMP, use of biotechnical bank protection design methods shall be encouraged where bank stabilization is required, such as the segment of active erosion on the Kaupke parcel.

Implementation of these mitigation measures would reduce potential impacts to wetland resources to a less-than-significant level.

4.7 AIR QUALITY

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INTRODUCTION

Clean air is a vital resource to public health and welfare, to a local agricultural economy, and to the quality of life enjoyed by everyone. Air pollution can adversely affect public health, diminish the production and quality of agricultural crops, reduce visibility, degrade materials, and damage native vegetation (YSAQMD, 1992). As a result, the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) have set State and Federal ambient air quality standards.

This section discusses regional air quality in Yolo County and sources and quantities of air emissions expected from the project. The potential air quality impacts were assessed based on methods recommended by the Yolo-Solano Air Quality Management District (YSAQMD), U.S. EPA, and CARB.

SETTING

Description of Regional Environment

Climate and Meteorology

A region's ambient air quality is generally determined by the amount of pollutants emitted into the atmosphere, the chemical reactions in the atmosphere involving these pollutants, and the physical processes (meteorology) affecting their distribution, dilution, and removal from the region. The regional topography and climate are therefore important factors to be considered in an air quality analysis.

The project site is located in the southwestern portion of the Sacramento Valley, a broad valley extending from the Coast Ranges to the Sierra Nevada. The prevailing winds generally come from the south. Occasional winds from the northwest occur, causing hot, dry conditions in the summer and sudden drops in temperature in the winter. Temperature inversions occur in the region, primarily during winter months, trapping pollutants near the ground and exacerbating air pollution in the valley. In the summer, a phenomenon called the "Schultz Eddy" prevents the normal horizontal distribution of pollutants to the north (YSAQMD, 1994). The OCMP Program EIR provides a more extensive description of the region's meteorological and topographical conditions that determine the movement and dispersal of air pollutants in Yolo County.

Air Quality Standards

Federal air quality standards are known as National Ambient Air Quality Standards (NAAQS). NAAQS have been established for six criteria air pollutants: ozone, carbon monoxide (CO), particulate matter less than 10 microns in diameter (PM_{10}), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. These pollutants are referred to as "criteria pollutants" because the EPA published criteria documents to justify its choice of standards. These NAAQS are divided into primary standards, designed to protect the public health,

and secondary standards intended to protect the public welfare from effects such as visibility reduction, soiling nuisance, and other forms of damage. The State of California has adopted its own air quality standards, which are more stringent than the Federal standards. State standards are designed to protect public health with a margin of safety. According to designations established by State and Federal agencies, the pollutants of concern in Yolo County are ozone, PM_{10}, and CO.

- Ozone is primarily a regional air pollutant, which is not emitted directly, but is formed in the atmosphere from a chemical reaction that takes place under the influence of sunlight. Nitrogen oxides (NO_x) and reactive organic gases (ROG) are the primary compounds contributing to the formation of ozone and are often referred to as ozone precursors. Automobiles are a major cause of ozone precursors in the atmosphere. Ozone is harmful to humans because it causes respiratory problems.

- Particulate matter can be found in the atmosphere in the form of dust, mist, ash, smoke, and fumes. In industrialized regions, smoke (composed of carbon and other products of incomplete combustion) is the most obvious form of particulate pollution. Earth-moving operations, especially farming and construction, cause large amounts of dust to enter the air. Particulate matter is also emitted by automobile exhaust, friction of tires on pavement, and vehicular traffic on unpaved roads. A portion of the total particulate matter suspended in the air is PM_{10}, which is small enough to remain suspended in the air for a long period of time and can potentially be inhaled by humans, causing aggravation of chronic respiratory diseases.

- Carbon monoxide is an odorless, colorless gas that is highly toxic. It is the result of incomplete combustion of fuels. Its main sources are motor vehicles. At high concentrations, carbon monoxide reduces the amount of oxygen in the blood, causing heart difficulties, and reduced lung capacity.

Description of Local Environment

The project site is located in the relatively flat lands of Hungry Hollow and is surrounded by the Dunnigan Hills to the northeast, the Capay Hills to the northwest, and the Rumsey Hills to the southwest. The average annual precipitation in the project area is 19.4 inches (National Oceanographic and Atmospheric Administration, 1992) and most of the seasonal rainfall occurs between October and April.

The project site is within the eleven-county Sacramento Valley Air Basin, which is comprised of eight air districts, including the Yolo-Solano Air Quality Management District (YSAQMD). The YSAQMD is designated as a nonattainment area for State ozone and PM_{10} standards and for Federal ozone standards[1] (Antone, 1996). These nonattainment designations are based on air quality monitoring data obtained at monitoring stations operated by YSAQMD and the California Air Resources Board (CARB).

[1]The OCMP Program EIR provides a discussion of the difference between YSAQMD's Federal and State nonattainment designations.

The closest air monitoring station to the project site is the YSAQMD-operated station in Woodland. Recent data obtained at this multiple-pollutant monitoring station show that the State standard for ozone (0.09 part per million [ppm] averaged over one hour) and the State PM_{10} standard (50 micrograms per cubic meter averaged over 24 hours) is exceeded every year (Table 4.7-1). No exceedances of the State standards for other pollutants, or the Federal ozone or PM_{10} standards occurred.

TABLE 4.7-1: **Summary of Air Quality Data, 1990-1993.**

Pollutant	Standard		1990	1991	1992	1993
WOODLAND STATION:[1]						
Ozone	State 1-hour (0.09 ppm)	Days over standard	3	4	9	1
	Federal 1-hour (0.12 ppm)	Days over standard	0	0	0	0
		Highest concentration (ppm)	0.11	0.10	0.11	0.12
Carbon Monoxide	State 1-hour (20 ppm)	Days over standard	0	0	0	0
	Federal 1-hour (35 ppm)	Days over standard	0	0	0	0
		Highest concentration (ppm)	12	7	7	6
	State & Federal 8-hour (9 ppm)	Days over standard	0	0	0	0
		Highest concentration (ppm)	5	3.5	3.9	3.4
PM_{10}	State 24-hour (50 $\mu g/m^3$)	% samples over standard	11.9	38.5	38.1	16.1
	Federal 24-hour (150 $\mu g/m^3$)	% samples over standard	0	0	0	0
		Highest concentration (ppm)	80	102	103	96

Source: California Air Resources Board, 1991-1994.

Notes: ppm = parts per million.
$\mu g/m^3$ = micrograms per cubic meter.

[1] The Woodland monitoring station was relocated in 1992 from a location on West Main Avenue to 40 Sutter Street.

Sensitive air quality receptors consist primarily of areas frequented by people who are most susceptible to respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by illness, and people practicing outdoor sports. Examples are hospitals, schools, and convalescent homes. Sensitive receptors located along local roads include the Madison Migrant Center Daycare on SR 16 east of County Road 89.

Existing Emissions

Air pollutant emissions in the area are primarily associated with vehicle travel on Federal, State, and local roadways, operation of heavy equipment on agricultural fields, and existing aggregate mining and processing plants. Solano Concrete has operated a sand and gravel processing plant and a hot asphalt batch plant on the subject site since the early 1970s. The Solano Concrete plants operate under two permits (permit P-26-92 for the aggregate plant and permit P-89-80a for the asphalt batch plant) issued by the YSAQMD and are considered to use Best Available Control Technology (BACT). The District has not

issued any notice of permit violation, and has not received any complaints related to operation the Solano Concrete plant facilities (Smith, 1996).

The YSAQMD permits limit the aggregate and asphalt production and emissions from the existing aggregate processing and asphalt hot plants. Several devices at the aggregate processing and asphalt plants (e.g., conveyors, screens, crushers) are considered air pollutant sources and are listed on the permits from the District. The proposed project requests an increase in aggregate production from a permitted limit of 772,400 (under the existing use permit issued by the County) to 1,200,000 tons sold per year (1,445,783 tons mined per year). Since the YSAQMD current permit for the aggregate plant (permit P-26-92) limits production to 836,000 tons per year, the production increase requested in the long-term application would require an amendment to the existing aggregate plant air permit. Depending on the YSAQMD rules at the time of permit amendment, new or additional emissions controls may be required if, for example, the definition of BACT has changed since the issuance of the original permit for the aggregate plant. No increase is requested at the asphalt plant, which is currently limited to a maximum production of 100,000 tons per year, and therefore no amendment to air permit P-89-80a would be necessary.

Current activities on the project site that result in air emissions include agricultural production, aggregate mining, plant aggregate processing, and hauling of aggregate materials from the plant to customers by haul trucks. The pollutants of concern from these activities are particulate matter (primarily fugitive emissions), NO_x, and ROG (from exhaust fumes). The daily and annual air emissions currently generated by the Solano Concrete facility were estimated (Tables 4.7-2a and 4.7-2b), as described below, for plant emissions, aggregate mining and reclamation, agricultural activities, and hauling of products.

Aggregate Processing and Asphalt Plants

The aggregate material is loaded onto the scrapers and transported from the mining pits to the processing plant, where it is bottom-dumped into a large underground hopper. This hopper feeds material onto a long conveyor belt for transfer to a storage pile. Other conveyors move material from this stockpile into the portion of the plant where washing, sorting, crushing, and blending are conducted. A series of screens and baths separate the material into gravel and sand of several sizes. Excessively large rock fragments are fed into two cone-type rock crushers where they are broken up for use in the asphalt plant. After washing and sorting, the material is transported to several stockpiles by a combination of conveyors and front-end loaders. Several sand and gravel stockpiles, up to 50 feet high, are located around the processing plant. The primary air emission generated by the aggregate processing plant is dust; and a portion of this aggregate dust is PM_{10}. PM_{10} is generated by several plant processes, including feeding of raw excavated material, size separation of material by vibrating screens, crushing of rocks, dropping of materials from conveyor belts, and wind disturbance of stockpile surfaces.

The asphalt hot plant, located on the processing plant site, uses approximately ten percent of the processed aggregate for preparation of various grades of surfacing asphalt. The

TABLE 4.7-2a: **Current Annual Emissions.**

Emission Source	Estimated Emission Rate (tons/year) ROG	NO_x	PM_{10}	CO	SO_x
On-site Stationary Sources:					
Rock plant			12.64		
Asphalt plant	0.72	1.10	0.40	14.29	0.23
On-site Mobile Exhaust Sources					
Overburden excavation, reclamation, and hauling	0.05	0.70	0.07	0.23	0.08
Aggregate excavation and hauling	0.28	3.91	0.38	1.36	0.43
Miscellaneous equipment	0	0.04	0	0.01	0.01
On-site Fugitive Dust Sources:					
Overburden excavation, reclamation, and hauling			1.40		
Aggregate excavation and hauling			13.51		
Aggregate, overburden, dumping			0.10		
Wind erosion			1.42		
Agricultural activities			39.05		
Off-site Mobile Exhaust Sources:					
Hauling of aggregate and asphalt products	4.36	23.12	5.31	16.39	0.66
Miscellaneous transportation	0.17	1.40	0.13	0.42	0.13
Total Annual Emissions	**5.58**	**30.27**	**74.41**	**32.71**	**1.55**

TABLE 4.7-2b: **Current Daily Emissions.**

Emission Source	Estimated Emission Rate (pounds/day) ROG	NO_x	PM_{10}	CO	SO_x
On-site Stationary Sources:					
Rock plant			244.2		
Asphalt plant	34.09	52.35	19.24	680.33	11.16
On-site Mobile Exhaust Sources					
Overburden excavation, reclamation, and hauling	0.57	8.23	0.84	2.75	0.97
Aggregate excavation and hauling	3.34	45.97	4.46	15.99	5.12
Miscellaneous equipment	0.03	0.49	0.04	0.10	0.06
On-site Fugitive Dust Sources:					
Overburden excavation, reclamation, and hauling			16.46		
Aggregate excavation and hauling			158.99		
Aggregate, overburden, dumping			1.16		
Wind erosion			16.75		
Agricultural activities			459.40		
Off-site Mobile Exhaust Sources:					
Hauling of aggregate and asphalt products	51.28	271.98	62.42	192.84	7.80
Miscellaneous transportation	2.01	16.48	1.50	14.99	1.59
Total Daily Emissions	**91.30**	**395.5**	**985.45**	**896.99**	**26.7**

operation of the asphalt plant consists of combining specific amounts of sand and crushed rock with heated petroleum liquid, and mixing and heating the mixture to form the final asphalt product. The asphalt product is loaded directly onto haul trucks. The primary types of emissions in the asphalt hot plant are fugitive emissions from aggregate processing and emissions from fuel burning. The cyclone and baghouse collector systems installed in 1972 allow for capture of a major portion of fugitive emissions at the source and recycling of particulates into the process (Solano Concrete, No Date [b]). Since 1972, equipment improvement and additions allowed for further reduction of PM_{10} emissions. These modifications also reduced the amount of time the plant runs by increasing its efficiency, which resulted in a decrease in both fugitive and fuel burning emissions. Fuel burning sources at the hot asphalt plant include the dryer for crushed aggregate and the asphalt heater. Fuel burning emissions depend on the type of fuel used, and the amount of fuel burned. Diesel number 2 was used in the dryer until 1992, when the dryer was converted to liquefied petroleum gas (LPG). Also in 1992, the asphalt heater was converted from electricity to LPG. The net result of these modifications was a reduction in emissions of CO, VOC, SO_x, and PM_{10}.

Both the aggregate processing plant and asphalt batch plant at the Solano Concrete facilities operate with Best Available Control Technology (BACT). The current emissions generated by the plants were calculated (see On-site Stationary Sources in Tables 4.7-2a and 4.7-2b) based on AP-42 revised emission factors[2] (EPA, 1995). The calculated current emissions were then adjusted for the ten-year average production for the asphalt plant, assumed to be 84,000 tons a year (Russo, 1996), and for the aggregate processing plant, assumed to be 718,787 tons a year (Morrison, 1996).

Aggregate Mining and Reclamation Activities

Mining of approximately 13 acres of the Farnham West parcel and reclamation of portions of the Hutson parcel are currently taking place at the project site. On-site air emissions generated by current mining and reclamation activities include: 1) PM_{10} emissions from removal and hauling of overburden materials,[3] hauling of aggregate from the Farnham West parcel to the plant, unloading of scrapers at the plant's underground hopper, use of a bulldozer during reclamation of the site, use of a motor grader to maintain the unpaved haul roads, and wind erosion of stockpiles; and 2) exhaust emissions from operation of equipment (scrapers, motor graders, and bulldozers) used for excavation and hauling of overburden and aggregate, and maintenance of haul roads. Daily and annual average

[2]A revised edition of AP-42 was published in 1995 containing new emission factors for crushed stone and sand and gravel processing, which substantially reduces the calculated emissions for aggregate processing plants. After technical review of the source test methods used to develop the new emission factors, the CARB found that the new 5th Edition AP-42 emissions factors (for stone crushing and sand and gravel processing) provide reasonable emissions factors for facilities with similar operating conditions to those tested during the development of the new emission factors (CARB, 1996). The new emission factors were used for calculations included in this EIR.

[3]For simplification, the term overburden is used in this EIR to refer to the topsoil and overburden layers found over the aggregate materials.

emissions from on-site mobile exhaust sources and fugitive dust sources were calculated (Tables 4.7-2a and 4.7-2b) using AP-42 emission factors (EPA, 1995) based on average volumes of overburden and aggregate excavated and hauled from Farnham West every year (Russo, 1996). Dust emission from wind erosion of stockpiles was calculated based on the current average acreage of active storage piles (Russo, 1996).

Agricultural Production

Approximately 585 acres of the site to be mined are currently used for agricultural production. Agricultural activities that result in air emissions include deep tilling of the fields, seed bed preparation, planting, and crop harvest. During tilling of the fields, dust particles from loosening and pulverization of the soil are ejected into the atmosphere. Dust emissions are greatest when the soil is dry and during final seedbed preparation. Emissions from harvest operations are generated during crop handling by the harvesting equipment, loading of the harvested crop into trucks, and transport by trucks on the field. During these operations, particulate matter, composed of soil dust and plant tissue fragments, may be entrained by wind. PM_{10} emissions currently generated by agricultural activities on the project site were calculated based on an annual emission factor of 133.5 pounds of PM_{10} per acre used for agricultural activities (see On-site Fugitive Dust Sources in Tables 4.7-2a and 4.7-2b). This emission factor was calculated based on estimates of countywide emissions from pesticide use, tilling of fields, wind blown dust related to agriculture, and farm equipment exhaust generated by typical agricultural activities in Yolo County (CARB, 1995).

Hauling of Product to Customers

The materials produced at the plants are loaded into haul trucks. Off-site mobile exhaust emissions are generated by the trucks hauling aggregate and asphalt products from the plant to customers. Approximately 60 percent of the current aggregate and asphalt production is delivered to Solano County (average round trip of 70 miles), 35 percent to Yolo County (40 miles), and five percent to other nearby counties (40 miles). Diesel truck emissions were estimated based on 1997 EMFAC7F emission factors for heavy-duty diesel vehicles, an average speed of 35 miles per hour, and the total miles traveled to deliver the plant's average ten-year production of 718,787 tons (Tables 4.7-2a and 4.7-2b).

Consistency with Applicable Policies, Plans, and Regulations

EPA, CARB, and YSAQMD

Air quality issues in the Sacramento Valley Air Basin are addressed through Federal, State, and local government agencies. EPA is the Federal agency responsible for setting and enforcing the NAAQS, including the Clean Air Act, as amended. CARB is responsible for ensuring implementation of the California Clean Air Act (CCAA), responding to Federal regulations, and regulating emission standards. The CCAA specified that air districts in the State shall focus particular attention on reducing the emissions from transportation and areawide emission sources, and required the districts to prepare air quality attainment plans for pollutants that exceeded the State standards. The YSAQMD adopted an Air Quality Attainment Plan (AQAP) in 1992. The 1992 plan presents air quality control

strategies that would allow for the progressive reduction of ozone, and recognize PM_{10} as a pollutant of concern in the jurisdiction (YSAQMD, 1992).

The goal of the AQAP is to establish controls that reduce mobile and stationary source emissions through measures presented in the Public Education Program, Mobile Source Control Program, and the Stationary Source Control Program portions of the AQAP. Conformity with the AQAP is demonstrated through compliance with applicable YSAQMD rules and regulations adopted to achieve the goals of the AQAP.

YSAQMD has included mineral process industries in emission inventories prepared in support of attainment strategies recommended in the AQAP (YSAQMD, 1992). The AQAP reports the following existing emissions for mineral process industries, as compared with all inventoried sources under YSAQMD jurisdiction:

- PM_{10} Emissions:
  All Yolo-Solano sources = 85.24 tons per day
  Mineral process industry = 0.38 ton per day (<0.5% of total)

- ROG Emissions:
  All Yolo-Solano sources = 38.54 tons per day
  Mineral process industry = <0.01 ton per day (<0.05% of total)

- NO_x Emissions:
  All Yolo-Solano sources = 37.54 tons per day
  Mineral process industry = 0.19 ton per day (0.5% of total)

The YSAQMD regulates stationary sources, such as aggregate and asphalt plants, in Yolo County and the northeastern half of Solano County. The Solano Concrete plant operates with two permits from the YSAQMD, containing conditions under which the permits are issued (e.g., maximum throughput, maximum air emissions per year). The conditions contained in a permit are determined by the rules and regulations approved by the District. An extensive discussion of the YSAQMD rules and regulations relevant to aggregate processing facilities is provided in the OCMP Program EIR.

Yolo County General Plan

The Yolo County General Plan includes policies related to air quality and the reduction of air pollutant emissions. The following policies from the Circulation (CIR) and Conservation (CON) Elements of the General Plan apply to the proposed project:

CIR 20: Yolo County shall seek to avoid or mitigate all forms of possible air, water or noise pollution from construction or operation of the transportation system.

CIR 21: Yolo County shall actively support systems of transit and transport, patterns and densities of development, and technological or organizational means to reduce or mitigate air pollution problems in the community, the County, and the region.

CIR 22: Pollution research - Yolo County shall encourage continuation of the State vehicle pollution control research programs.

Additional truck trips for the hauling of aggregate products to customers will generate transportation exhaust emissions and is not, therefore, consistent with policy CIR 20 (Impact 4.7-2). The proposed mining project would generate dust and exhaust emissions from operation of on-site heavy equipment. Measures to control emissions would be implemented but would not entirely eliminate the project's air quality effects in the County and in the region (see Impacts 4.7-1 and 4.7-2).

CON 15: Yolo County shall maintain or improve air quality by means of the following actions:

- Coordination with the Yolo-Solano Air Pollution Control District.
- Coordination with the Sacramento Council of Governments, Air Quality Management Plan.
- Development of redevelopment project approval only with avoidance or appropriate mitigation of probable air pollution.
- Land use and transportation planning and implementation.
- Support of transportation systems that generate less air pollution problems.
- Planning and implementing more compact urban forms to stabilize or reduce aggregate commuting and other travel distance requirements.
- Continue to improve the County waste collection and disposal to avoid waste burning.
- Protect air quality levels required for agricultural productivity.
- Implementation of the Air Quality Maintenance Plan adopted by the Sacramento Area Council of Government.

The proposed project would result in air quality impacts, including increased dust and vehicle and equipment exhaust emissions. Dust generation and exhaust emissions would result in significant and unavoidable impacts of the proposed project; the project is not, therefore, in compliance with policy CON 15 of the General Plan.

Yolo County Resource Conservation District (RCD) Agricultural Land Preservation and Protection Policy

The Yolo County RCD is empowered by State law to develop and implement natural resource conservation programs protecting County resources. The following RCD policy applies to the proposed project:

Policy III.5.C: Proposals for urban growth or proposals requiring a significant increase in water use, losses to groundwater recharge, increased flooding or overall increase in air pollution will be discouraged unless plans for alternative water supply (through development or conservation) and air pollution reduction are also provided for review, approval, and subsequent implementation.

The project would result in emission of air pollutants and, even though pollution reduction measures are recommended, they would not entirely eliminate the project's air quality effects in the County. Therefore, the project is not in full compliance with RCD Policy III.5.C.

OCMP and Implementing Ordinances

The OCMP includes the following performance standards (PS) that would apply to the proposed project:

PS. 2.5-6: The following measures shall be implemented in order to control fugitive dust:

(a) All stockpiled soils should be vegetated, covered, or adequately watered to keep soil moist at all times.
(b) All disturbed soil and unpaved roads shall be adequately watered to keep soil moist at all times.
(c) All inactive portions of the site shall either be seeded or watered until vegetation is grown or shall be stabilized using methods such as chemical soil binders, jute netting, or other YSAQMD approved methods.

PS. 2.5-7: All operational heavy equipment shall be kept in good working order to reduce emissions and minimize the leakage of oils and fuels.

The project would be required to comply with these performance standards to minimize the emissions of PM_{10} and ozone precursors. The proposed project includes provisions for control of fugitive dust; additional measures are included in Mitigation Measures 4.7-1 and 4.7-2.

IMPACTS AND MITIGATION MEASURES

Project-Specific Implementation of Program EIR Mitigations

Possible impacts related to air quality were evaluated in the OCMP EIR. These impacts included potential emissions of PM_{10} (OCMP EIR Impact 4.7-1), potential emissions of ozone precursors (ROG and NO_x) (OCMP EIR Impact 4.7-2), cumulative effects on attainment of State and Federal air quality standards (OCMP EIR Impact 4.7-3), and potential impacts on sensitive receptors (OCMP EIR Impact 4.7-4). Each of these impacts is relevant to the proposed project and is evaluated in this section.

The OCMP EIR presented mitigation measures for the impacts related to emissions of PM_{10}, ROG, and NO_x that would reduce these impacts, but not to a less-than-significant level. The OCMP EIR found these impacts to be significant and unavoidable.

Under Mitigation 4.7-1a of the OCMP EIR, a performance standard of the OCMP would require that conveyors be used for transport of raw materials wherever practical and economical. Under Mitigation 4.7-2a of the OCMP EIR, a performance standard of the OCMP would require that conveyors be used for transport of raw materials wherever practical and economical, and another performance standard would require that internal combustion engine driven equipment and vehicles be kept tuned and not left idling for more than five minutes.

These mitigation measures apply to the project and are discussed in Project Impacts 4.7-1 and 4.7-2.

Standards of Significance

The project would have a significant effect on air quality if it would:

- Exceed the following quantitative thresholds:

  Reactive Organic Gases (ROGs): 82 pounds/day (15 tons/year)
  Oxides of Nitrogen (NO_x): 82 pounds/day (15 tons/year)
  Particulate Matter (PM_{10}): 82 pounds/day (15 tons/year)
  Carbon Monoxide (CO): 550 pounds/day (100 tons/year)

- Affect the following qualitative thresholds:

  Affect the attainment of Federal or State ambient air quality standards by either violating or contributing to an existing or projected air quality violation.

  Generate vehicle trips that cause a CO hot spot.

  Subject sensitive receptors within 0.25 mile to toxic air contaminant emissions or elevated CO emissions.

  Result in the production or disposal of a material that poses a health hazard, and subject sensitive receptors to toxic air emissions

  Create or subject sensitive receptors to an objectionable odor

Project-Specific Analysis

The proposed project would result in emission of air pollutants during aggregate processing and asphalt concrete production (process emissions), mining and reclamation activities (on-site exhaust and fugitive emissions), and hauling of products from the Madison plant to customers (off-site exhaust emissions).

The proposed mining and reclamation activities would result in air emissions during removal and transport of top soil and overburden, hauling of excavated aggregate to the plant, and reclamation of mined areas for agricultural use. Pollutants would include exhaust emissions from heavy equipment and vehicle operation, and fugitive particulate emissions from disturbance and movement of soil, and from equipment travel on unpaved haul roads within the Solano Concrete property. Project-related emissions from overburden removal, aggregate mining, and reclamation activities were calculated based on the volume of materials proposed to be excavated and hauled from each proposed mining area, as shown in the Overall Phasing Plan in the project application (Solano Concrete, 1995). On-site mobile exhaust emissions from the operation of heavy equipment were calculated, as were the on-site fugitive dust emissions for operation of heavy equipment, wind erosion, and agricultural activities (Tables 4.7-3a and 4.7-3b).

TABLE 4.7-3a: **Projected Annual Emissions.**

Emission Source	Estimated Emission Rate (tons/year) ROG	NO_x	PM_{10}	CO	SO_x
On-site Stationary Sources:					
Rock plant			23.2		
Asphalt plant	0.85	1.30	0.48	17.01	0.28
On-site Mobile Exhaust Sources					
Overburden excavation, reclamation, and hauling	0.43	6.35	0.64	2.13	0.75
Aggregate excavation and hauling	0.50	6.88	0.67	2.39	0.77
Miscellaneous equipment	0.01	0.13	0.01	0.03	0.02
On-site Fugitive Dust Sources:					
Overburden excavation, reclamation, and hauling			14.63		
Aggregate excavation and hauling			49.66		
Aggregate, overburden, dumping			0.17		
Wind erosion			1.78		
Agricultural activities			32.37		
Off-site Mobile Exhaust Sources:					
Hauling of aggregate and asphalt products	6.49	33.85	5.85	25.31	1.04
Miscellaneous transportation	0.23	1.87	0.17	0.57	0.18
Total Annual Emissions	**8.50**	**50.37**	**129.64**	**47.43**	**3.03**

TABLE 4.7-3b: **Projected Daily Emissions.**

Emission Source	Estimated Emission Rate (pounds/day) ROG	NO_x	PM_{10}	CO	SO_x
On-site Stationary Sources:					
Rock plant			353.15		
Asphalt plant	40.89	62.35	23.07	816.33	13.36
On-site Mobile Exhaust Sources					
Overburden excavation, reclamation, and hauling	3.10	45.34	4.56	15.21	5.33
Aggregate excavation and hauling	3.57	49.15	4.77	17.09	5.47
Miscellaneous equipment	0.05	0.91	0.08	0.19	0.11
On-site Fugitive Dust Sources:					
Overburden excavation, reclamation, and hauling			104.53		
Aggregate excavation and hauling			354.69		
Aggregate, overburden, dumping			1.25		
Wind erosion			12.71		
Agricultural activities			231.24		
Off-site Mobile Exhaust Sources:					
Hauling of aggregate and asphalt products	46.32	241.791	41.80	180.78	7.46
Miscellaneous transportation	1.62	3.34	1.21	4.04	1.28
Total Daily Emissions	**95.56**	**412.88**	**1,133.06**	**1,033.64**	**33.01**

Agricultural activities would continue to occur on the site during the 32 years required to complete reclamation of the proposed project. It was assumed that about 100 acres of agricultural lands would be disturbed each year for mining or reclamation activities andtherefore would not be available for agricultural production. Potential air emissions from agricultural activities were calculated assuming that, on average, 485 acres of the site would be productive (Tables 4.7-3a and 4.7-3b) every year for the duration of the project as opposed to the 585 acres currently being disturbed by agricultural activities. Projected air emissions from the plants were calculated based on AP-42 new process emission factors (EPA, 1995) for the future maximum production at the asphalt plant (100,000 tons a year), and at the aggregate processing plant (1,445,783 tons a year). It was assumed that there was no change in the composition of raw materials and the proportion of various product types processed at the plants (Tables 4.7-3a and 4.7-3b).

The hauling of aggregate material from the plant to customers would result in exhaust emissions from haul trucks traveling to and from their destinations. Projected truck exhaust emission factors were obtained by running the EMFAC7F computer model for heavy-duty diesel vehicles for the year 2010, assuming an average speed of 35 mph. Air emissions were calculated based on hauling to customers 1,200,000 tons per year (the maximum tonnage proposed for sale) (Tables 4.7-3a and 4.7-3b).

Impact 4.7-1

The proposed project would result in increases in PM_{10} emissions. This is considered to be a significant and unavoidable impact.

The proposed increase in aggregate mining and plant production would result in an increase in PM_{10} emissions (Tables 4.7-4a and 4.7-4b). Most of the particulate emissions would be generated by scrapers traveling on on-site unpaved roads and by agricultural activities occurring on the portion of the site not in active mining. The projected increase in PM_{10} emissions of 55 tons per year (147 lb/day) exceeds the YSAQMD threshold of significance of 15 tons per year (82 lb/day), thus the proposed project would result in a significant impact to air quality.

TABLE 4.7-4a: **Increased Air Emissions Due to the Proposed Project in Tons Per Year.**

	Emissions in Tons Per Year				
	ROG	NO_x	PM_{10}	CO	SO_x
Current emissions	5.58	30.27	74.41	32.71	1.55
Projected emissions	8.50	50.37	129.64	47.43	3.03
Increase due to the project	2.92	**20.1**	**55.23**	14.72	1.48
YSAQMD significance threshold	15	15	15	100	15

Note: Emission increases in bolded numbers indicate exceedance of the YSAQMD significance threshold.

TABLE 4.7-4b: **Increased Air Emissions Due to the Proposed Project in Pounds Per Day.**

	Emissions in Pounds Per Day				
	ROG	NO_x	PM_{10}	CO	SO_x
Current emissions	91.30	395.50	985.45	896.99	26.70
Projected emissions	95.56	412.88	1,133.06	1,033.64	33.01
Increase due to the project	4.26	17.38	**147.61**	136.65	6.31
YSAQMD significance threshold	82	82	82	550	82

Note: Emission increases in bolded numbers indicate exceedance of the YSAQMD significance threshold.

Exceedance of the District's threshold of significance for PM_{10} is expected to occur for the duration of the project. If a conveyor belt is installed, as tentatively planned by the applicant for mining of Mining Areas III through VI, PM_{10} emissions could be reduced by 42.4 tons per year. Installation of a conveyor to transport aggregate materials from the excavation area to the plant would eliminate dust emissions from travel on unpaved haul roads. Some emissions would still occur at the conveyor transfer points and loading of the conveyors.

As reclamation of the mined areas is completed, and permanent lakes are created, there would be a decrease in areas used for mining and agricultural production, and consequently a decrease in fugitive emissions. After reclamation, most of the site would be used for agricultural production, with the exception of sloped areas and 161 acres that are proposed to be reclaimed as lakes. The creation of lakes in this area instead of agricultural fields would reduce current PM_{10} agricultural emissions by an estimated 10.7 tons per year. If the lakes were not created and this area were reclaimed as agricultural fields, tilling of the soil, seed bed preparation, planting, and harvesting of the fields would generate 10.7 tons of PM_{10} per year.

Mitigation Measure 4.7-1a

Implement Mitigation Measure 4.7-1a of the OCMP Program EIR.

Implementation of this mitigation measure would reduce project-related PM_{10} emissions but would not mitigate this impact to a less-than-significant level.

Impact 4.7-2

The project would result in an increase in emissions of ozone precursors. This is considered to be a significant and unavoidable impact.

The proposed increase in aggregate mining and plant production would result in an increase of ROG and NO_x emissions (Table 4.7-4). Emissions of ROG and NO_x are

usually generated by equipment exhaust. Most of the increase in emissions of ozone precursors is caused by the proposed increase in haul truck traffic. The proposed increase in the annual aggregate production from 718,787 (ten-year average) to 1,200,000 tons sold per year would result in approximately 43,746 truck trips each year; an increase of 1,268,640 vehicle miles traveled per year. Increase in ROG and NO_X emissions would also result from the increase in the amount of raw material excavated and hauled to the plant, and the amount of material processed and produced at the plants. Installation of conveyors to transport excavated materials to the plant during Phases III through VI would cause some reduction of ROG and NO_x emissions but this reduction would not be substantial. Most of the emissions of ozone precursors are caused by off-site exhaust emissions.

The annual increase in ROG emissions would not exceed the YSAQMD significance threshold (Table 4.7-4). The estimated annual increase of 20.1 tons in NO_X emissions, however, would exceed the District's 15 tons per year threshold of significance for NO_X. Increase in NO_X emissions is considered a significant air quality impact over the 30-year life of the project.

Mitigation Measure 4.7-2a

Implement Mitigation Measure 4.7-2a of the OCMP Program EIR.

Implementation of this mitigation measure would reduce project-related NO_X emissions but would not mitigate the impact to a less-than-significant level.

Impact 4.7-3

The project would affect the attainment of local or regional air quality goals. This is considered to be a significant and unavoidable impact.

The YSAQMD is currently in nonattainment of the State and Federal ozone standards and the State PM_{10} standards. Any increase in the emission of ozone precursors (ROG and NO_X) and of PM_{10} would exacerbate this nonattainment condition, and cause a delay in the eventual attainment of State and Federal standards within the YSAQMD.

Mitigation Measure 4.7-3a

See Mitigation Measures 4.7-1a and 4.7-2a. No additional measures are available to reduce the impact to a less-than-significant level.

Implementation of the OCMP policies, including Mitigation Measures 4.7-1a and 4.7-2a above, would provide measures to reduce dust and exhaust emissions; however, these measures would not totally eliminate the increase in ozone precursors and PM_{10} emissions resulting from the project. The impact on the attainment of State and Federal ozone and PM_{10} emissions would remain significant and unavoidable after implementation of these measures.

Impact 4.7-4

The project could generate vehicle trips that cause a CO hot spot. This is considered to be a less-than-significant impact.

In the future, off-site vehicle trips associated with the project will increase from existing conditions. However, the air quality analysis performed for the OCMP Program EIR determined that the approval and implementation of all proposed sand and gravel mining applications in the Cache Creek Valley would not cause a significant increase in carbon monoxide concentrations, and would not result in CO hot spots in the project area.

Mitigation Measure 4.7-4a

None required.

Impact 4.7-5

Emissions from the proposed project could affect sensitive air quality receptors. This is considered to be a less-than-significant impact.

Dust emissions from on-site aggregate mining and hauling could potentially affect residences located close to the haul road and excavation areas. However, the distance between the proposed excavation areas and nearby residences (over 1,500 feet), and the proposed haul road and the closest residence (approximately 2,100 feet), combined with the dust control measures required by OCMP policies and Mitigation Measures 4.7-1a and 4.7-2a above would reduce this impact to a less-than-significant level.

Sensitive receptors located along local roadways could be affected by increased CO emissions and odors from diesel exhaust fumes caused by increased truck traffic. Typically, impacts from CO concentration and exhaust fumes occur in congested urban intersections subject to high volumes of traffic. However, as indicated in the OCMP Program EIR, the operating conditions on all local roadways are good with minimum delay or congestion, indicating that CO concentrations in the area are likely to be quite low. As a result, residents of houses along local roadways would not be subject to increased CO concentrations from implementation of the proposed project.

Mitigation Measure 4.7-5a

None required.

Impact 4.7-6

The project could create or subject sensitive air quality receptors to an objectionable odor. This is considered to be a less-than-significant impact.

The asphalt batch plant generates odors during asphalt production. However, this plant is located more than 1,000 feet from the property line, and more than 1,500 feet from the nearest residence. Operation of the plant has not resulted in air quality complaints in the past (Smith, 1996). Future increase in production at the plant would require modification

of the existing air permits and compliance with emission limits established by YSAQMD. Due to the remote location of the plants and the required review of modifications to the plant processes and production by YSAQMD, the future operation of the plant is not expected to cause any odor impacts on nearby residents.

Mitigation Measure 4.7-6a

None required.

4.8 TRAFFIC AND CIRCULATION

4.8 TRAFFIC AND CIRCULATION

INTRODUCTION

This section includes a discussion of the traffic and circulation associated with the proposed project. The setting describes the existing conditions of the area transportation system for each travel mode, including the roads, transit system, bicycle and pedestrian facilities, and school bus operations. Impacts and mitigation measures are identified for project-specific impacts under existing conditions and cumulative conditions. The impact discussion addresses impacts to roadway pavement and bridges, and the timing of required improvements.

SETTING

Description of the Regional Environment

The project site is located in a rural environment characterized by agricultural uses including orchards, field crops, and open land. Residential development is limited in the area, with rural residences scattered throughout the region. The only significant urban uses within the OCMP planning area are located in the towns of Madison and Capay. The city of Woodland is located approximately eight miles east of the project site.

The transportation system within the OCMP planning area is almost entirely dependent on the roadway system for the movement of goods and people. The automobile is the primary travel mode for most trips. The majority of regional travel occurs on Interstate 5 (I-5), Interstate 505 (I-505) and State Route 16 (SR 16) (Figure 4.8-1).

Description of the Local Environment

Transportation within the local environment includes travel on the roads, public transit, the bicycle/pedestrian system, and school buses. The following discussion summarizes the current status of each facility within the OCMP planning area.

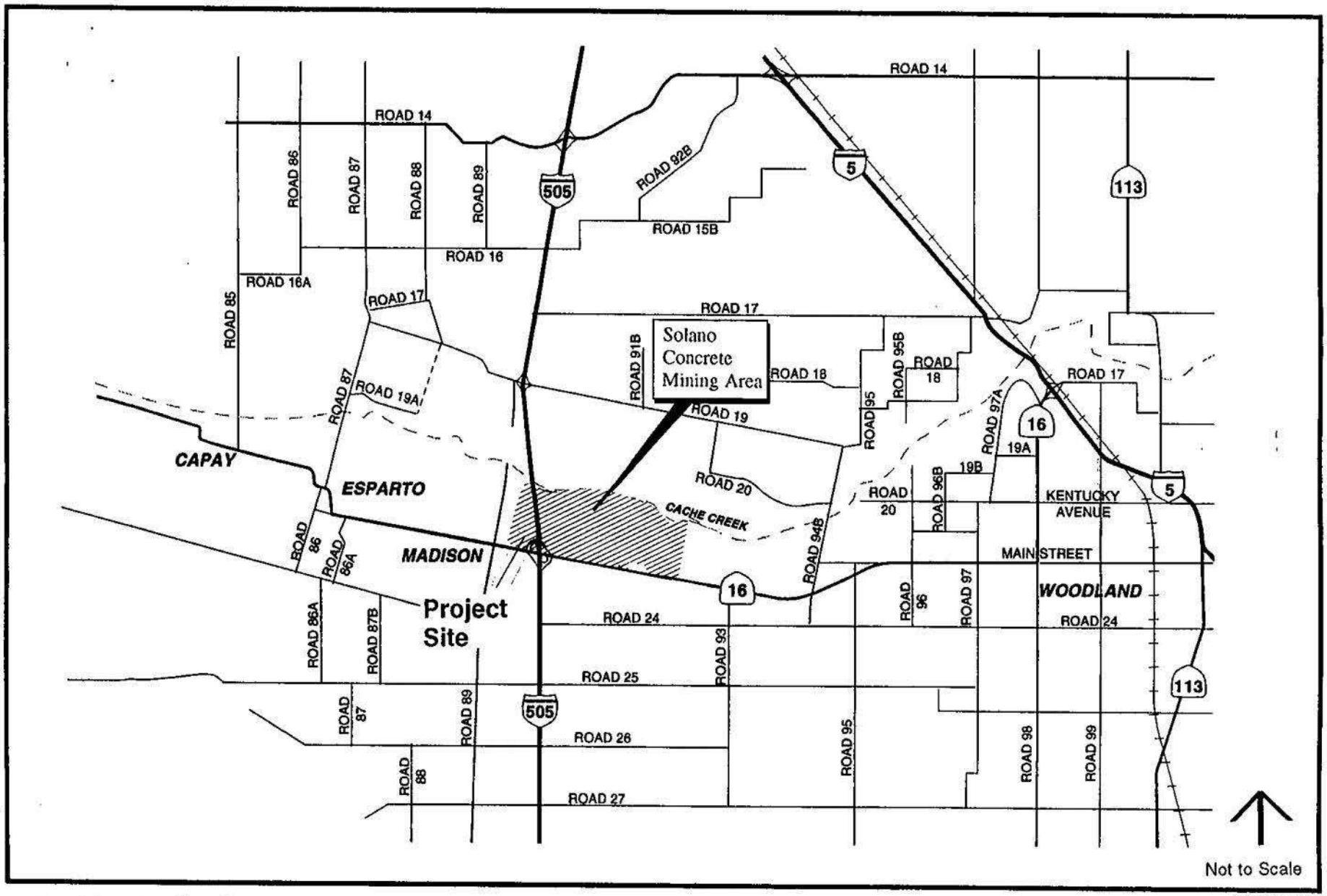
Road Conditions and Operations

All roadways in the area are two-lane County roads, except for I-5, I-505, and SR 16. County roads numbered between 80 and 100 are north-south roads and County Roads numbered between 10 and 40 are east-west roads. In addition, a number of smaller roads are located between the primary County roads. These smaller roadways are designated with an "A" or a "B" suffix following the County Road number. Each of the roads that could potentially be affected by the project is described below.

Interstate 5 is a four-lane freeway that serves north-south travel throughout the entire State of California. It serves the eastern portion of the OCMP planning area and maintains interchange access at County Road 14, County Road 98, and several streets within the city of Woodland.

STUDY AREA

Figure 4.8-1



Source: Fehr & Peers Associates, Inc.

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BASELINE

Interstate 505 is a four-lane, north-south freeway that connects with Interstate 80 (I-80) near Vacaville and I-5 near Dunnigan. An interchange exists at SR 16 near the OCMP planning area.

State Route 16 is a two-lane, east-west highway that traverses Amador County, Sacramento County, Yolo County, and Colusa County. SR 16 begins at I-5 and intersects Main Street in Woodland three miles to the south. It then runs west for several miles through western Yolo County, eventually turning in a northwesterly direction into western Colusa County. The project site is generally bordered by SR 16 along its southern boundary.

The pavement along the majority of SR 16 is considered to be in fair to good condition with two- to four-foot paved shoulders (Table 4.8-1). Passing is permitted along portions of SR 16, west of County Road 94B, where the speed limit is 55 miles per hour.

TABLE 4.8-1: **Road Segment Pavement Conditions.**

Road	Road Segment	Lane Width (feet)	Shoulder Width (feet)[1]	Pavement Condition[2]
SR 16	County Road 98 to County Road 96	12	2-4	Fair to Good
SR 16	County Road 96 to I-505	12	2-4	Fair
County Road 98	SR 16 to I-5	12	2-4	Fair to Good

[1] Observed width of paved shoulder.

[2] Based on field observations. 'Good' pavement is defined as generally smooth surface with limited cracking. 'Fair' pavement is defined as slightly rough with some cracking. 'Poor' pavement is defined as noticeably rough with considerable cracking and some potholes.

County Road 98 is a north-south road that forms the western boundary of the city of Woodland. County Road 98 begins at I-80 where it forms the I-80/Pedrick Road interchange. It continues north through the western portion of Davis to Woodland where it forms the SR 16, County Road 98, and Main Street intersection. For the purposes of this DEIR, the concurrent three-mile section of road north of this intersection, known both as SR 16 and County Road 98, is referred to as County Road 98. The existing pavement condition for all of County Road 98 is fair to good (Table 4.8-1).

The operating efficiency of each existing road segment was evaluated based on procedures described in the *Highway Capacity Manual-Special Report 209* (Transportation Research Board, 1994). The quality of operations is described in terms of service levels, which vary qualitatively from "A" (best) to "F" (worst) (Table 4.8–2).

TABLE 4.8-2: **Level of Service Description.**

LOS	Description
A	Represents free flow. Individual users are virtually unaffected by the presence of other vehicles in the traffic stream.
B	Stable flow, but the presence of other users in the traffic stream begins to be noticeable.
C	Stable flow, but marks the beginning of the range of flow in which operation of individual users becomes significantly affected by interactions with others in the traffic stream.
D	Represents high-density, but stable flow.
E	Represents operating conditions at or near the capacity level.
F	Represents forced or breakdown flow.

Source: *Highway Capacity Manual - Special Report 209,* Transportation Research Board, 1994.

Road segments were analyzed by comparing average daily traffic volumes to the applicable capacity thresholds.[1] The separate level of service thresholds or criteria used to analyze SR 16 and the other County roads are shown in Table 4.8-3.

TABLE 4.8-3: **Road Segment Service Level Criteria.**

	Average Daily Traffic Volume at				
Road Segment	LOS A	LOS B	LOS C	LOS D	LOS E
State Route 16	0-2,100	2,101-5,000	5,001-8,500	8,501-14,200	14,201-23,700
County Roads	0-1,300	1,301-3,400	3,401-6,100	6,101-10,600	10,601-18,000

Source: Fehr & Peers Associates, based on the *Highway Capacity Manual - Special Report 209,* Transportation Research Board, 1994.

Daily traffic counts were conducted at the entrance to the Solano Concrete plant during October and November 1995 over a five-day period. The daily counts include a breakdown of vehicle mix by the number of axles to assist in the analysis of potential truck impacts. Average daily traffic counts at other locations were provided by the Yolo County Public Works Department based on traffic counts collected between 1992 and 1995.

It should be noted that the aggregate industry varies seasonally, with the highest activity levels occurring between May and November. Traffic counts conducted during October

[1]Detailed calculations of level of service are contained in the separately bound appendix, *Technical Appendix to the Project-Specific Environmental Documents for Long-Term Mining and Reclamation Permit Applications along Cache Creek in Yolo County* (Fehr & Peers Associates, 1996a).

and November are believed to be representative of a high level of production activity. The agricultural industry also varies seasonally, with operations occurring in the summer months.[2] Although the counts were not conducted while both industries were in peak operations, counts conducted during the summer would not have included school traffic. Therefore, the counts conducted for this study are considered to be a reasonable representation of existing conditions.

Figure 4.8-2 shows existing daily traffic volumes and corresponding levels of service on roadway segments in the OCMP planning area. All segments of SR 16 currently operate at level of service (LOS) C on the segments within the OCMP planning area. The other County roads currently operate at LOS A.

Intersection Operations

To evaluate existing intersection operations, intersection turning movement counts were conducted for the peak hour periods during October and November 1995 at the following intersections:

- County Road 20/County Road 98;
- SR 16/County Road 96;
- SR 16/County Road 98/Main Street;
- SR 16/Solano Concrete Plant entrance;
- SR 16/I-505 northbound ramps;
- SR 16/I-505 southbound ramps.

Figure 4.8-3 displays existing AM and PM peak hour traffic volumes at the intersections. Additional counts were conducted during the morning peak hour at the intersections to determine the number of aggregate trucks in relation to the total number of trucks. Based on the peak hours of plant operations, as well as school traffic and adjacent street traffic, 7:00 to 9:00 AM and 2:00 to 4:00 PM were selected as the morning and afternoon peak periods for this analysis.

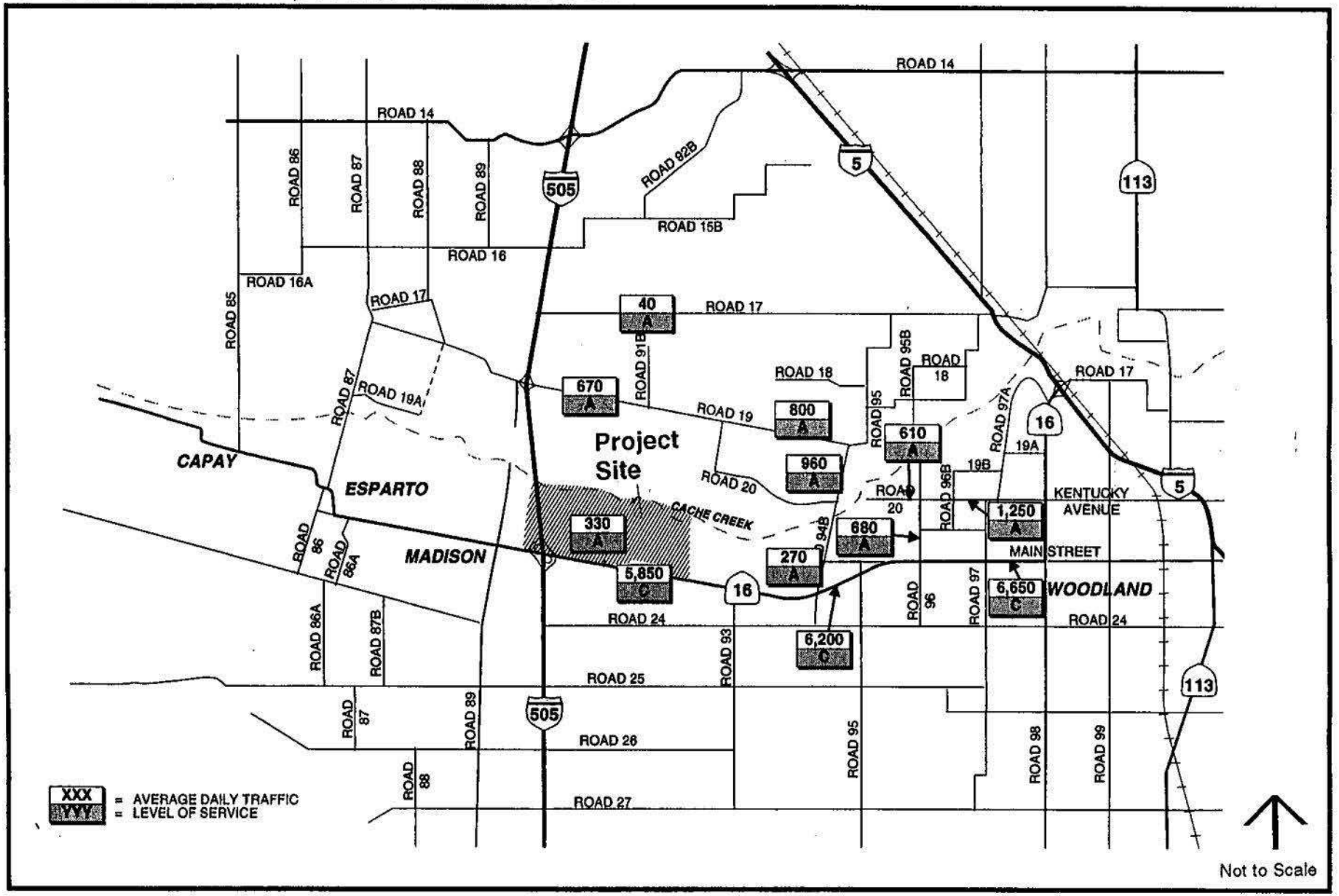
Two-way stop-controlled intersections were analyzed using the methodology described in the *Highway Capacity Manual - Special Report 209*, Transportation Research Board, 1994. This methodology calculates the average delay for all vehicles entering an intersection during the peak hour. It should be noted that the calculation of average delay includes through-movements, which are assumed to have no delay. Thus, if there is a large number of through-movement vehicles, average delay may be small even if considerable delay occurs on the side street.

Four-way stop-controlled intersections were analyzed based on the methodology described in the *Highway Capacity Manual - Special Report 209*, Transportation Research Board, 1985. In this methodology, the level of service for an intersection during the peak hour

[2]According to a representative of Mike Lowry Trucking, August and September are the peak months for hauling agricultural products in Yolo County.

EXISTING ROADWAY SEGMENT TRAFFIC VOLUMES AND LEVELS OF SERVICE

Figure 4.8-2



Source: Fehr & Peers Associates, Inc.

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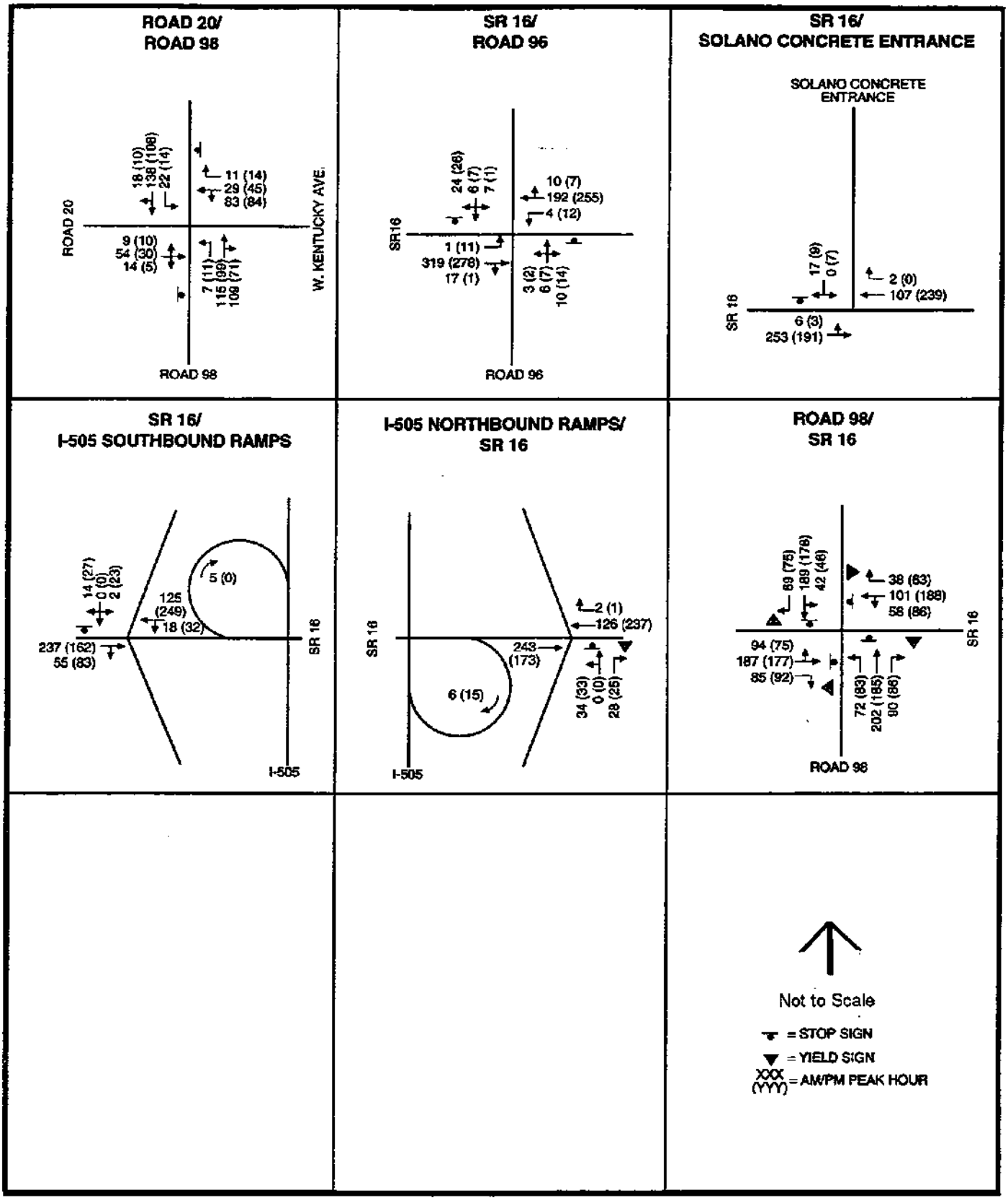
EXISTING GEOMETRICS AND A.M. AND P.M. PEAK HOUR TRAFFIC VOLUMES

Figure 4.8-3



Source: Fehr & Peers Associates, Inc.

BASELINE

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is reported as either 'LOS C or better' or 'Worse than LOS C'. If the intersection operates 'worse than LOS C', operations would be improved by adding travel lanes or installing a traffic signal if warranted.

Each of the six intersections was analyzed to determine existing peak hour operations (Table 4.8-4). The table indicates that each intersection currently operates at LOS C or better during the AM and PM peak hours.

TABLE 4.8-4: **Existing Conditions - Intersection Levels of Service.**

Intersection	Type of Control	AM Peak Hour LOS	PM Peak Hour LOS
County Road 20/County Road 98	Side-street stop	A	A
SR 16/County Road 96	Side-street stop	A	A
SR 16/County Road 98/Main Street	All-way stop	C or better	C or better
SR 16/Solano Concrete plant entrance	Side-street stop	A	A
SR 16/I-505 northbound ramps	Side-street stop	A	A
SR 16/I-505 southbound ramps	Side-street stop	A	A

Source: Fehr & Peers Associates.

Notes: Results are presented as LOS A, B, C, D, E, or F for side-street stop-controlled intersections. Results are presented as either "LOS C or better" or "Worse than LOS C" for all-way stop-controlled intersections. Please refer to methodology discussion on page 4.8-4 of this section.

Accident History

Accident data from January 1992 to December 1994 were obtained for SR 16 from the Caltrans Traffic Accident Surveillance and Analysis System (TASAS) database (Caltrans, 1995). The data include a summary of total accidents, accidents involving trucks, and a comparison of the actual accident rates for the specific SR 16 segments to the statewide averages for similar facilities (Table 4.8-5).

TABLE 4.8-5: **Summary of Accidents on SR 16, January 1992 to December 1994.**

SR 16 Segment	Length (miles)	Total Accidents	Total Accidents Involving Trucks	Total Fatalities	Accident Rate (per million vehicles)	
					Statewide Average	Yolo County
County Road 98 to I-5	3	22	1	0	1.64	1.64
County Roads 98 to 97	1	6	1	0	1.3	0.57
County Roads 97 to 94B	3	21	1	1	0.95	1.02
County Road 94B to I-505	4.5	32	6	1	0.97	1.31

Source: Caltrans Traffic Accident Surveillance and Analysis System (TASAS) data.

The actual accident rate on SR 16 is equal to or greater than the average rate on most segments within the OCMP planning area. Of the nine accidents involving trucks over the three-year period, seven were multi-vehicle collisions. Most of these collisions occurred as vehicles were turning or passing. It is not known whether any of these trucks were associated with the aggregate industry.

Accident data, summarized by intersection, on County roads from January 1992 to October 1995 were obtained from the Yolo County Public Works Department from police accident reports (Table 4.8-6). Additional accidents may have occurred at these intersections, since accident reports are not always provided to the Yolo County Police Department. While the accident data reported in Table 4.8-6 may not precisely estimate the frequency of accidents, the data represent the most reliable assessment of traffic safety available.

TABLE 4.8-6: **Summary of Accidents on County Roads, January 1992 to October 1995.**

Intersection	Number of Accidents	Type	Cause
County Road 20/County Road 98	3	Broad-side Hit object Ran off road	Intoxication Inattention Inattention
SR 16/County Road 96	1	Hit object	Inattention

Source: Yolo County Public Works Department Accident Records, 1992 to present.

County data indicate that accidents occurred infrequently (once per year or less on average) at these two intersections. Most of the accidents involved single vehicles running off the road or hitting a fixed object, such as a telephone pole or tree.

Truck Traffic

Yolo County does not currently designate truck routes. Truck travel is allowed on all County roads and State highways unless prohibited at a specific location. Primary truck haul routes are identified by individual aggregate generators when a mining or other permit is approved. Within the OCMP planning area, trucks associated with the aggregate industry primarily travel on I-5 and I-505, SR 16, and County Road 98.

Truck classification counts were conducted at each of the six study intersections during the morning peak period (7:00 AM to 9:00 AM) of two weekdays during October and November 1995. As discussed above, this time of year is considered by the aggregate producers as being representative of a high level of production activity. Therefore, these data are considered to be a conservative representation of existing conditions.

Table 4.8-7 shows the total number of trucks, and the number of aggregate, agricultural, and utility trucks using each intersection during the morning peak period. The numbers shown are an average of the two weekday morning peak period truck counts. Trucks

related to the aggregate industry contribute significantly (between 30 percent and 70 percent of all trucks) to existing truck traffic at most intersections along SR 16. The relative proportion of aggregate trucks to all trucks appears to depend on the proximity of the intersection to existing mining operations and truck routings.

TABLE 4.8-7: **Truck Types at Intersections during Morning Peak Period.**

Intersection	Number of Trucks[1]	Truck Type							
		Aggregate		Agricultural[2]		Utility[3]		Other[4]	
County Road 20/County Road 98	135	93	(69%)	17	(12%)	5	(4%)	20	(15%)
SR 16/County Road 96	79	29	(37%)	21	(26%)	14	(18%)	15	(19%)
SR 16/County Road 98	98	30	(31%)	15	(15%)	14	(14%)	39	(40%)
SR 16/I-505 northbound ramps	111	64	(58%)	13	(12%)	8	(7%)	26	(23%)
SR 16/I-505 southbound ramps	90	57	(63%)	12	(13%)	6	(7%)	15	(17%)
SR 16/County Road 89	87	38	(44%)	15	(17%)	9	(10%)	5	(29%)

Source: Fehr & Peers Associates.

[1] Number of trucks based on the average of two weekday morning peak period (7:00 - 9:00) AM counts.
[2] Including farm goods, equipment, and hay trucks.
[3] Including gas, electric, and garbage trucks.
[4] Including tanker, delivery, moving, ready-mix, fire, and lumber trucks.

Existing Operational Problems

The area roads do not currently experience substantial traffic congestion. However, as described below, the system does include some facilities with existing design features that do not meet current County standards or that represent potential safety concerns.

These facilities include nonstandard road designs, narrow or substandard bridges, frequent accident locations, segments with deteriorated pavement, and intersections with limited curve radii (i.e., sharp intersection curves). A brief description of each facility is provided below.

Nonstandard Road Design. These are roads with design features that do not meet current County standards. Field observations identified one location with a nonstandard road design that would potentially be impacted by Solano Concrete truck traffic.

A safety concern was identified on SR 16 between I-505 and the entrance to the Solano Concrete plant. Vehicles traveling eastbound on SR 16 just east of the interchange conflict with trucks exiting I-505 northbound and turning right towards the plant. The trucks entering the plant slow down, while the speeds of the eastbound through-vehicles on SR 16 are increasing. The lack of a shoulder and a left-turn lane for eastbound traffic on SR 16 causes a safety concern, as documented in the certified *Environmental Impact Report, Solano Concrete Company Short-Term, Off-Channel Mining Permit Application* (BASELINE, 1995).

A review of accident data reveals that seven accidents have occurred in the vicinity of the plant entrance since 1989. Five of these accidents involved vehicles accessing the plant entrance. Caltrans identified three possible improvements for the area:

- Construct a left-turn lane for vehicles turning into the Solano Concrete driveway
- Eliminate the free right-turn for vehicles at the intersection of the northbound I-505 off-ramp and SR 16
- Construct an eight-foot shoulder on eastbound SR 16 so that vehicles can pass turning trucks on the right side.

The construction of an eight-foot shoulder for approximately 300 feet was identified as a reasonable short-term solution to the safety issue. The construction of a left-turn lane into the plant and the elimination of free right turns from the I-505 northbound off-ramp were considered long-term solutions that should be evaluated when long-term mining applications were examined.

Narrow or Substandard Bridges. These are bridges that are less than 20 feet wide or that have been identified as being in need of structural repair by the State or Federal Government. Bridge widths were obtained from the *County of Yolo Bridge Replacement Workshop (December 1993)*, and were verified by field observations. None of the nonstandard bridges is located along existing or proposed haul routes for the project.

Frequent Accident Locations. These include locations in which four or more accidents have occurred in a 12-month period during the past three years. The data indicate that no individual locations experienced four or more accidents over a 12-month period within the past three years.

Deteriorated Pavement. These include pavement sections that have deteriorated to the point that they may affect public health and safety under existing conditions. Field observations indicated that, while a number of road segments were identified as having 'poor' pavement, none of the project's existing or proposed haul roads has pavement that has deteriorated to this extreme.

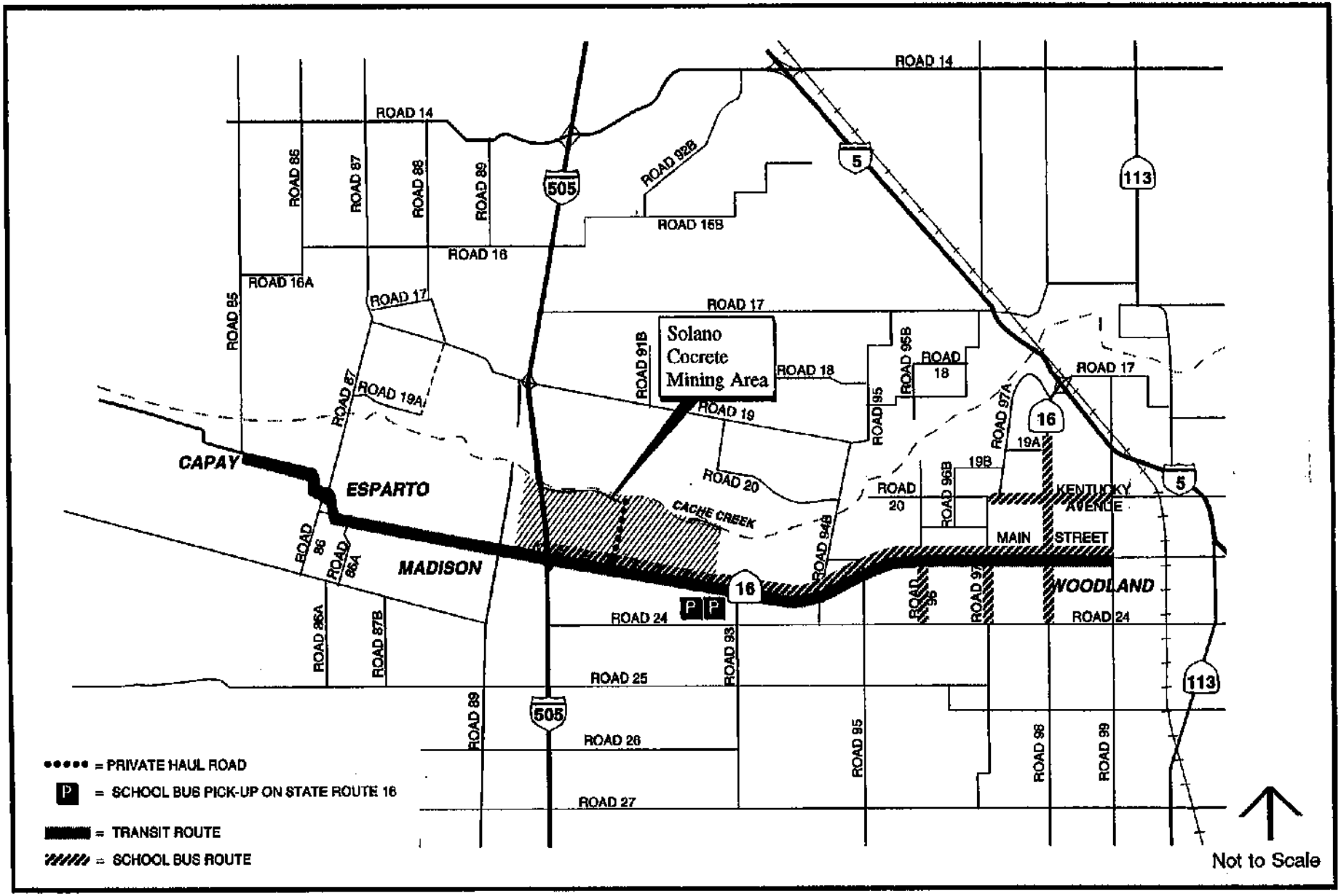
Intersections with Limited Curve Radii. These are cases where the limited curve radius at an intersection may cause a truck to swing into an oncoming lane while making a turning movement. Based on field observations, none of the intersections traveled by the project's truck traffic would fall into this category.

Transit System

The Yolo County Transit Authority operates Yolobus, a fixed-route (i.e., a pre-determined route) (Figure 4.8-4) bus service for Yolo County residents. On Mondays and Thursdays,

TRANSIT AND SCHOOL BUS ROUTES

Figure 4.8-4



Source: Fehr & Peers Associates, Inc.

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Yolobus provides round-trip service from Capay, Esparto, and Madison to Woodland. A bus departs from Capay at 10:00 AM and picks up passengers in Esparto and Madison. It arrives in Woodland at 10:30 AM and departs again at 12:30 PM, dropping off its last passengers in Capay by 12:50 PM.

Bicycle and Pedestrian System

Bicycle and pedestrian travel within the OCMP planning area are limited primarily because of the rural, low density character of the area. The lack of bicycle and pedestrian facilities also contributes to the limited amount of bicycle/pedestrian travel. According to the *County of Yolo Bikeway Plan* (January 1993), no bicycle facilities currently are located near the OCMP planning area. This was verified by field observations.

School Bus Operations

Residents in the unincorporated areas of Yolo County rely on school buses to transport children to school. Two school districts, Woodland Joint Unified and Esparto Unified, are located within the OCMP planning area. The jurisdiction of the Woodland Joint Unified School District extends from Woodland to County Road 95, while the Esparto Unified School District has jurisdiction west of County Road 95.

School district staff were contacted to identify existing school bus routes and schedules (Sims, 1995) (Figure 4.8-4). Within the OCMP planning area, the Woodland Joint Unified School District operates three buses. One bus operates south of SR 16 on County roads 96, 97, and 98 and picks up elementary school students attending school in Woodland. The other buses operate along various study roadways including SR 16. These buses serve both high school and elementary school students. Buses typically operate from 6:00 AM to 9:00 AM and 2:00 PM to 5:00 PM.

The Esparto Unified School District operates four buses that transport students from their residences to schools in Esparto (Plunkett, 1995). Buses currently travel on several roadways within the OCMP planning area, including SR 16 from Esparto to County Road 93. There are currently two stops on SR 16 located east of the project site near County Road 93. Hours of bus travel typically occur from 6:00 AM to 8:00 AM and from 1:00 PM to 4:00 PM.

Consistency with Applicable Policies, Plans, and Regulations

This section identifies the policies, plans and regulations of other related planning documents that are applicable to the project. These policies were used to formulate the basis of the standards of significance against which project impacts were evaluated.

Yolo County General Plan

Traffic and circulation are addressed in a number of the policies contained in the Yolo County General Plan. The general policies that relate to the project are discussed below.

CIR 3: Plan, develop, and maintain a comprehensive, coordinated transportation system.

CIR 5: Establish, expand, and improve a balanced public transportation system, integrated with the Regional System.

The proposed project conforms with these policies in that it does not conflict with the development and maintenance of the transportation system.

CIR 6: Relieve traffic congestion through measures, such as traffic signals, turning lanes, improved signing and striping, ramp metering, and other similar methods.

CIR 7: Maintain level of service C on all County roads.

The proposed project does not identify specific improvements designed to relieve traffic congestion and maintain LOS C on County roads. However, the impacts and mitigation section of this EIR identifies the capacity deficiencies and proposes mitigation measures to be consistent with both of these policies.

CIR 8: Maintain and upgrade all road facilities to established standards including capacity, curve, alignment, signing, traffic control, access control, and special safety features.

The proposed project does not identify specific improvements designed to upgrade County roads to current standards. However, the impacts and mitigation section of this EIR identifies those locations impacted by project traffic and proposes mitigation measures to be consistent with this policy.

CIR 11, 12, and 14: Provide safe and adequate pedestrian ways and bicycle facilities.

The proposed project conforms with these policies in that it does not conflict with the development and maintenance of the bicycle and pedestrian circulation system.

CIR 17: Discourage truck traffic on residential streets.

The proposed project does not add truck traffic to residential streets.

CIR 18: Discourage direct driveway access to County and State arterials and highways.

The proposed project conforms with this policy in that it does not propose a new driveway onto a County or State arterial or highway.

<u>OCMP and CCRMP and Implementing Ordinances</u>

The following four policies in the OCMP identify transportation and circulation requirements that must be addressed by individual mining applications.

PS. 2.5-1: The first one-hundred (100) feet of access road intersecting a County-maintained road shall be surfaced in a manner approved by the Public Works Department, with an approach constructed to County standards. Traffic control and warning signs shall be installed as required by the Public Works Department.

PS. 2.5-5: As a condition of approval, the operator shall be required to construct all County roads along a designated haul route to an engineered standard established by the Public Works Department, from the access point of the surface mining operation to an appropriate State Highway. Construction of the required improvements shall be completed prior to commencement of the mining operation. As an alternative, the operator may provide security in a form authorized by County Counsel equal to the estimated cost of road construction improvements, in which case improvements shall be completed within one (1) year.

If a subsequent mining operation utilizes a road previously required to be improved pursuant to this subsection, then the subsequent operator shall make a payment to the County based on an equitable portion of the relative impact of the proposed project. The amount paid to the County shall be reimbursed to the operator who made the previous road improvements.

PS. 2.5-9: Those portions of designated truck haul routes that include County-maintained roads shall be posted as such, in accordance with the Public Works Department, to facilitate law enforcement and public safety. Private truck haul routes shall be used where possible, in order to reduce impacts to public roads.

PS. 2.5-13: All operations shall provide sufficient off-street parking to accommodate customers, employees, and all mining equipment.

The proposed project is consistent with the OCMP policies listed above. The on-site haul road that has been identified by the project connects directly to SR 16 and does not include County-maintained roads.

The following three policies in the draft CCRMP identify transportation and circulation requirements that must be addressed by individual mining applications.

PS. 6.5-3: All unpaved roads shall be adequately watered to keep soil moist at all times, in order to control fugitive dust.

PS. 6.5-4: Operational areas and haul roads that are not required for future use of the site shall be ripped and prepared accordingly to prevent compaction and allow for revegetation.

PS. 6.5-9: In-channel haul roads shall be located along the toe of the streambank, in order to provide additional bank stabilization and to minimize disturbance of the low-flow channel. Each operation may have no more than two (2) haul roads that cross the low-flow channel. Haul roads shall comply with all requirements of the Department of Fish and Game.

The proposed project is consistent with these three draft CCRMP policies. No new in-channel haul roads are proposed.

Route Concept and Development Report for State Route 16

The Route Concept and Development Report for State Route 16 (Caltrans, 1987) identifies level of service D as the level of service standard for State Route 16 through the study area. This standard has been incorporated into the standards of significance for this EIR, and mitigation measures are included to ensure that LOS D operations are maintained.

Project-Specific Implementation of the Program EIR Mitigations

Possible impacts related to traffic and circulation were evaluated in the OCMP EIR. These impacts included potential increase in trips due to recycling (OCMP EIR Impact 4.8-1), potential increase in total vehicle trips (OCMP EIR Impact 4.8-2), potential changes in LOS at the SR 16/Road 98/Main Street and the SR 16/County Road 89 intersections (OCMP EIR Impacts 4.8-3 and 4.8-4), potential impacts to the nonstandard segments of County Road 19 west of I-505, of SR 16 between I-505 and the Solano Concrete entrance, and to County Road 14 west of I-505 (OCMP EIR Impacts 4.8-5, 4.8-6, and 4.8-7).

The OCMP EIR identified potential impacts to the nonstandard pavement on County Road 14 west of I-505 (OCMP EIR Impact 4.8), and to nonstandard bridges on County Roads 89, 19, 85, and 14 (OCMP EIR Impacts 4.8-9, 4.8-10, 4.8-11, and 4.8-12). The OCMP EIR also identified potential impacts to nonstandard curve radii at three intersections (OCMP EIR Impacts 4.13, 4.8-14, and 4.8-15). Finally, the OCMP EIR identified potential impacts related to accelerated pavement deterioration (OCMP EIR Impact 4.8-16).

Several of these impacts are relevant to the proposed project and are evaluated in this section.

The OCMP EIR presented mitigation measures for the impacts related to traffic and circulation that would reduce these impacts to a less-than-significant level. Mitigation Measure 4.8-3a of the OCMP EIR requires each mining operator to pay its fair share toward improvements required to maintain LOS C on County roads or LOS D on State highways, and to improve existing operational deficiencies such as nonstandard bridges and nonstandard curve radii at intersections. This mitigation measure applies to this project and is discussed under Project Impacts 4.8-1 and 4.8-2 of this section.

Standards of Significance

The project would have a significant effect on traffic and circulation if it would:

- Change the level of service of a County roadway segment or intersection from acceptable levels (i.e., LOS A, B, or C) to unacceptable levels (i.e., LOS D, E, or F), as specified by Circulation Policy CIR-7 of the Yolo County General Plan.

- Change the level of service on a State highway from acceptable levels (i.e., LOS A, B, C, or D) to unacceptable levels (i.e., LOS E or F) as specified by the *Route Concept and Development Report for State Route 16* (Caltrans, 1987).

- Exacerbate conditions on a road or an intersection that currently operates at an unacceptable level of service.

- Add substantial (ten or more vehicle trips per day) to a road that does not currently meet the standards identified below:

- Nonstandard road design according to County and State design standards;
- Bridges less than 20 feet in width or those identified by the Federal or State government as being in need of structural repair;
- Locations in which four or more reported accidents have occurred in a 12-month period during the past three years;
- Pavement that has deteriorated to the degree that it may affect public health and safety; or
- Intersections in which limited curve radii cause a truck to access an on-coming lane while making a turning movement.

- Add substantial (50 or more) loaded truck trips per day to a County-maintained roadway in which the pavement will deteriorate and require repair during the life of the permit.

- Disrupt or interfere with existing or planned transit operations and facilities of the Yolo County Transit Authority.

- Create hazards for pedestrians or bicyclists.

- Disrupt or interfere with existing or planned bicycle facilities as identified in the *County of Yolo Bikeway Plan.*

- Disrupt or interfere with existing or planned school bus operations of the Woodland Joint Unified and Esparto Unified School Districts.

Assumptions and Methodology

The project-specific analysis was conducted for both existing conditions (1997) and cumulative conditions (2027). The assumptions, methodology, and results of each analysis scenario are described below, followed by identified impacts and mitigation measures.

Assumptions and Methodology for Analysis of Existing Conditions (1997)

No major road improvements are planned in the OCMP planning area. Solano Concrete was required, as a condition of approval for the previous short-term mining project approval and as a minimum mitigation, to post a bond to ensure that construction of a paved eight-foot shoulder for a 300-foot segment of SR 16 adjacent to the Solano Concrete driveway occurs during the short-term mining operations. No other project-specific roadway improvements are assumed to be in place by 1997.

The following key assumptions were used to develop trip generation for the proposed project under existing conditions. These assumptions are conservative to ensure that the potential impacts are not underestimated.

- The Solano Concrete plant is assumed to operate at maximum production levels, thereby generating the maximum number of truck trips for an average day. Permitted

production would increase from the current maximum level of 772,400 tons sold per year to 1,200,000 tons sold per year.[3]

- The Solano Concrete plant site will not process raw aggregate materials brought in from other locations.

- The volume of recycled materials is assumed to be one percent of total production, with 0.5 percent resulting in new truck trips.

- A maximum of 1,200,000 tons sold per year will be mined in Yolo County for channel maintenance purposes. For the purposes of this analysis, it was assumed that this gravel would be processed at the plants in the area and that 60 percent of the total would be usable gravel. Each of the six plants was assumed to produce 120,000 tons per year.

- Trucks are assumed to carry 22 tons per load. An average work year is assumed to include 247 work days.

Analysis of Existing Conditions (1997)

Trip generation has been calculated for daily AM peak hour and PM peak hour trips for the Solano Concrete plant. Trip generation is computed by calculating the difference between the trips generated under the maximum proposed production and the ten-year historic average of the trips generated by the site. The Solano Concrete plant would generate a maximum of 187 truck trips per day under the proposed mining plan conditions (Table 4.8-8). Two of these trips would result from recycling activities.

The proposed haul routes for the Solano Concrete plant were obtained from the applicant (Russo, 1995). Since most of the truck traffic would be destined for locations outside the OCMP planning area, a majority of trips would use SR 16 to access I-505 or I-5. Figure 4.8-5 shows the OCMP planning area roadways proposed to be used as haul routes by the Solano Concrete plant's truck traffic and the percentage of total truck traffic that is anticipated. This figure indicates that the majority of trips would be to and from I-505 via SR 16. A small percentage of trips would be to and from the city of Woodland and the city of Davis via SR 16.

Daily traffic projections and levels of service have been calculated for the roadways in the project area under existing conditions (1997) with the proposed project (Figure 4.8-6). Operations on SR 16 would continue to be LOS C with the project in 1997. All County roads would continue to operate at LOS A. All facilities would operate above the identified LOS standards of significance that have been identified.

[3]The traffic analysis is based on tons sold as opposed to tons mined because sales tonnage dictates the amount of truck traffic generated by the project.

TABLE 4.8-8: **Trip Generation for Solano Concrete Plant (1997).**

Variable	Trips Generated: Maximum Proposed Production	Existing Ten-Year Average Production	Difference
Average daily truck trips[1]	444	257	187
Number of employees	14	14	0
Morning (afternoon)[2] peak hour inbound vehicle trips	34 (22)	14 (11)	20 (11)
Truck	27 (22)	7 (11)	20 (11)
Auto	7 (0)	7 (0)	0 (0)
Morning (afternoon)[2] peak hour outbound vehicle trips	27 (29)	19 (22)	8 (7)
Truck	27 (22)	19 (15)	8 (7)
Auto	0 (7)	0 (7)	0 (0)

Source: Fehr & Peers Associates.

[1] Includes 0.5 percent increase in proposed long-term production for hauling recycled materials.
[2] Values outside the parentheses indicate morning peak hour traffic, while values within the parentheses indicate afternoon peak hour traffic. Peak hours are defined as 7 AM to 9 AM and 2 PM to 4 PM.

Peak hour intersection operations were also analyzed under existing (1997) conditions with the project (Figure 4.8-7). The corresponding levels of service for the peak periods were also calculated (Table 4.8-9). The results show that, with the proposed project, all study intersections continue to operate at the same levels as under the no project condition.

TABLE 4.8-9: **Existing Plus Project (1997) Conditions - Intersection Levels of Service.**

Intersection	Type of Control	AM (PM) Peak Hour LOS: Existing[1]	Existing Plus Project[1]
County Road 20/County Road 98	Side-street stop	A (A)	A (A)
SR 16/County Road 96	Side-street stop	A (A)	A (A)
SR 16/County Road 98/Main Street	All-way stop	LOS C or better (LOS C or better)	LOS C or better (LOS C or better)
SR 16/Solano Concrete entrance	Side-street stop	A (A)	A (A)
SR 16/I-505 northbound ramps	Side-street stop	A (A)	A (A)
SR 16/I-505 southbound ramps	Side-street stop	A (A)	A (A)

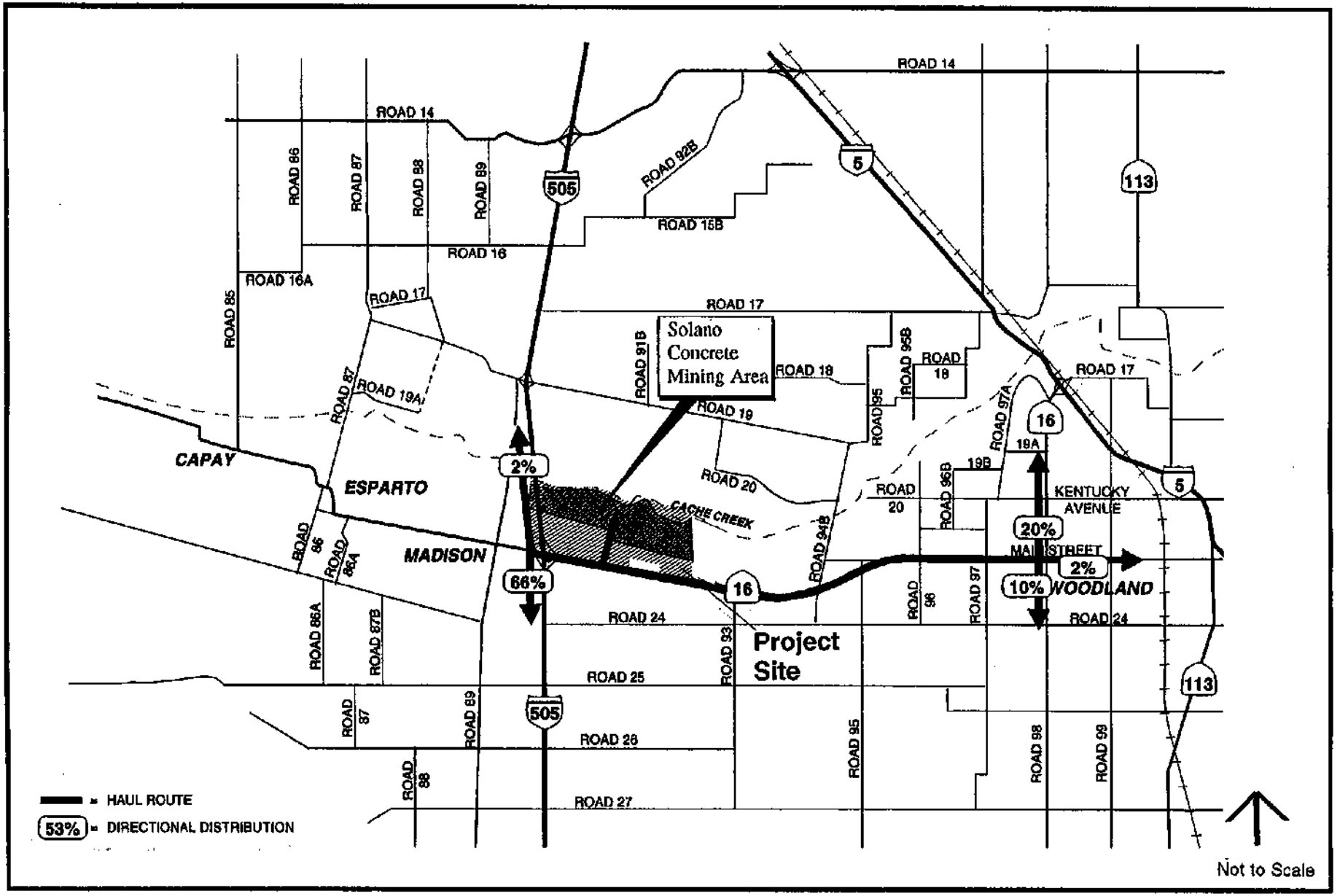
Source: Fehr & Peers Associates.

Notes: Results are presented as LOS A, B, C, D, E or F for side-street stop-controlled intersections. Results are presented as either "LOS C or better" or "Worse than LOS C" for all-way stop-controlled intersections. Please refer to methodology discussion on page 4.8-4 of this section.

[1] Values outside the parentheses indicate morning peak hour traffic, while values within the parentheses indicate afternoon peak hour traffic. Peak hours are 7 AM to 9 AM and 2 PM to 4 PM.

HAUL ROUTES

Figure 4.8-5



Source: Fehr & Peers Associates, Inc.

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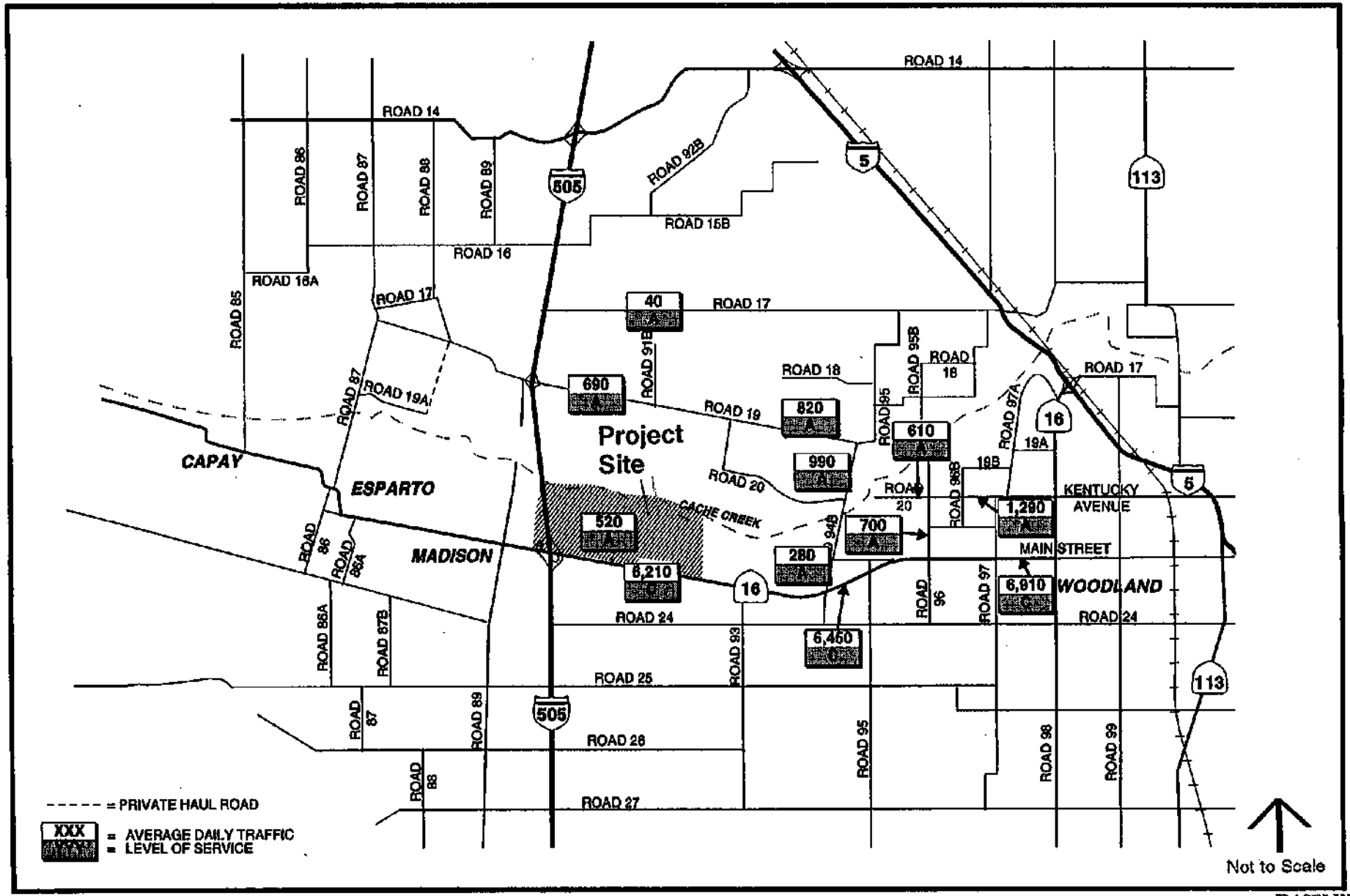
EXISTING PLUS PROJECT (1997) Figure 4.8-6
ROADWAY SEGMENT TRAFFIC VOLUMES AND LEVELS OF SERVICE



Source: Fehr & Peers Associates, Inc.

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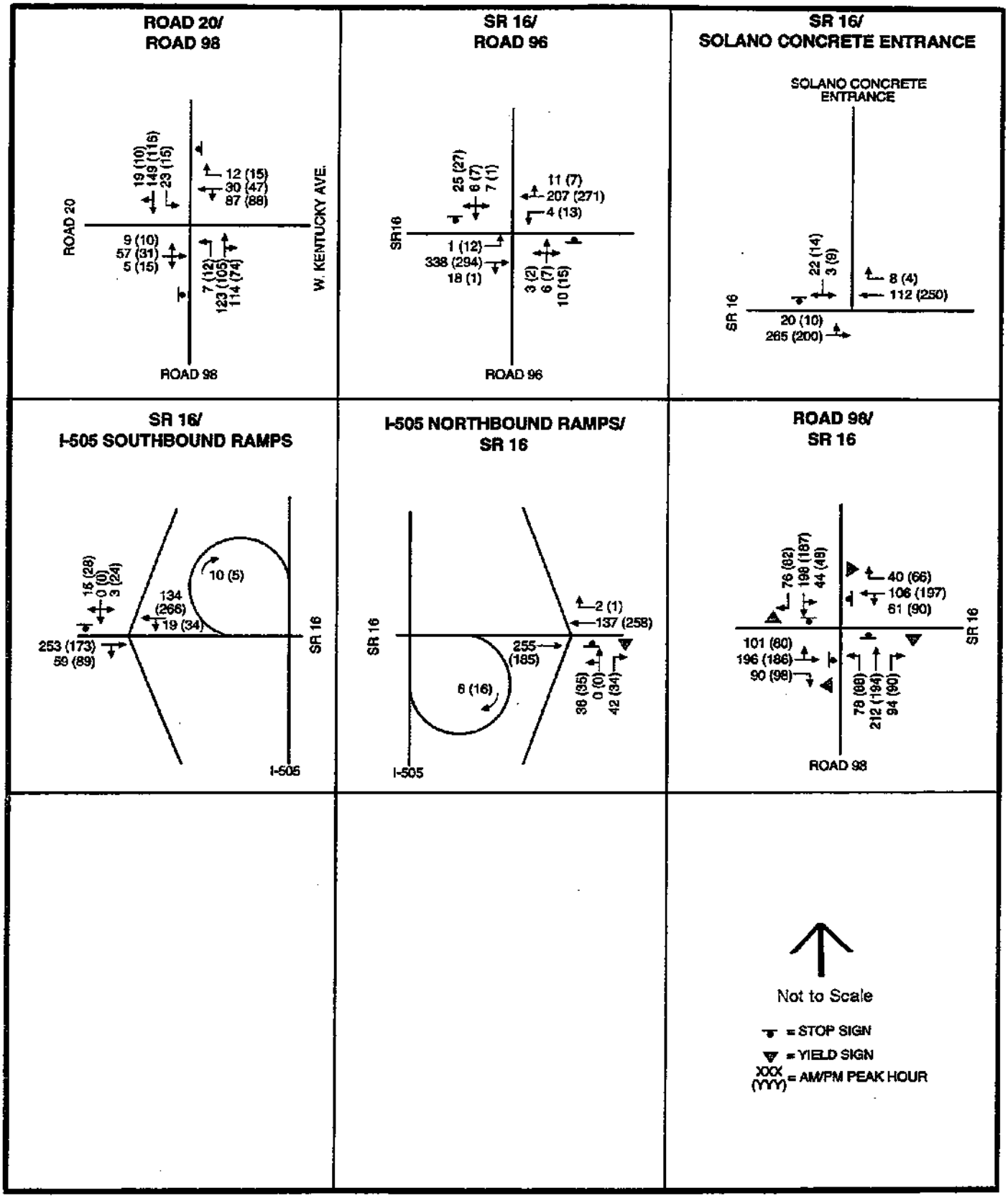
BASELINE

EXISTING PLUS PROJECT (1997) Figure 4.8-7
A.M. AND P.M. PEAK HOUR TRAFFIC VOLUMES



Source: Fehr & Peers Associates, Inc.

BASELINE

95263-00.03 3/19/96, Solano Long-Term

The increased traffic that would result from the project would not disrupt or interfere with any existing or planned bicycle, pedestrian, transit facilities, or school bus operations.

Assumptions and Methods for Analysis of Cumulative Conditions (2027)

The following assumptions have been used to analyze cumulative traffic conditions for 2027, the year corresponding to the end of the proposed 30-year mining permit period.

According to the *Yolo County General Plan* and the *Yolo County Congestion Management Program*, no major road improvements are planned in the OCMP planning area. However, some project-specific improvements were included as conditions of approval for area developments under recent approvals. The following project-specific transportation improvements are assumed to be in place by 2027:

- Construction of a paved eight-foot shoulder for a 300-foot segment of SR 16 adjacent to the Solano Concrete driveway to facilitate passing maneuvers;

- Installation of a traffic signal at the SR 16/County Road 98 intersection, as required for the Wild Wing project; and

- Improved site access intersections along SR 16 at the Wild Wing County Club and Pheasant Glen Golf Course developments.

As noted previously, no increases in Yolobus service are assumed within the OCMP planning area given that modest growth is expected in the area. A Class II, on-street bike lane is assumed to be built along County Road 24 from Woodland to I-505 and along SR 16 west of I-505.

Existing school bus operations are not expected to change significantly under the future cumulative conditions scenario. Improvements, such as bus shelters or turnouts, have not been proposed by school district officials and are not assumed.

The following assumptions regarding cumulative no project traffic, population growth, and aggregate production levels were used in the cumulative (2027) traffic analysis. Similar to the trip generation assumptions, the land use assumptions are conservative so as to ensure project impacts are not underestimated.

- The Teichert-Woodland Properties, Teichert-Esparto Properties, Syar Industries, Cache Creek Aggregates, and Schwarzgruber sites are assumed to operate at maximum proposed long-term production levels. The following production sales levels are assumed for each site:

Cache Creek Aggregates	-	1,000,000 tons per year
Schwarzgruber	-	158,650 tons per year
Syar Industries	-	1,952,000 tons per year
Teichert-Esparto Properties	-	1,000,000 tons per year
Teichert-Woodland Properties	-	1,200,000 tons per year

- Contrary to the other aggregate producers, the Solano Concrete plant is assumed to continue operating at the existing ten-year average production level. Under cumulative no project conditions, this assumption provides a future baseline condition that isolates the project's impacts (i.e., up to maximum production levels) in the impact analysis section.

- A "dummy variable" of 200 acres was assumed to be developed under the cumulative conditions. Of the 200 acres, 150 acres is assumed to be located along Cache Creek west of I-505, while 50 acres is assumed to be located east of I-505.

- A total of 200,000 tons per year is assumed to be mined in Yolo County for channel maintenance purposes after the year 2001. For the purposes of this analysis, it was assumed that this gravel would be processed at the plants in the area and that 60 percent of the total would be usable gravel. Each of the six plants was assumed to produce 20,000 tons per year.

- No site is assumed to process raw aggregate materials brought in from other locations.

- The volume of recycled materials is assumed to be four percent of total production, with two percent resulting in new truck trips. Since this does not count against the producer's production totals, it is assumed that this would result in additional truck trips.

- Trucks are assumed to carry 22 tons per load. An average work year is assumed to include 247 work days.

- The existing Granite mining operation in the OCMP planning area is assumed to have mined all resources by 1997 and therefore is assumed not to be in operation in 2027.

- The Wild Wing County Club project (337 single family dwelling units) and the Pheasant Glen 18-hole golf course project are assumed to be constructed by 2027.

- Cumulative background traffic levels were assumed to increase by an annual rate of 1.5 and 2.0 percent, respectively, on SR 16 east and west of County Road 89. A 1.5 percent annual growth rate was assumed for all other County roads.

- Growth in the Woodland area is assumed to occur consistent with the *City of Woodland Draft General Plan*. This corresponds to a population growth rate of 2.0 percent per year.

Analysis of Cumulative Conditions (2027)

Cumulative trip generation was computed by calculating the difference between the trips generated under maximum proposed production at the Solano Concrete site, and the ten-year average of trips generated by the site. This difference was added to the cumulative traffic conditions to yield the cumulative plus project condition. The same key assumptions

were used to develop the cumulative trip generation for the proposed project as in the cumulative-without-project scenario.

Cumulative daily AM peak hour and PM peak hour trip generation for the Solano Concrete plant have been calculated (Table 4.8-10). A maximum of 195 truck trips per day would be generated by the project under cumulative conditions. Ten of these trips would result from recycling activities.

TABLE 4.8-10: **Trip Generation for Solano Concrete Plant - Cumulative Conditions.**

Variable	Trips Generated		
	Maximum Proposed Production	Existing Ten-Year Average Production	Difference
Average daily truck trips[1]	452	257	195
Number of employees	14	14	0
Morning (afternoon)[2] peak hour inbound vehicle trips	35 (23)	14 (11)	21 (12)
Truck	28 (23)	7 (11)	21 (12)
Auto	7 (0)	7 (0)	0 (0)
Morning (afternoon)[2] peak hour outbound vehicle trips	28 (30)	19 (22)	9 (8)
Truck	28 (23)	19 (15)	9 (8)
Auto	0 (7)	0 (7)	0 (0)

Source: Fehr & Peers Associates.

1 Includes two percent increase in proposed long-term production for hauling recycled materials.

2 Values outside the parentheses indicate morning peak hour traffic, while values within the parentheses indicate afternoon peak hour traffic. Peak hours are defined as 7 AM to 9 AM and 2 PM to 4 PM.

The proposed haul routes under cumulative conditions for each mining site were obtained from each operator. The haul routes used for existing conditions were also assumed to apply to cumulative conditions. The majority of trips are to/from I-505 via SR 16. The proposed haul routes for the other sites are provided in the *Technical Appendix to the Program-Level Environmental Documents for the Off-Channel Mining Plan and the Cache Creek Resources Management Plan* (Fehr & Peers Associates, 1996b).

Daily traffic projections and levels of service for the roadways under cumulative conditions (2027) without the proposed project were calculated. All segments of SR 16 within the OCMP planning area are projected to operate at LOS D. The results of the analysis are shown in Appendix B of this DEIR. All County roads would operate at LOS A or LOS B. All facilities would operate with the previously identified LOS standard of significance levels.

Peak hour intersection operations were also analyzed under cumulative no project conditions (2027). The resulting AM and PM peak hour volumes are shown in Appendix 7.6. The corresponding levels of service are also shown in the Appendix. The results show that each study intersection will continue to operate at the same LOS as under the no project condition. The SR 16/County Road 98/Main Street intersection will continue to operate at 'worse than LOS C' during each peak hour. A review of the peak hour traffic signal warrant criteria listed in the Caltrans *Traffic Manual* (1991) reveals that a traffic signal would be warranted at this intersection.

None of the aspects of the cumulative no project condition would result in a disruption or interference with any existing or planned bicycle, pedestrian, or transit facilities. Similarly, school bus operations would not be disrupted under the no project condition.

Daily traffic projections and levels of service for the OCMP planning area roads have been calculated under cumulative conditions (2027) with the proposed project (Figure 4.8-8). All segments of SR 16 within the OCMP planning area are projected to continue to operate at LOS D. All County roads would continue to operate at LOS A or LOS B. All facilities would operate above the identified LOS standards of significance with the proposed project.

Peak hour intersection operations were analyzed under cumulative plus project conditions (2027). The resulting morning and afternoon peak hour volumes are shown in Figure 4.8-9. The corresponding levels of service are shown in Table 4.8-11. The results show that each study intersection will continue to operate at the same LOS as in the cumulative no project condition. The SR 16/County Road 98/Main Street intersection will continue to operate at 'worse than LOS C' during each peak hour.

TABLE 4.8-11: **Cumulative without and with Project (2027) Conditions, Intersection Levels of Service.**

Intersection	Type of Control	AM (PM) Peak Hour LOS	
		Cumulative without Project[1]	Cumulative with Project[1]
County Road 20/County Road 98	Side-street stop	B (A)	B (A)
SR 16/County Road 96	Side-street stop	A (A)	A (A)
SR 16/County Road 98/Main Street	All-way stop	Worse than LOS C (Worse than LOS C)	Worse than LOS C (Worse than LOS C)
SR 16/Solano Concrete entrance	Side-street stop	A (A)	A (A)
SR 16/I-505 northbound ramps	Side-street stop	A (A)	A (A)
SR 16/I-505 southbound ramps	Side-street stop	A (A)	A (A)

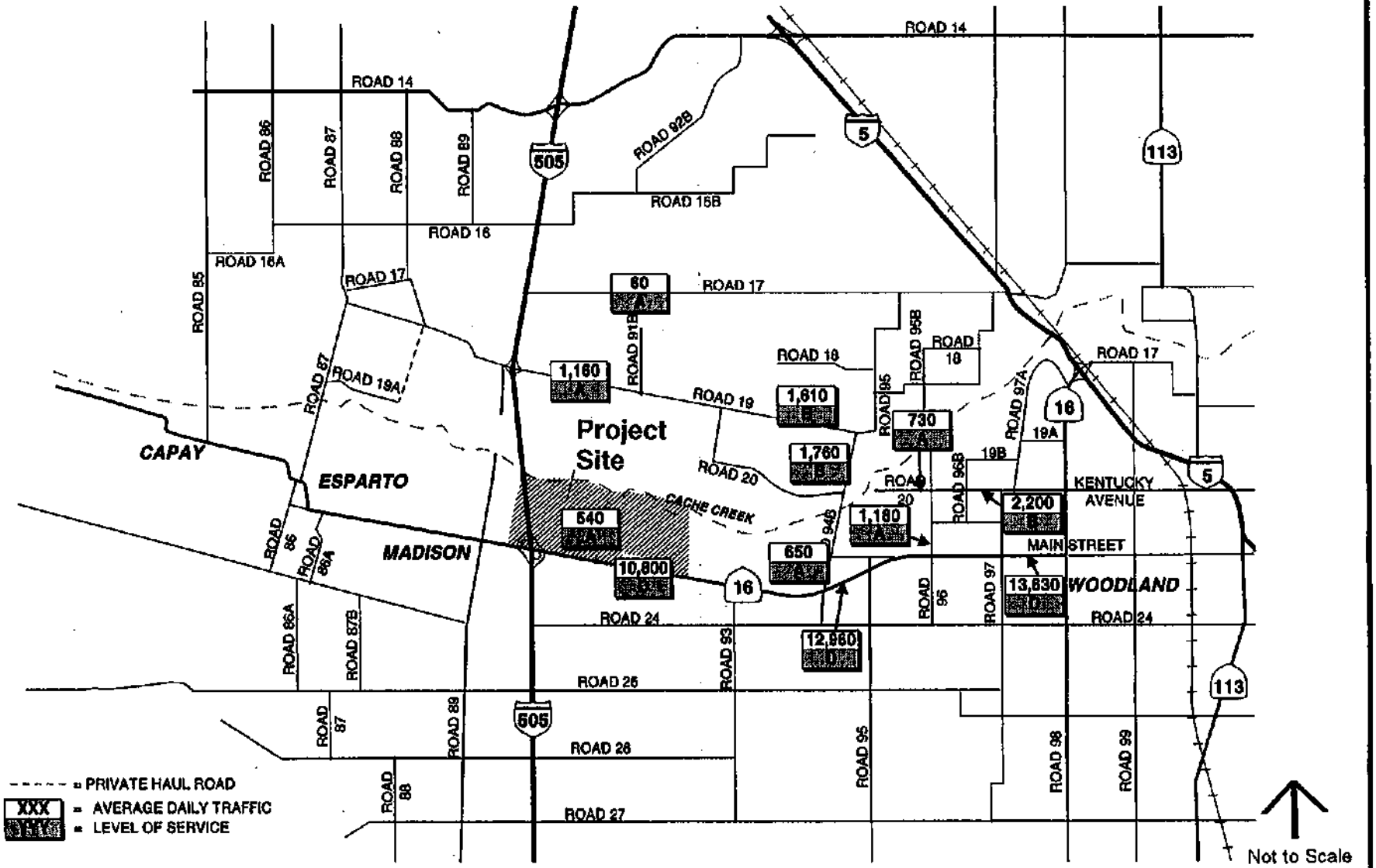
Source: Fehr & Peers Associates.

Notes: Results are presented as LOS A, B, C, D, E, or F for side-street stop-controlled intersections. Results are presented as either "LOS C or better" or "Worse than LOS C" for all-way stop-controlled intersections. Please refer to methodology discussion on page 4.8-4.

[1] Values outside parentheses indicate morning peak hour traffic, while values within the parentheses indicate afternoon peak hour traffic.

CUMULATIVE PLUS PROJECT ROADWAY SEGMENT VOLUMES AND LEVELS OF SERVICE

Figure 4.8-8



NOTE: VOLUMES BASED ON CACHE CREEK AGGREGATES TRUCK ROUTING VIA ROAD 85 AND ROAD 14.

Source: Fehr & Peers Associates, Inc.

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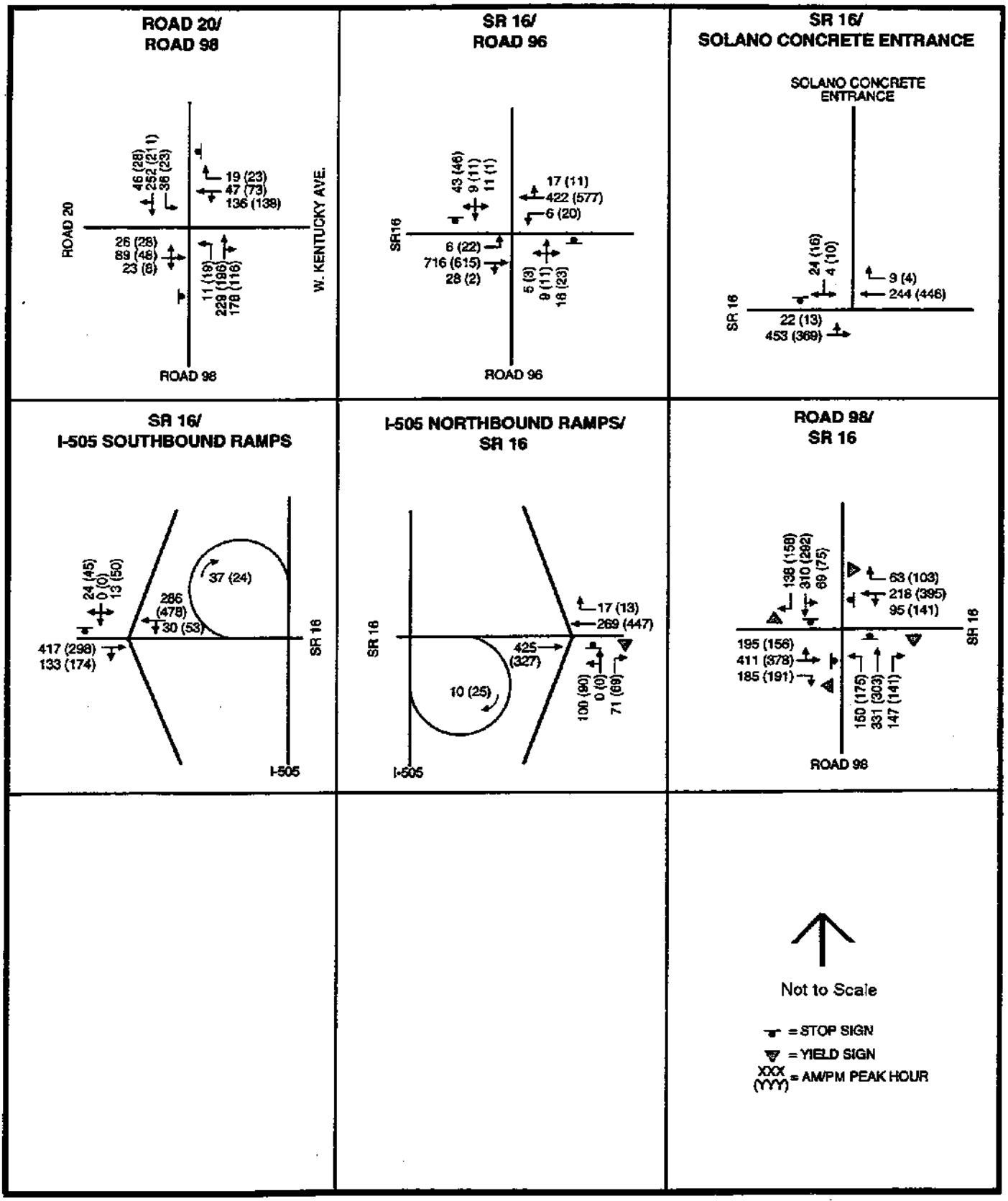
CUMULATIVE PLUS PROJECT (2027) Figure 4.8-9
A.M. AND P.M. PEAK HOUR TRAFFIC VOLUMES



Source: Fehr & Peers Associates, Inc.

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Similar to the no project condition, the increased traffic that would result from the project would not disrupt or interfere with any existing or planned bicycle, pedestrian, transit facilities, or school bus operations.

Project-Specific Analysis

Impact 4.8-1

The proposed project would result in additional truck traffic on the nonstandard segment of SR 16 between I-505 and the entrance to the Solano Concrete Plant. This is considered to be a significant impact.

The segment of SR 16 between I-505 and the Solano Concrete driveway lacks a left-turn lane and shoulders for eastbound travel, thereby causing a safety concern. Solano Concrete was required to post bond for the construction of a 300-foot paved shoulder along this section of SR 16 to improve passing opportunities as a minimum mitigation measure for the short-term mining permit approval. The construction is to be completed as part of the long-term mining application. However, the improvement is a short-term solution that is not ideal from a capacity and/or safety standpoint.

The Environmental Impact Report for the *Solano Concrete Company Short-Term, Off-Channel Mining Permit Application* (BASELINE, 1995) recommended that the safety benefits associated with provision of an exclusive left-turn lane into the plant and elimination of free-right turns from the I-505 northbound off-ramp be evaluated when long-term mining applications are examined. Based on the types of accidents observed in the area, the construction of an exclusive eastbound left-turn lane into the plant from SR 16 is recommended. This reduces the conflict between trucks decelerating to enter the plant and other vehicles continuing east on SR 16.

Mitigation Measure 4.8-1a

The applicant shall construct a left-turn lane for eastbound movements into the Solano Concrete Plant.

Implementation of this measure would reduce this impact to a less-than-significant level.

Impact 4.8-2

The proposed project would exacerbate unacceptable operations at the SR 16/County Road 98/Main Street intersection in the city of Woodland. This is considered to be a significant impact.

The additional truck traffic generated by the proposed project will exacerbate unacceptable operations at the SR 16/County Road 98/Main Street intersection in the cumulative condition. This is considered to be a significant impact because the project exacerbates a future LOS deficiency. The proposed project would generate 60 truck trips per day through the intersection, which is in excess of the criteria of ten trips per day established

in this EIR. The project would contribute 0.3 percent of total intersection traffic under cumulative plus project conditions.

Mitigation Measure 4.8-2a

The applicant shall pay its fair share toward the construction of left-turn lanes on each approach, and the installation of a traffic signal, at the SR 16/County Road 98/Main Street intersection to maintain acceptable levels of service.

Implementation of this measure would reduce this impact to a less-than-significant level. According to the city of Woodland Public Works staff, the City has recently initiated the preparation of design plans for this improvement (Pollard, 1996). The City has funding for the majority of the cost of this improvement, but some additional funding will be necessary to complete the project.

4.9 NOISE

4.9 NOISE

INTRODUCTION

A quiet environment is a valuable environmental resource necessary for human health and welfare. Because noise is an environmental pollutant that can interfere with human activities, noise exposure consideration has become an integral part of land use planning and environmental assessments. Noise is commonly defined as unwanted sound, sound that annoys or disturbs people and potentially causes an adverse psychological or physiological effect on human health.

SETTING

Description of Regional Environment

Noise sources in the Cache Creek region are typically associated with transportation corridors, agricultural activities, existing mining activities along the river, and aircraft overflight. The OCMP Program EIR provides a description of the noise environment in the Cache Creek area.

Description of Local Environment

The major noise sources affecting the project surroundings are vehicles traveling on local roads, activities in nearby agricultural fields, aggregate extraction from active mining areas, and operation of the aggregate processing and asphalt plants.

Interstate 505 (I-505), the loudest transportation corridor traversing the region, generates a CNEL[1] of 70 to 71 decibels (dB) at 100 feet. State Route (SR) 16 generates a CNEL of 66 to 68 dB at 100 feet. County roads in general proximity to the Solano Concrete site generate CNEL levels of 62 dB or less at 100 feet (EDAW, 1996a).

Agricultural activities contributing to the ambient noise levels in the area include field and crop maintenance, hauling, and crop dusting by small aircraft. These noise sources are typically seasonal, resulting in short periods of noisy activities and long periods of little or no noise-generating activities. Most of the agriculture-related noise is confined to the agricultural fields.

Existing aggregate mining and processing activities also contribute to ambient noise levels. Noise measurements conducted on the Solano Concrete property in October 1992 indicate a noise level of 76.2 dBA L_{eq}[2] at 50 feet from scrapers loading material at the mining area and 60.1 dBA L_{eq} on the property boundary along Cache Creek, approximately 550 feet

[1]CNEL is a time-weighted, 24-hour average noise level that provides adjustments for sensitive periods by adding five dB to evening noise (occurring between 7 PM and 10 PM) and ten dB to nighttime noise (10 PM and 7 AM).

[2]L_{eq} is the equivalent steady state sound level that contains the same acoustical energy as the varying sound levels over the measuring period.

east of the plant (Table 4.9-1). Noise-generating equipment used in mining includes scrapers, bulldozers, and draglines. Noise-generating activities at the plant include rock crushing, and sorting and loading of materials.

TABLE 4.9-1: **Noise Measurements/Observations Conducted on the Solano Concrete Property.**

Station Location	L_{eq}[1] (dBA)	Primary Noise Sources
50 feet from scrapers loading materials at the Hutson parcel	76.2	Two scrapers, a periodic water truck, and occasionally one bulldozer
Northern border of Solano Concrete property, on dirt road along Cache Creek, approximately 375 feet east of Central Valley Project power line, (approximately 550 feet east of the plants)	60.1	Both plants were in operation
At the border of Hutson and Farnham parcels, directly west of the existing Farnham house, approximately 2,000 feet from plant access road	40	Aggregate and asphalt plants; other audible sources were helicopter, small plane, birds, I-505 trucks, hauling trucks on plant access road
100 feet from the plant access road centerline	68-75 peak pass-by levels	Trucks hauling aggregate from the plant
At the rim of the mining pit, southeastern corner of Hutson's Pit No. 4	51	Two scrapers in pit at 300-400 feet; one scraper on stockpile at 1,000 ft; one D-8 Caterpillar moving earth at 1,000 ft; and both plants operating in the background
300 feet south of previous location at the Pit No. 4 rim	--	Scrapers were not audible as a separate source, unless the unit was visible at the top of stockpile
50 feet from one scraper loading materials on grade[2]	78.3	One scraper
50 feet from two scrapers loading materials on grade[2]	81.3	Two scrapers operating close to each other

Sources: Fitzroy/Dobbs, 1992; Dobbs, 1995.

[1] L_{eq} readings unless otherwise indicated.
[2] Measurements conducted in 1995.

Typical land uses sensitive to noise include day care centers, residences, hospitals, recreational facilities, and schools. Sensitive receptors in the general vicinity of the Solano Concrete property are primarily rural residences located along SR 16 and County Road 20 (Table 4.9-2 and Figure 4.2-1)

TABLE 4.9-2: **Location of Noise-Sensitive Receptors near the Solano Concrete Property.**

Residence Location	Approximate Distance from Proposed Mining Areas
SR 16 (4,600 feet west of I-505)	1,800 feet south of mining boundary, company owned
SR 16 (6,500 feet west of I-505)	1,900 feet south of mining boundary
SR 16 (8,000 feet west of I-505)	1,700 feet south of mining boundary
SR 16 (10,400 feet west of I-505)	1,600 feet south of mining boundary
County Road 20	2,150 feet north of haul road

Note: Refer to Figure 4.2-1 for location of residences.

Consistency with Applicable Policies, Plans, and Regulations

State Regulations

The State of California Office of Noise Control has established standards for land use compatibility with community noise environment. According to these standards, an exterior noise level of 60 dB L_{dn}[3] is considered acceptable in residential areas, while an L_{dn} in the 60 to 70 dB range is conditionally acceptable if appropriate noise attenuation measures are included in the design of residential structures to reduce the interior noise environment to an L_{dn} of 45 dB. Based on the noise study conducted by Dobbs Acoustics, the proposed project is consistent with these standards.

Yolo County General Plan

As required by the State of California, Yolo County has developed and adopted a Noise Element in its General Plan to provide noise guidelines for land use planning. The current Noise Element for Yolo County contains the following policies applicable to the proposed project:

N1 Yolo County shall regulate, educate, and cooperate to reduce excessive noise levels within the environment and particularly those noise levels which impinge upon the home environment.

N2 Yolo County shall regulate the location and operation of land uses to avoid or mitigate harmful or nuisance levels of noise.

N3 Noise shall be prevented, avoided, and suppressed by controlling noises at the source, providing barriers or buffers, by implementation of a noise ordinance and by means of wise land use planning and implementation.

N6 Yolo County will review all new developments, public and private, for noise compatibility with surrounding uses to protect the occupants of nearby lands from undesirable noise levels and shall discourage new residential development in areas subject to legal, long term, excessive noise.

In general, the proposed project conforms with the General Plan policies for noise control. The proposed nighttime mining operation during peak demand periods, however, has the

[3] L_{dn} is a time-weighted, 24-hour average noise level that provides adjustments for the greater sensitivity to nighttime noise by adding ten dB to noise generated between 10 PM and 7 AM.

potential to expose residential receptors to excessive noise levels and could therefore be inconsistent with policy N1. This impact is discussed under Impact 4.9-2.

OCMP and Implementing Ordinances

The Aggregate Resources Element of the Off-Channel Mining Plan (OCMP) for lower Cache Creek includes the following performance standard (PS) that would apply to the proposed project:

PS 2.5-11: From 6:00 AM to 6:00 PM, noise levels shall not exceed an average noise level equivalent (L_{eq}) of eight (80) decibels (dBA) measured at the property boundaries of the site. However, noise levels may not exceed an average noise level equivalent (L_{eq}) of sixty (60) decibels (dBA) for any nearby off-site residences or other noise-sensitive land uses.

From 6:00 PM to 6:00 AM, noise levels shall not exceed an average noise level equivalent (L_{eq}) of sixty-five (65) decibels (dBA) measured at the property boundaries of the site.

The OCMP also requires vegetated buffers between restored habitat areas and adjoining farmland to minimize impacts from noise, dust, and spraying generated by agricultural operations (Action 6.4-11).

The noise standards in the OCMP are identical to the standards in the draft Off-Channel Surface Mining Ordinance. The mining activities proposed by Solano Concrete may increase ambient noise levels at the property boundaries in excess of these noise standards. This potential adverse effect is discussed in Impact 4.9-1. Potential exposure of nearby residences to noise levels greater than 60 dBA (L_{eq}) is discussed in Impact 4.9-2.

The proposed project would be subject to the following noise control standard contained in Section 10-4.418 of the draft Off-Channel Surface Mining Ordinance:

a) From 6:00 AM to 6:00 PM, noise levels shall not exceed an average noise level equivalent (L_{eq}) of eighty (80) decibels (dBA) measured at the property boundaries of the site. However, noise levels may not exceed an average noise level equivalent (L_{eq}) of sixty (60) decibels (dBA) for any nearby off-site residences or other noise-sensitive land uses.

b) From 6:00 PM to 6:00 AM, noise levels shall not exceed an average noise level equivalent (L_{eq}) of sixty-five (65) decibels (dBA) measured at the property boundaries of the site.

The mining activities proposed by Solano Concrete may increase ambient noise levels at the property boundaries in excess of these noise standards. This impact is discussed in Impacts 4.9-1 and 4.9-2.

IMPACTS AND MITIGATION MEASURES

Project-Specific Implementation of Program EIR Mitigations

Possible impacts related to noise were evaluated in the OCMP Program EIR. These impacts included unacceptable noise levels from mining, reclamation, and related activities

on the project site (OCMP EIR Impact 4.9-1), exposure to unacceptable increases in noise from off-site truck traffic (OCMP EIR Impact 4.9-2), contribution to cumulative noise increases (OCMP EIR Impact 4.9-3), and generation of vibration or nuisance noise (OCMP EIR Impact 4.9-4). Each of these impacts is relevant to the proposed project and is evaluated in this section.

The OCMP EIR presented mitigation measures for the impacts related to noise generated by on-site activities and to cumulative impacts that would reduce these impacts to a less-than-significant level. Under Mitigation Measure 4.9-1a of the OCMP EIR, the Off-Channel Surface Mining Ordinance would be modified to reflect a 60 dB CNEL residential standard rather than L_{eq}. Under Mitigation Measure 4.9-3a of the OCMP EIR, operators would be required to have a noise study prepared for future off-site truck traffic associated with their projects along County roadways identified as subject to significant increases in traffic noise. These mitigation measures apply to the project and are discussed in Project Impacts 4.9-1 and 4.9-2.

The OCMP EIR presented a mitigation measure for generation of vibration or nuisance noise that would reduce this impact to a less-than-significant level. Under OCMP EIR Mitigation Measure 4.9-4a, OCMP performance standards would require the use of nonsonic warning devices under OSHA regulations for nighttime activities within 1,500 feet of residences. This mitigation measure applies to the project and is discussed in Project Impact 4.9-3.

Significance Criteria

The proposed project would cause a significant impact on the noise environment if it were to result in:

- Activities exceeding an exterior noise level (L_{eq}) of 80 dBA between 6 AM and 6 PM, measured at the property site boundary;
- Activities exceeding an exterior noise level (L_{eq}) of 65 dBA between 6 PM and 6 AM, measured at the property site boundary;
- Exposure of sensitive receptors to long-term noise levels exceeding 60 dB CNEL;
- An increase in ambient noise levels of
  0-3 decibels (L_{eq}) - not significant
  4-5 decibels (L_{eq}) - potentially significant
  6 or more decibels (L_{eq}) - significant
- Vibration or nuisance noise.

Project-Specific Analysis

Impact 4.9-1

The proposed project may result in an increase in ambient noise levels. This is considered to be a significant impact.

Given the history of surface mining and farming activities at the project site, the type of noise generated by mining and reclamation activities would not be new to the land uses, including residences, surrounding the Solano Concrete property. However, an increase in ambient noise levels at the property boundary in excess of 80 dBA L_{eq} during the day or 65 dBA L_{eq} during the night would constitute a significant impact of the project.

Mining and Reclamation Activities

The removal of topsoil, overburden, and nonsaturated aggregate materials would be accomplished by using scrapers and an occasional bulldozer. The scrapers used by Solano Concrete are "paddle wheel" scrapers that scoop the materials and also haul them to the central plant without the use of haul trucks. The maximum noise from this type of operations occurs during the "paddle wheel" loading or scraper run. Noise measurements recently conducted at the Solano Concrete site indicate that, at a distance of 50 feet, one scraper, loading material at grade, would generate 78.3 dBA L_{eq}, while two scrapers operating close to each other at grade would generate 81.3 dBA L_{eq} (Table 4.9-1).[4]

Using the noise measurements for two scrapers and assuming that the mining operations were taking place adjacent to the mining boundary while the equipment was still at or near grade with the land outside the boundary, a perimeter noise contour was prepared for the Solano Concrete site. These assumptions (two scrapers loading materials adjacent to the mining boundary and at the same grade as the land outside the boundary) represent worst-case conditions. At 50 feet from the perimeter of the mining area, the noise contour would be 81.3 dBA L_{eq}. Since the intensity of noise diminishes as the distance from the equipment increases,[5] the 80 dBA L_{eq} contour would be located at 58 feet from the mining boundary, the 70 dBA L_{eq} at 184 feet, and the 60 dBA L_{eq} at 581 feet (Dobbs, 1995). These noise contours would represent the worst-case conditions for noise generated by mining and reclamation activities at grade.

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[4]These measurements were provided in the Dobbs Noise Study prepared for the site, which used worst-case conditions. These values are higher than those shown in Table 4.9-4 of the OCMP Program EIR, which were based on calculations performed by Brown-Buntin for other sand and gravel operations nearby. The Dobbs study is based on L_{eq} measurement of one or two scrapers while they were loading materials. The Brown-Buntin study shows the average hourly L_{eq} calculated based on the noise emission of a single scraper passage, assuming 30 scraper passages per hour. The calculated average hourly noise level is lower than the Dobbs noise level because it would include the quiet times in between scraper passages.

[5]Noise levels are normally reduced by 6 dBA for each doubling of distance from the source due to atmospheric and ground absorption.

Reclamation of mined areas for agricultural use would require transporting overburden and topsoil from other areas being mined or from stockpiles. Bulldozers and scrapers would be used for overburden removal and transport. Maximum noise levels generated by these activities would be similar to noise levels generated by removal of topsoil from the mining areas.

Based on the estimated noise contours, there is a potential for the proposed project to generate daytime noise levels in excess of 80 dBA L_{eq} at the property boundaries if two scrapers were used to excavate materials at grade at a distance of less than 58 feet from the Solano Concrete property boundary. This could occur during topsoil and overburden removal at the eastern boundary of the Phase V mining area and the western boundary of the Phase VII mining area where the proposed setbacks are 50 feet. Daytime noise levels in excess of 80 dBA L_{eq} at the property boundary would be inconsistent with the OCMP and Off-Channel Surface Mining Ordinance standards, and would constitute a significant impact of the project.

The noise intensity would be reduced as the work proceeds to lower elevations in the mining pit. As the mining lowers the ground elevation, the pit walls would serve as natural noise barriers and reduce noise levels at receptor sites located at grade. It is estimated that the pit walls can result in noise level reductions of up to 10 to 15 dBA L_{eq} (Dobbs, 1995). After the nonsaturated aggregate is excavated (by scrapers), the removal of the saturated aggregate would proceed with the use of a diesel-operated dragline. The saturated aggregate would be stockpiled on a bench approximately level with the base of the dragline, and scrapers would transport the drained material from the bench to the plant. The pit slopes would provide shielding for noise generated by the dragline and the scrapers working on the bench within the excavated area. No significant increase in the ambient noise level is expected from mining of saturated aggregate in the excavated areas.

Noise would also be generated by the scrapers when transporting materials to the processing plant, to the stockpile, or to a field being reclaimed for agricultural use, however, the noise level generated by scrapers traveling on roads is less significant than the noise generated by a scraper loading material at excavation sites. Noise measurements conducted adjacent to the haul road near the plant are representative of the noise levels that could be generated by scrapers traveling to the plant. The measured noise level of about 60.1 dBA L_{eq} (Table 4.9-1) included noise from the haul road as well as from the plants located approximately 550 feet to the west of the noise monitoring station. Based on this noise measurement, the noise generated by scrapers hauling materials to the plant is not likely to cause ambient noise levels at the property boundary to exceed 65 dBA. In addition, hauling of materials to the plant is not expected to substantially increase noise levels at nearby residences since the closest residence to the main haul road is located at a distance of 2,150 feet. All mining areas are proposed to be connected to an existing haul road along Cache Creek. This haul road is approximately 2,150 feet south of a house across Cache Creek and at least 4,500 feet north of the houses located along SR 16. Any noise generated by scrapers traveling on the haul road

would be greatly reduced by the distance between the haul road and the residences, resulting in a noise level of less than 60 dBA L_{eq}.

The mining and reclamation activities would generally occur during normal hours of operation, from 6 AM to 3:30 PM, Monday through Friday. Currently, longer shifts are occasionally needed during seasonal high demand requiring mining activities to be extended until 5 PM. If mining activities were extended beyond 6 PM in the future, noise generated by extraction and processing activities could potentially result in a significant impact, if the noise exceeded 65 dBA at the outermost boundary of the Solano Concrete property.

Plant Operation and Hauling of Materials

Noise associated with the Solano Concrete plant includes noise from operation of the aggregate processing and asphalt plants and noise associated with trucks hauling material to customers. Measurements conducted at the northern border of the Solano Concrete site, when both plants were in operation, recorded a noise level of 60.1 dBA L_{eq} (Table 4.9-1). This noise level is likely to be representative of the maximum noise level at the property boundary due to operation of the plants. The noise level recorded, 60.1 dBA, is within standards established by the Yolo County Off-Channel Mining Ordinance and the Off-Channel Mining Plan (65 dBA for nighttime and 80 dBA for daytime activities).

The project proposes to increase the annual permitted production of aggregate at the site from 772,400 to 1,445,783 tons per year. This increased production would be processed at the plants with existing equipment. Increase in the noise levels currently generated by the plants could occur due to the additional production, particularly if nighttime plant operation occurs more frequently in the future. Operation of the Solano Concrete plants, as a result of approving the proposed project, would have to comply with daytime and nighttime noise performance standards set by the OCMP and implementing ordinances.

Post-Reclamation Activities

Post-reclamation activities at the project site would be primarily related to agricultural production on lowered fields reclaimed for agricultural use. Noise generated by post-reclamation agricultural activities would be similar to noise generated by existing agricultural activities, except that, in fields substantially lower than the surrounding areas, some noise attenuation may be provided by the walls of the excavated area. Based on noise levels presented in the OCMP Program EIR (EDAW, 1996a), tractors on agricultural land typically generate noise levels of 58 dBA Leq at 50 feet. Future agricultural activities on the reclaimed fields of the Solano Concrete site would generally result in similar noise levels and would not, therefore, result in an increase in existing ambient noise levels.

Mitigation Measure 4.9-1a

Daytime noise levels at the property boundary shall not exceed 80 dBA L_{eq} during mining and reclamation of the site. If earth moving operations are conducted at grade within less than 58 feet from the property boundary, the applicant shall ensure that no more than one scraper is used at any one time.

Mitigation Measure 4.9-1b

Implement Mitigation Measures 4.9-1b and 4.9-1c of the OCMP Program EIR.

Implementation of these mitigation measures would reduce nighttime noise impacts from aggregate processing and mining to a less-than-significant level.

Impact 4.9-2

Project activities may result in exposure of sensitive receptors to increased noise levels. This is considered to be a significant impact.

Mining and Reclamation Activities

The closest noise-sensitive receptors to the proposed project are residences located north of SR 16. The distance between these residences and the southern mining boundary ranges from 1,600 to 1,900 feet (Table 4.9-2). Noise contours developed for the proposed project indicate that the 60 dBA L_{eq} contour would be located at least 1,000 feet north of the closest residence, which is 1,600 feet south of the mining boundary, and that the maximum project-related noise at the residence would be 51.2 dBA L_{eq} (Dobbs, 1995). The OCMP Program EIR modified the residential noise limit to a CNEL of 60 dB rather than the currently specified L_{eq} of 60 dBA. CNEL is the proper descriptor because it is a 24-hour average noise level with penalties for evening and nighttime hours when residents are more sensitive to noise. The new residential noise performance standard limits noise to a maximum of 60 dB CNEL at the property line of any residentially zoned area or, in the case of agricultural land, any occupied residential structure. The proposed project could cause an exceedance of this new OCMP noise standard if mining operations result in a significant noise increase during evening and nighttime hours. Residences located closest to active mining and reclamation activities (Table 4.9-2) would be the most susceptible receptors to noise generated by nighttime activities.

Plant Operation

Noise is generated by several sources, such as conveyors, motors, crushers, and screens, during processing of aggregate at a plant. These noise sources combine together and create a relatively steady noise level. In addition, noise levels generated by the plant equipment is typically reduced by stockpiles of aggregate located at the plant site.

Measurements conducted at the northern border of the Solano Concrete site when both plants were in operation indicated a noise level of 60.1 dBA L_{eq} (Table 4.9-1). Since the closest residence is located at least 1,500 feet from the plants, and noise levels are reduced with the distance from the source, current operation of the plants results in noise levels of less than 60 dBA L_{eq} at nearby residences.

The proposed increased aggregate production would result in the plant operating longer hours in a day and more days in a year. Typically, the noise generated by aggregate processing at any one time in the future would be similar to current plant noise levels. However, if the plant is operated longer hours into the evening, it could result in a higher

CNEL noise level. Future operation would have to comply with the OCMP noise performance standard of 60 dB CNEL at nearby residences at all times.

Haul Trucks

The increase in the number of trucks hauling products to customers would result in an increase in the noise level along roadways, and could affect noise sensitive receptors (primarily residences) located along nearby roadways. Local roads used by trucks hauling products from Solano Concrete are I-505, SR 16, and County Road 98.

Future traffic noise levels along major roadways were calculated for the OCMP Program EIR based on the total increase of sand and gravel haul truck traffic in the Cache Creek area. For most roads, the increase in truck traffic would not result in an increase in noise levels greater than a CNEL of 5 dB (EDAW, 1996a). For the road segments used by haul trucks from Solano Concrete, the estimated noise increase at a distance of 100 feet would be a CNEL of 3 dB for SR 16 and I-505. This noise increase would be a result of truck traffic from the proposed Solano Concrete project combined with traffic from other proposed sand and gravel operations in the area (EDAW, 1996a). Thus, increase in noise level attributable to the Solano Concrete operations alone would be less than the estimated increase of 3 dBA. The increase in ambient noise levels along local roadways as a result of the Solano Concrete truck traffic would not be readily noticeable, and thus, would not constitute a significant noise impact.

Mitigation Measure 4.9-2a

Implement OCMP policies as modified in Mitigation Measure 4.9-1c of the OCMP Program EIR.

Implementation of this mitigation measure would reduce the impact to a less-than-significant level

Impact 4.9-3

The proposed project may create vibration or nuisance noise on adjoining properties. This is considered to be a significant impact.

Most of the heavy equipment used in mining and reclamation activities are diesel-operated, with noise characteristics similar to agricultural equipment and truck traffic; nuisance noise is not expected to be a common occurrence. Nuisance noise from this equipment could be typically reduced or avoided with routine maintenance of the equipment and the use of proper mufflers. The greatest potential for nuisance noise would be from the periodic noise of backup beepers on trucks and other earth-moving equipment, particularly during evening hours, when an increase in human sensitivity to noise tends to occur. Based on the analysis conducted for the OCMP Program EIR (EDAW, 1996a), use of backup beepers within 1,500 feet of residences during nighttime operations would constitute an annoyance to residents and should be mitigated.

The vibration generated by mining equipment is typically adequately reduced by the distance required to achieve acceptable noise levels, and thus, would not cause an adverse effect on adjoining properties.

Mitigation Measure 4.9-3a

Implement OCMP Program EIR Mitigation Measure 4.9-4a.

Implementation of this mitigation measure would reduce the noise nuisance impact from the project to a less-than-significant level.

4.10 AESTHETICS

4.10 AESTHETICS

INTRODUCTION

A landscape is typically composed of several basic visual elements, including form, line, color, and texture. The interaction of these basic elements composes the visual setting of an area. Other elements considered in evaluating visual resources include the degree of natural screening by vegetation and topography, distance from the point of observation, relative size or scale, and length of time structures are in view. This section describes the visual environment of the project site in terms of these visual elements and assesses impacts in terms of changes resulting from project implementation.

SETTING

Description of Regional Environment

The broad, generally flat agricultural lands of the Sacramento Valley determine the regional landscape of the Cache Creek area. Gently rolling terrain and winding creeks are also part of the landscape. The sloped hillsides of the Coastal Range, located several miles to the west, constitute the background in long-range views to the west. On clear days, the Sierra Nevada can be seen in very long-range views to the east.

Expansive agricultural fields, scattered farm houses, and low-density residential communities, such as Esparto and Madison, contribute to the predominantly rural character of the area. Agricultural lands include cultivated crop fields, pasture, or orchards. Most nonagricultural trees are found along stream courses or pockets of rural development; visual access to agricultural fields generally consist of open, unobstructed views. The occasional rows of trees along property lines introduce lineal elements to the landscape, and provide visual screens on views from local roadways.

The appearance of the fields evolves with the season, depending on the type of crop produced. Agricultural activities typically involve the use of heavy equipment (tractors, cultivators, harvesters, trucks, and the like) in the fields. At different times of the year, heavy agricultural equipment is seen operating in the fields or traveling on local roads.

A network of County, State and Federal roads crosses the area. None of these roads is a designated scenic route, except for State Route (SR) 16 which is designated "Local Scenic Highway" in its segment crossing Capay Valley, west of the project site. Interstate 505 (I-505), which runs north-south through the area, is a readily visible feature of the landscape, particularly at points where it is elevated to cross local roads and Cache Creek.

While the visual character within the area has been greatly affected by agriculture, the visual character of the Cache Creek channel has also been affected by surface mining operations. The alteration of natural land forms due to mining, and the presence of processing plants nearby, provide a predominantly industrial character to several segments

of Cache Creek. Further description of the visual regional setting of the Cache Creek area is provided in the OCMP Program EIR.

Description of Local Environment

The project site is located in the flood plain of Cache Creek, visually dominated by agricultural fields and a few scattered rural residences. The area immediately north of the site is characterized by limited relief where levees parallel the Cache Creek channel. Existing vegetation at the site is primarily row crops and grasses with low visual profile. Vegetative cover also includes lines of trees along parcel boundaries and along the private roadway accessing the plant site, scattered groupings of trees and bushes, and riparian vegetation on a lower terrace along Cache Creek.

Several high voltage transmission lines traverse the project site. Four lines located in the Kaupke parcel and one in the Farnham and Hutson parcels cross the site in a southeast-northwest direction, roughly parallel to I-505. Another line crosses the Snyder parcel in a southwest-northeast direction. The towers and conductors associated with these transmission lines introduce linear elements to views of the project site (Figure 4.10-1).

Major roadways from which the project site is visible include SR 16, bordering the site to the south, and I-505, traversing the western portion of the site. From these roadways, the project site is part of a larger panorama that includes gravel operations, agricultural lands, and Cache Creek. Views of the project site from these roadways are limited due to the minimum relief of the valley floor. Views of the site would be primarily from vehicles traveling along SR 16 and I-505. At normal travel speeds, passengers inside a passing vehicle can only glimpse mining operations currently occurring on the site.

The natural visual quality and land form of a portion of the site have been altered by previous sand and gravel extraction. As a result of previous mining, the Hutson parcel contains an open mining pit with water ponds surrounded by steep slopes, a terrace near the water level, ongoing backfilling activities, and reclaimed agricultural fields. In addition, current mining extraction at the Farnham West parcel has created a bowl-shaped depression, approximately 20 feet deep, in the northern portion of the parcel. Mining-related land form alterations on the site are obscured from public views due to the distance from the mining area to public roads (about 3,500 feet to SR 16 and 2,200 feet to I-505) and the relief created by the excavation. Views of the site from the SR 16 and I-505 are dominated by the visual features of the processing plant, including conveyor belts, 40- to 50-foot high stockpiles, heavy equipment, structures, and trucks (Figure 4.10-1, Photo B).

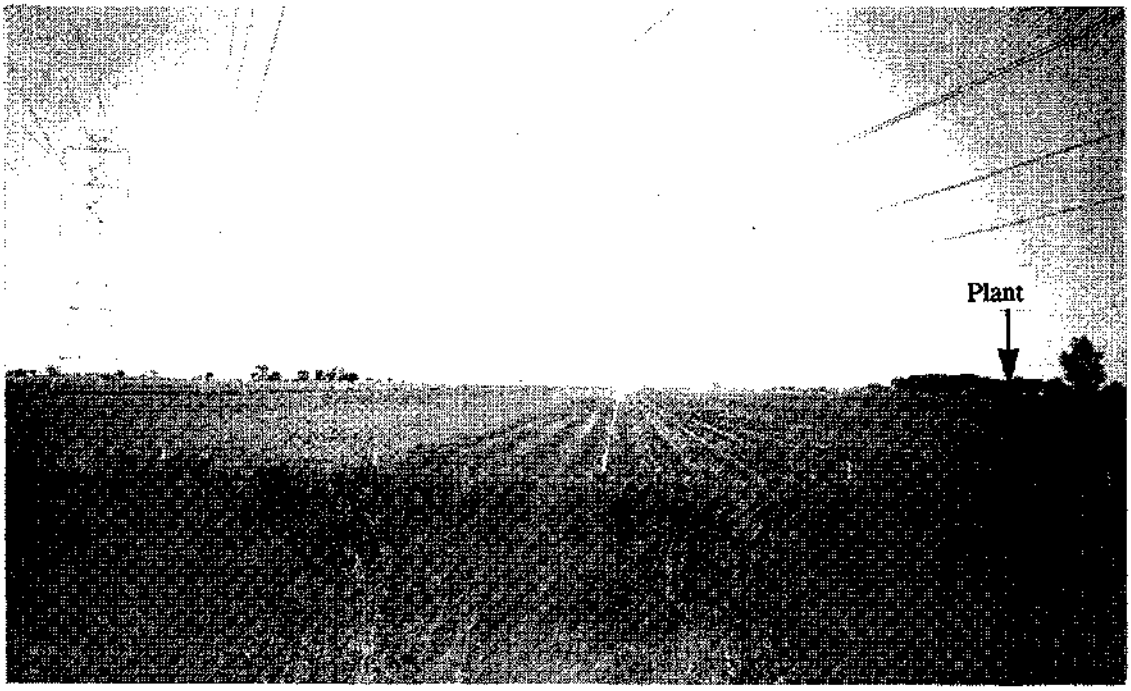
Consistency with Applicable Policies, Plans, and Regulations

Yolo County General Plan

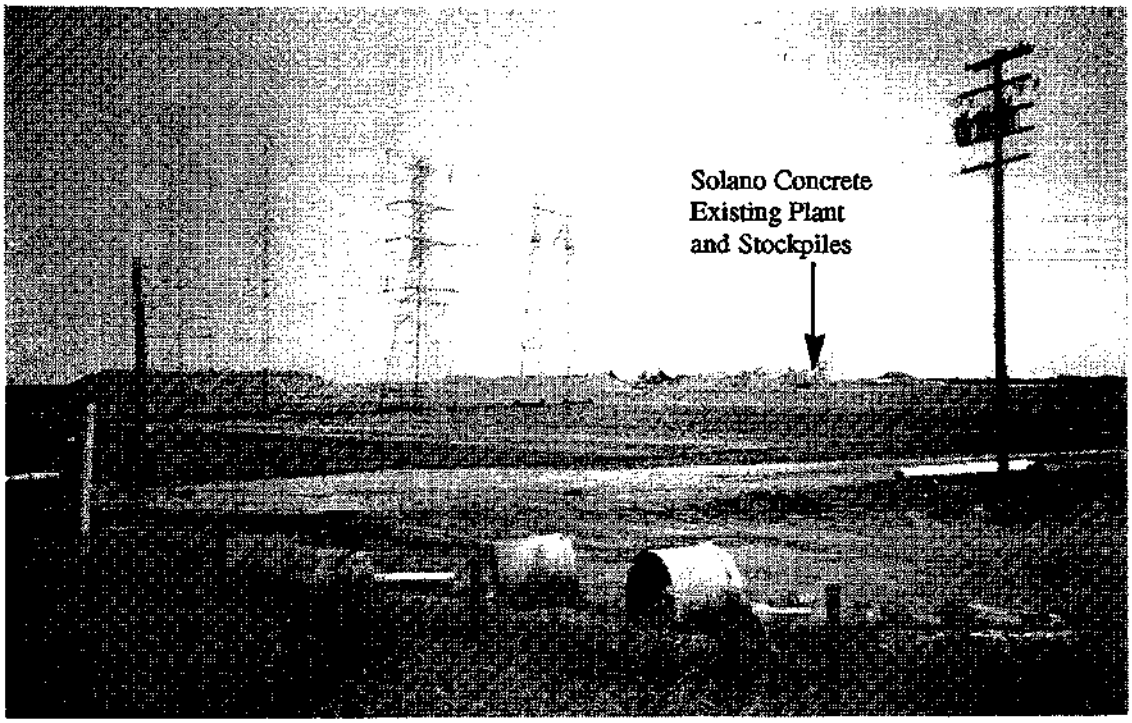
The Yolo County General Plan includes the following visual policies that would apply to the proposed project:

PHOTOGRAPHS

Figure 4.10-1



A. View from the intersection of State Route 16 and I-505 northbound on-ramp, looking northwest toward the Kaupke parcel. High voltage transmission lines can be seen on the left traversing the project site. The Solano Concrete Plant is located to the right, screened by a row of mature trees.



B. View from I-505 looking northeast toward the Solano Concrete Plant. The view encompasses the Kaupke parcel in the foreground, high voltage transmission lines in the middle ground to the left, and the plant stockpiles and equipment in the background.

BASELINE

OS 9 Scenic Areas. Yolo County shall plan to maintain scenic highways and waterways or riverbank corridors of scenic value as part of its open space preservation program.

CON 27 Landscaping/Screening. Yolo County shall require assured landscaping between certain uses which may otherwise conflict.

SH 7 Natural Vegetation and Landscaping. Yolo County shall require retention of existing trees and vegetation and natural landforms, and shall require landscaping to enhance scenic qualities and/or screen unsightly view.

The proposed habitat areas near Cache Creek would contribute to increase the scenic value of riverbank corridors, as required by policy OS 9, and would enhance scenic qualities of views as required by policy SH 7. The project's proposed windbreak planting along I-505 would provide screening of mining and plant operations to views of travelers using the roadway, and would be generally consistent with CON 27.

OCMP and Implementing Ordinances

The Aggregate Resource Element of the OCMP includes several visual performance standards that would directly apply to the proposed project, such as the following OCMP setback requirements:

PS. 7.5-1 New processing plants and materials stockpiles shall be located a minimum of 1,000 feet from public rights-of-way, public recreation areas, and/or off-site residences, unless alternate measures to reduce visual/aesthetic impact are developed and implemented.

Since the proposed project does not modify current operations at the plant site, which is almost 1,000 feet away from I-505, it would be in compliance with PS. 7.5-1.

PS. 7.5-2 Soil stockpiles shall be located a minimum of 500 feet from public rights-of-way, public recreation areas, and/or off-site residences, unless alternate measures to reduce potential noise, dust, and aesthetic impacts are developed and implemented.

All proposed stockpiles would be at least 500 feet from SR 16. The stockpile in the Kaupke parcel would be set back more than 500 feet from I-505. The northern portion of the stockpile proposed for the Solano West parcel would be within 500 feet of the I-505 right-of-way, but planted windbreak corridors proposed for each side of I-505 should provide the visual buffering required in PS. 7.5-2. There are no public recreation areas near the project site. All proposed stockpiles, including those in the Snyder West and East parcels (phases IV and V), would be more than 500 feet from nearby off-site residences. The proposed project is therefore consistent with PS. 7.5-2.

PS. 7.5-3 Off-channel excavations shall maintain a minimum 1,000 foot setback from public rights-of-way and adjacent property lines, unless a landscaped buffer is provided or site-specific characteristics reduce potential aesthetic impacts. Where landscaped buffers are proposed, the setback for off-channel excavation may be reduced to a minimum of 50 feet.

Excavation on the Solano West parcel is set back less than 1,000 feet from nearby I-505; however, the proposed planted windbreak corridor along the eastern boundary of the

parcel would provide the landscape buffer required by PS. 7.5-3. Excavation setbacks to the western border of the Solano West parcel and to the eastern border of the Snyder East parcel would be set back 50 feet and no landscape buffers are proposed along the property lines; this would be technically inconsistent with PS. 7.5-3. However, the intent of PS. 7.5-3 was to require visual buffers between excavation areas and property lines located less than 1,000 feet away if residences were located in adjacent parcels (Morrison, 1996). The project does not propose mining pits within 1,000 feet of a residence.

Section 10-4.424 of the Off-Channel Surface Mining Ordinance (Ordinance) contains setback requirements similar to PS. 7.5-1, 7.5-2, and 7.5-3 of the OCMP, and as indicated above, the project would be consistent with those performance standards.

In addition, the OCMP includes the following policies, which would reduce the visual contrast of mine-related disturbance to the surrounding landscape.

PS. 2.5-21 All final slopes above the groundwater level shall be seeded with a weed-free, drought-tolerant mix of native and non-native grass species as soon as practical after grading.

PS. 2.5-22 Permanent piles of mine waste and/or overburden shall be stabilized and contoured to conform visually with the surrounding topography. Berms and swales should generally parallel and angle downstream towards the creek, instead of perpendicular to it.

PS. 6.5-2 Riparian vegetation, including identified off-channel vegetation, shall be retained or replaced according to a habitat restoration plan prepared by a qualified biologist, consistent with the goals of this plan.

PS. 6.5.5 Off-channel excavations that are proposed to be reclaimed to wetland habitat shall include appropriate features such as: scalloped basin perimeters with extended peninsulas, islands, and stepped benches of various widths at approximately three (3) foot vertical intervals both above and below the groundwater level.

PS. 5.5-2 Stockpiles shall be seeded with a vegetative cover to prevent erosion and leaching.

The proposed project generally complies with all of these performance standards. The effectiveness of the proposed management and revegetation of the slopes and stockpiles is evaluated in detail in Sections 4.3, Geology and Soils, and 4.6, Biological Resources, of this DEIR.

IMPACTS AND MITIGATION MEASURES

Project-Specific Implementation of Program EIR Mitigation Measures

Possible impacts related to aesthetics were evaluated in the OCMP EIR. These impacts included effects on existing views or vistas during mining (OCMP EIR Impact 4.10-1), effects on views or vistas following reclamation (OCMP EIR Impact 4.10-2), potential for visual incompatibility with surrounding land uses (OCMP EIR Impact 4.10-3), introduction of light and glare (OCMP EIR Impact 4.10-4), consistency with Yolo County General Plan

policies concerning aesthetics and light and glare (OCMP EIR Impact 4.10-5), and contribution to cumulative visual impacts (OCMP EIR Impact 4.10-6).

Each of these impacts is relevant to the proposed project is evaluated in this section.

The OCMP EIR presented mitigation measures for the impacts related to effects on existing views or vistas during mining, which would reduce these impacts to a less than significant level. Under Mitigation Measure 4.10-1a of the OCMP EIR, individual project would be assessed for their visual impacts and visual screens including berms and vegetation would be required.

These mitigation measures apply to the project and are discussed in Project Impact 4.10-1.

Standards of Significance

The project would have a significant effect on visual resources if it would:

- Substantially affect a scenic area, vista, or view open to the public.
- Create visual incompatibility with surrounding land uses.
- Introduce a negative visual element or create light or glare.

Project-Specific Analysis

Impact 4.10-1

Mining and reclamation activities could adversely impact public views and vistas. This is considered to be a significant impact.

Mining would take place along approximately 2.5 miles of the south bank of the creek in a band 1,500 to 4,000 feet wide. The project site is bounded to the north by a private levee along Cache Creek, to the east by agricultural fields, to the south by SR 16 and agricultural fields and residences, and to the west by I-505 and agricultural fields.

Mining and reclamation activities would alter the visual environment by removing vegetation, modifying topography, generating dust, and creating soil stockpiles and open bodies of water. Pits would be mined to depths ranging from 38 to 70 feet below the ground surface and water bodies would be created in pits mined to depths greater than the depth to groundwater. Most modifications to the site's land form would only be visible from the Solano Concrete Company property by workers and customers using the access roads to the processing plant. The phasing of the proposed project is described in Chapter 3.0, Project Description, and summarized in Figure 3-4.

When the top soil and overburden are being excavated and transported to nearby fields or stockpiles, vehicles and heavy equipment on the site would be visible from SR 16 and I-505. As excavation proceeds and aggregate extraction is conducted at a lower level than

surrounding fields, views of the mining activities from nearby roadways would be partially obscured by the pit walls. When mining of the saturated deposits is conducted, most of the equipment and activities inside the deep mining pit would be obscured from public views, except for the crane-operated dragline. The elongated shape of the crane would be seen as a linear element in views from nearby roadways, but would not be prominent.

Potential intrusion on views from public roadways due to proposed mining and reclamation operations would result primarily from the operation of heavy equipment on haul roads and nearby fields, and the creation of soil stockpiles. Scrapers used to transport aggregate materials to the processing plant would be seen circulating on dirt roads for the duration of the mining operation, unless a conveyor belt were installed as tentatively planned by the applicant for mining during phases III through V (Orrick and Snyder parcels). Heavy equipment traffic on haul roads, and any dust associated with it, would be visible from nearby public roadways; however, dust generation is not expected to be significant because road surfaces would be watered down frequently, eliminating most dust.

From SR 16, views of mining equipment on the site would not be different from existing views of agricultural equipment tilling and discing the site's agricultural fields. If the project were implemented, these agricultural activities would continue to occur in the southern portion of the site, while mining-related activities would occur in the northern portion of the site. This increase in heavy equipment use on the site could be noticed from nearby SR 16, but is not expected to significantly alter the visual character of the area because the view of the mining activities from vehicles traveling along the roadway would be brief and the pieces of equipment would generally appear as small features not visually prominent in the landscape. In addition, the proposed modification to the reclamation of the Farnham West parcel would preclude the necessity of borrowing soil from the unmined southern portions of the Solano Concrete property, and would therefore avoid disturbance to the foreground of views from SR 16.

As I-505 traverses the Solano Concrete site, travelers would have continuous near-range views of aggregate extraction and processing. Active mining operations are particularly visible at the point where I-505 gently rises and crosses Cache Creek. Since a greater number of persons travel on I-505, as compared to SR 16, and better visual access to the site is afforded from I-505, the project would result in a more significant visual impact on views from I-505 than on views from SR 16.

Impact to views from roadways would be primarily from the creation of stockpiles up to 40 feet high during mining of the site. Stockpiles located south of the mining areas during phases I, III, IV and V would be most prominent to viewers traveling along SR 16. Stockpiles proposed to be created during phases II and VII of the project would be most prominent to travelers on I-505. The OCMP includes a provision (PS. 7.5-2) requiring soil stockpiles to be set back a minimum of 500 feet from public rights-of-way and off-site residences, unless alternate measures to reduce potential aesthetic impacts are developed and implemented. All proposed stockpiles would be at least 500 feet away from SR 16 and from off-site residences along SR 16. The stockpile proposed for the Kaupke parcel would be set back more than 500 feet from I-505. The northern portion of the stockpile proposed

for the Solano West parcel would be within 500 feet of the I-505 right-of-way. The planted windbreak corridors proposed for each side of I-505 should provide some visual screening of the stockpile on the Solano West parcel, as required in PS. 7.5-2.

In addition, the OCMP also requires that off-channel excavations be located at least 1,000 feet from public rights-of-way unless a landscaped buffer is provided, in which case the minimum setback is 50 feet (PS. 7.5-3). The excavation areas proposed for the Solano West and Kaupke parcels would be located less than 1,000 feet from I-505. The proposed windbreak plantings along the roadway should provide some visual screening, as required in PS. 7.5-3; however, to reduce impacts on views from I-505, the following mitigation measure should also be implemented.

Mitigation Measure 4.10-1a

Implement Mitigation Measure 4.10-1b of the OCMP Program EIR.

Implementation of this mitigation measure would reduce the impact to a less-than-significant level; however, cumulative visual impacts in the OCMP area would be unavoidable and adverse as documented in the OCMP Program EIR Impact 4.10-1.

Impact 4.10-2

Changes to the site's original character and topography following reclamation activities may result in long-term changes to public views and vistas. This is considered to be a less-than-significant impact.

Upon completion of mining, the mining pits would be sequentially reclaimed to a combination of uses. In general, the northern sections of five of the seven mining areas would be converted to permanent lakes bounded by wildlife habitat zones. The areas adjacent to and south of the reclaimed lakes would be converted to tree crop production. Remaining portions of the mining areas, primarily in the western half of the property, would be reclaimed as agricultural fields for row crop production.

Permanent changes in the landscape would include a lowering of the ground elevation in pit areas, creation of lakes, establishment of row crop and tree crop production fields on lowered agricultural surfaces, and restoration or creation of wildlife habitat areas near the creek. After reclamation is completed, the mining and reclamation activities currently seen from public roadways would be replaced by wildlife habitat areas, lakes, and agricultural uses (tree and row crops).

Following reclamation, there would be alteration of the visual character of the site, but it would not be necessarily adverse. The presence of topographic depressions would serve as evidence of past mining of the area and might influence the visual character of the area. The tree crop production areas would provide a more dense and visually prominent vegetative cover than the current low visual profile vegetation on the site. This would alter the expansive and unobstructed current views of the site, but would also provide more diversity and texture to the landscape and would screen views of the site. The topographic

depressions resulting from the mining activities would not be readily noticeable from SR 16 due to the distance from the mining areas (minimum of 1,900 feet), and the typical travel speed of vehicles using the road. Topographic depressions on the reclaimed areas just west and east of I-505 (Solano West and Kaupke) would be more noticeable, due to its proximity to this roadway (approximately 100 feet); however, the windbreak plantings proposed along I-505 would partially screen views of the site, and mitigate adverse impacts on views from I-505 due to the proposed project.

As reclamation of the site is conducted, the grading and topographical changes from mining would be less evident and views of the lake and proposed vegetation would become accepted as part of the local landscape. OCMP performance standards for revegetation and visual compatibility (PS. 2.5-21, 2.5-22, 6.5-2, and 6.5-5) will reduce impacts from mining and reclamation to a less-than-significant level.

Mitigation Measure 4.10-2a

None required.

Impact 4.10-3

Mining, reclamation, and post-reclamation activities may result in visual incompatibility with surrounding land uses. This is considered to be a less-than-significant impact.

The presence of heavy equipment, soil stockpiles, and excavated pits may visually contrast with land uses surrounding the Solano Concrete property where the primary land uses include agriculture and rural residences. The visual presence of heavy equipment during mining, or the landscape changes after reclamation could appear incompatible with the visual character of surrounding land uses.

The proposed mining areas border Cache Creek and the existing processing plant to the north; rural residential areas to the east, south, and west; SR 16 to the south; and I-505 (which bisects the eastern portion of the site). The proposed mining activities would not visually contrast with the existing processing plant and previously mined areas in the Hutson parcel. The extension of mining activities to the remainder of the Solano Concrete property would introduce the visual presence of mining activities closer to nearby agricultural uses.

In general, the appearance of active mining resembles agricultural operations that occur within the project surroundings, and include the use of heavy equipment and affect many acres of ground. One significant difference is that agriculture generally creates surface disturbance only, while mining creates several topographical changes including excavation pits, stockpiles, and depressed agricultural fields. The creation of pits and stockpiles during mining would generally not constitute a conflict with surrounding land uses if set back a certain distance from property lines (e.g., 1,000 feet as required by OCMP PS. 7.5-2 and 7.5-3).

Post-reclamation, depressed fields reclaimed to agricultural crops would be generally consistent with the surrounding agricultural uses, allowing a visual continuity of the organized planting of cultivated fields, even if occurring at different topographic levels. The vegetation mass provided in the tree crop areas would somewhat contrast with the low visual profile of vegetation on adjacent parcels, but would also provide more diversity and texture to views of the site. This impact is considered to be less than significant.

Mitigation Measure 4.10-3a

None required.

Impact 4.10-4

Light and glare may be created from nighttime mining operations. This is considered to be a less-than-significant impact.

In recent years, highway projects and resurfacing are often conducted at night to avoid disruption to traffic. Since asphalt cools quickly, it must be delivered for use soon after it is mixed, and therefore, hot asphalt plants are required to operate during the night.

Night lighting of mining facilities and headlights of heavy equipment transporting materials to and from the plant could be seen by occupants of nearby residences and travelers using SR 16 and I-505. Since nighttime operation is expected to be infrequent, and residences are located at least 1,500 feet from mining areas and haul roads, impacts from light and glare would not be significant. In addition, any visual impact from light and glare would be minimized by OCMP PS. 2.5-10.

Mitigation Measure 4.10-4a

None required.

4.11 CULTURAL RESOURCES

4.11 CULTURAL RESOURCES

INTRODUCTION

This section examines potential impacts on cultural resources as a result of on-site excavation proposed by the project. The cultural resources setting is based on cultural resources investigations previously prepared for the project site, NOP response letters from the Northwest Information Center at Sonoma State University, and review of the Technical Studies prepared for the lower Cache Creek Resource Management Plan (NHC, 1995).

SETTING

Description of Regional Environment

Rocks in the planning area vary from marine sandstones to nonmarine sands and gravel, and range in age from Late Cretaceous to recent. Some of these rocks are reported as being fossiliferous. However, fossil localities in the Cache Creek area are scarce and their position in the valley is not predictable.

Cache Creek is located within the territory once inhabited by Patwin people. The Patwin were nonagrarian people living on high ground next to watercourses in the lower valleys, in an area with abundant game and other food sources. Their subsistence was based on hunting, fishing, and gathering of acorns, berries, and plants (e.g., tule roots, bulbs, buckeyes). Villages were often located along rivers and drainages forming a tribelet. The tribelet consisted of one primary village linked to several satellite villages, through shared territory. The Patwin population declined dramatically in the first years of contact with Europeans.

The European presence in the area intensified under Mexican control with the establishment of the mission system and the grant of large parcels of land to Mexicans and Americans. In 1842, William Gordon moved his family from New Mexico onto land along lower Cache Creek, and requested a grant from the local Mexican governor. Gordon's ranch, known as the Guesiosi Grant, was located near the present site of Madison. The ranch boundaries are generally delineated by roads 94B, 19, 89, and State Route (SR) 16 (Michael Brandman, 1995).

During the 1850s, agriculture started in the area, and the valley of Cache Creek became a center of farming and stock raising. Early agriculture in the area focused primarily on stock raising, due to the high prices paid for meat during the Gold Rush years, but also included grain cultivation. The Cache Creek Valley was one of the first areas in the state to develop irrigated agriculture. James Moore started a water diversion project in 1856, building a dam on Cache Creek approximately four miles east of Madison, in Gordon's Ranch. He extended an irrigation ditch, known as the Moore's Ditch, to his settlement located southeast of Gordon's Ranch. Moore's Ditch was initially three and a half miles long but was later extended to nine miles, with one branch toward Woodland and a second to the south. After the construction of Moore's Ditch, other local farmers organized ditch

companies to irrigate agricultural fields in the Cache Creek area. These irrigation projects included: Capay Valley Ditch, a twelve-mile ditch with headworks on the right bank of Cache Creek near Rumsey; Adams Ditch with headworks opposite Capay and serving fields located north of Cache Creek; and Cottonwood Ditch with headworks two miles above Capay on the right bank of the creek and extending for ten miles (NHC, 1995). In 1986, as a result of a survey conducted for the Yolo County Community Development Agency, the Moore's Ditch was formally recorded as a historic structure. Following the 1986 survey, the California Office of Historic Preservation identified the Moore's Ditch (then officially designated HRI #5695-0343-0000) as appearing eligible for listing in the National Register of Historic Places (Johnson, 1996).

Further description of the cultural resources setting of the Cache Creek area is provided in the OCMP Program EIR.

Description of Local Environment

Paleontology

Significant paleontological materials may be present within the alluvial deposits that would be excavated at the project site. A mammoth fossil was found in the bed of Cache Creek northeast of Madison in 1982, approximately 500 feet north of the Hutson parcel. Mammoth tusks, four to five molars, and a portion of a skull were collected at this in-stream mining site. It is believed that this fossil was almost certainly eroded out of the older gravels (EDAW, 1996a). This mammoth fossil was collected by a paleontologist at Sonoma State University. Other paleontological materials uncovered during in-stream mining in the vicinity of the site include a large portion of a fossilized tree, which was donated to Yolo County and is on display at the County building in Woodland, California.

In 1992, a portion of another mammoth skull was unearthed during off-channel mining activities at the Hutson parcel in the Solano Concrete property. Upon discovery of the skull, excavation activities were suspended and the County Community Development Agency was notified of the find. A paleontologist from the University of California at Berkeley was allowed to inspect and remove the mammoth skull.

1978 Cultural Resources Survey

In the fall of 1978, Archaeological Consulting and Research Services, Inc. (ACRS) surveyed areas along the southern bank of Cache Creek for cultural resources. The areas surveyed encompassed roughly the northern half of the land Solano Concrete proposes to mine. During this survey the ACRS team discovered and recorded an archaeological site (Yol-69) consisting of a oval-shaped area of approximately 300 meters north-south by 150 meters east-west. During the surface survey of this site, ACRS staff found chert and obsidian cores, as well as ground stone fragments, burned bone, shell fragments, fire-cracked rocks, obsidian flakes and scrapers, clam disk beads, animal bone, pestles, and a *Haliotis* pendant (Holman & Associates, 1993; California Archaeological Inventory, 1993). The ACRS team also identified a site, Yol-70, about 3,000 meters northwest of the Solano Concrete property. Yol-70 is a large habitation site with stone, bone, and lithics on the surface. Other artifacts observed included obsidian projectile point fragments, chert

and obsidian cores, and flakes and shell fragments. A single fragment of a human skull was found on the surface, suggesting that burials may have occurred at the site (Holman & Associates, 1993).

1993 Records Search

In January 1993 a records search was conducted by the California Archaeological Inventory (CAI) at the Northwest Information Center, Sonoma State University, for Solano Concrete. The records search, conducted for a proposed gravel mining site near Madison, indicated that the area contained the Yol-69 prehistoric archaeological site. The CAI records search also indicated that only a portion of the site had been surveyed and that additional prehistoric resources could potentially be present within the unsurveyed area because, in this portion of Yolo County, prehistoric archaeological sites are usually located on terraces adjacent to watercourses. It was recommended that an archaeologist be retained to inspect Yol-69 and the unsurveyed portion of the mining site, and determine potential impact from mining activities. In addition, the records search indicated that no historic properties within the proposed mining areas were listed with State and Federal Inventories (CAI, 1993).

1993 Cultural Resources Survey

In March 1993, Holman & Associates conducted a surface survey of the areas proposed to be mined and located to the south of the area previously surveyed by ACRS. The area surveyed consisted of three segments: 1) the *west segment* located to the west of the Hutson property line and encompassing the plant site and the portion of Solano Concrete's property west of I-505; 2) the *central segment* encompassing of the southern portion of the Farnham West parcel; and 3) the *eastern segment* extending east from the Farnham East Parcel to the easternmost boundary of the Solano Concrete property. The Hutson and the Farnham East parcels were not covered during this survey.

The Yol-69 site was relocated by the survey team to check the accuracy of the previous survey, and to assess any changes since the 1978 survey. It was determined that the site conditions and location generally conformed to the description supplied in the site record. Items observed on the surface included clam shell beads, numerous obsidian flakes, fire cracked rock, chert flakes, and animal bone. None of this material was collected and the exact boundaries of the site were not established, but a stake was placed in the presumed north end of the site. The survey team observed cultural materials for at least 250 meters south of the stake, and at least 75 meters to both the east and the west. From an inspection of the types of artifacts discovered on the surface, it appears that a full range of activities occurred at these locations which are typical of a larger village used by the Patwin Indians. Typically, these types of archaeological deposits, known as midden, can contain artifacts and ecofactual materials (e.g., remains of plants, birds, and fish eaten by the residents); hearths and remains of structures (such as individual and group family houses and dance houses); and human skeletal remains (Holman & Associates, 1993).

During the survey of the eastern segment of the Solano Concrete's property, a concentration of archaeological material (including groundstone fragments, and chert

flakes and cores) was found along a north-south dirt road located south of Yol-69. It is likely that this concentration of cultural resources could be related to Yol-69; therefore, Holman & Associates recommended that until the boundaries of Yol-69 can be established more conclusively, the site's boundaries should be expanded to include the archaeologic concentration along the dirt road.

Isolated stone artifacts were found throughout the remainder of the surveyed area, wherever vegetation allowed inspection of the ground surface. These isolated discoveries are typical of an areas where two village sites (Yol-69 and Yol-70) are located in such close proximity. These artifacts were described as "background chatter," probably resulting from activities outside the camp or from travel between Yol-69 and nearby Yol-70. In most instances, the material was found in isolation, such as a few shell pieces found in the Kaupke Parcel (in the west segment of the area surveyed), scattered groundstone fragments found in the Snyder West Parcel (in the western portion of the east segment surveyed), and a point found in the easternmost portion of the Snyder East Parcel (in the east segment of the area surveyed).

In addition to isolated historic cultural resources, such as glass and china fragments, found in several of the parcels surveyed, two noticeable concentrations of historic resources were observed during the survey.

One of these concentrations was located on the Snyder West Parcel (located on the western portion of the east segment) and consisted of white China ceramic material, blue transfer-print ceramics, clear and dark glass fragments, one or two "Mocha ware" ceramics, several brick fragments, and recent trash. Since blue transfer-print ware was popular in the mid-1800s and declined in use during the 1850s, and white ironstone China was popular from the late 1840s onward, the suggested dating of these historic resources is around 1850. The second concentration of historic resources was found in the southeastern corner of the Snyder East Parcel (the east segment of the area surveyed), on the southeast side of the canal. The soil in this area was disturbed and reddish in color and the surface contained fragments of glass and ceramics.

The historical resources observed in the area surveyed are consistent with historic accounts of an 1840s occupation by the settler Gordon. Other historic resources that might be uncovered in the area include privies, garbage areas, artifacts, and fragments of structures. No architectural features associated with historic occupation were noted during the site survey; surface deposits observed were typical of remains of historic occupation of an area which has been heavily modified by farming and/or ranching activities (Holman & Associates, 1993).

1995 CCRMP Technical Studies

A review of cultural resources studies prepared for properties within the Cache Creek valley revealed the existence of historical irrigation canals throughout the area. The Technical Studies prepared for the Cache Creek Resource Management Plan (NHC, 1995) include a map showing the extent of canal development in the area in 1915 and 1987. The

1915 information is based on USGS topographic mapping and the 1987 information is based on a Yolo County Flood Control and Water Conservation District (YCFCWCD) Distribution System Map. As indicated in the Technical Studies map, in 1915 a ditch named Old Capay Canal traversed the area between Esparto and Cache Creek in a west-east direction. Apparently, the Old Capay Canal was included in the 1915 USGS map but not in the 1987 YCFCWCD map. As shown in the Technical Studies map, the Old Capay Canal alignment extends east from a point on SR 16 located west of the town of Esparto to a point on Interstate (I) 505, generally running parallel to, and south of Cache Creek. Based on this map, it appears that this old historic canal traverses the portion of the Solano Concrete property located west of I-505 in a west-east direction. Apparently the Old Capay Canal was previously named the Cottonwood Ditch. An earlier publication, the 1879 *Illustrated Atlas and History of Yolo County*, shows the Cottonwood Ditch in the same location as the Old Capay Canal shown on the 1915 map (Gilbert, 1879). A study conducted on irrigation development in Yolo County reported that, in 1880, the Cottonwood Ditch was in "excellent repair" and provided irrigation for 200 acres of alfalfa fields (NHC, 1995). In 1901, a report prepared for the U.S. Geological Survey by Albert Chandler indicated that the Cottonwood Ditch was no longer in use.

Historic Resources Information System

In response to the Notice of Preparation of this EIR, Yolo County received a letter from the Historical Resources Information System (HRIS), located in Sonoma State University, which indicated that the project site contains one archaeological site (Yol-69), and is adjacent to another (Yol-70), and that a study of the unsurveyed portion of the site was recommended. In addition, the letter indicated that the project site is adjacent to a recorded historic resource (HRI #5695-0343-0000), known as the Moore's Ditch. The 1986 Yolo County Historic Resources Survey identified the Moore's Ditch as appearing eligible for listing in the National Register of Historic Places, and it was recommended that, prior to commencement of project activities, a historian familiar with Yolo County history should assess the current status of the ditch to determine how project activities would affect the ditch and its setting (HRIS, 1996).

1996 Cultural Resources Survey of the Farnham East Parcel

An archaeological study was conducted by Holman & Associates in March 1996 covering the Farnham East parcel, the last portion of the Solano Concrete site which had not been previously surveyed. At the time of the field survey, a one-foot high wheat crop covered most of the parcel's ground surface. The surface inspection of the Farnham East parcel was restricted to the furrows between the rows (approximately five percent of the actual ground surface). With the exception of a fragment found at the southwest portion of the parcel, no other prehistoric materials were encountered. The study indicated that it is likely that this single artifact was "background chatter" from the more intense human activity observed at the nearby Yol-69 site.

1996 Mechanical Subsurface Perimeter Testing of Archaeological Site Yol-69

In March 1996, Holman & Associates conducted mechanical subsurface perimeter testing of Yol-69 to assess the site's location and volume (aerial extent and depth below the

surface). A total of 36 trenches were excavated on a grid pattern in the vicinity of Yol-69. In 15 of the 36 trenches, cultural or ecofactual materials were noted. The materials observed in trenches indicate that the site is about 200 meters wide and 275 meters long on a northeast to southwest axis. Based upon soil color, texture, and the presence of artifactual and ecofactual material in the upper layers, the midden deposit seems to range between 10 centimeters and 150 centimeters below the surface, averaging less than 50 centimeters in depth. The majority of the artifactual material observed (obsidian flakes, shellfish remains, hammerstones, charcoal, chert flakes, and fire altered rocks) was probably derived from the first 30 centimeters below the surface.

The subsurface observations were made based on visual inspection of the trench spoils and the side walls of the trenches; no materials were screened for additional signs of human activities. All trenches were terminated at depths where the underlying clay soils, determined to be culturally sterile, were encountered. Likewise, trenching to determine the perimeters of the site was terminated when yellow clay soils were encountered on the west, east, and south, and when gravel and sandy soils were encountered on the north, along the banks of Cache Creek.

The brown-gray soils, found either in conjunction with artifactual and ecofactual indicators or without them, constituted the "midden" deposits. Soils are described as midden based upon the evidence of human activity and/or alteration of the composition of the soils themselves–human activity may have led to the color change and a change in the texture of these soils (as compared to those around them and below them) by making them more friable (less clay-like) and lighter in color (Holman & Associates, 1996b).

The Holman & Associates report indicates that a true understanding of the midden soils at Yol-69 will require controlled archaeological hand excavation of the site. This process, coupled with the processing of all excavated materials through screens, will aid in the understanding of the process of the midden development and its stratigraphic relationship with surrounding soils, and will reveal information about the culture and dietary regime of the prehistoric people who lived in the region. In addition, the report recommends that a professional surveyor be contracted to plot the perimeter of Yol-69 using a surveying instrument or GPS unit to locate the exact position of the site datum on a topographic map.

Consistency with Applicable Policies, Plans, and Regulations

Federal and State Legislation

On the Federal level, Section 106 of the National Historic Preservation Act of 1966 (NHPA, 16 U.S.C.) and the National Environmental Policy Act of 1969 (NEPA, 42 U.S.C.) regulate the treatment of cultural resources. At the State level, the State Historical Building Code and CEQA regulate the preservation of cultural resources. In addition, treatment of human remains, if found, is regulated by State Health and Safety codes, while the State Penal Code covers the destruction, defacing, or injury of any item or site of archaeological or historical interest. Paleontological resources are protected by the California Public Resources Code 5097.5.

Yolo County General Plan

The Historic Preservation Element of the Yolo County General Plan (included in Exhibit "D" of the General Plan) addresses the County's commitment to preservation of Cultural resources by requiring identification of cultural resources in the County and monitoring of important historical resources identified during the Yolo County Historic Resource Survey of 1986. The General Plan includes the following Historic Conservation (HC) policies that would apply to the proposed project:

HC1 Yolo County shall support a program to identify and preserve Indian sites and other significant archaeological sites and shall encourage development of a demonstration site.

HC2 Buildings and places of historic significance should be conserved.

The proposed project has had a cultural resources survey prepared for the proposed mining and reclamation area, and has thus conformed with HC1's requirement of identifying Indian sites in the area. However, since an evaluation of the cultural significance of the Yol-69 site has not been conducted yet, and since the project, as it is currently proposed, will result in the excavation (and consequently destruction) of cultural sites, the project does not conform with the language in policy HC1 requiring preservation of archaeological sites.

OCMP and Implementing Ordinances

The Aggregate Resource Element of the OCMP includes the following performance standard (PS) that would apply to the proposed project:

PS. 2.5-3: If human skeletal remains are encountered during excavation, all work within 75 feet shall immediately stop, and the County Coroner shall be notified within 24 hours. If any cultural resources, such as chipped or ground stone, historic debris, building foundations, or paleontological materials are encountered during excavation, then all work within 75 feet shall immediately stop and the Director shall be notified at once. Any cultural resources found on the site shall be recorded by a qualified archaeologist and the information shall be submitted to the County.

Based on the findings of the project site survey, it is very likely that cultural resources artifacts would be encountered during excavation of the site. It is also probable that skeletal remains would be found in subsurface soils located within the cultural site identified during the survey. To comply with PS. 2.5-3, all work within 75 feet of any findings of artifacts or human remains would have to be halted immediately until the appropriate authorities are contacted and the resources are evaluated. The OCMP Program EIR recommended modifications to PS. 2.5-3 to require appropriate notification of the Native American Heritage Commission if the human remains were of Native American origin. Measures recommended below to mitigate potential impacts on cultural resources include these requirements, and would therefore ensure the project's compliance with PS. 2.5-3.

Project-Specific Implementation of Program EIR Mitigations

Possible impacts related to cultural resources were evaluated in OCMP EIR Impact 4.11-1. This impact is relevant to the proposed project and is evaluated in this section.

The OCMP EIR presented mitigation measures for the impacts on cultural resources that would reduce these impacts to a less-than-significant level. Under Mitigation Measure 4.11-1a of the OCMP EIR, performance standards of the OCMP would require avoidance of cultural resources if possible, and if not possible, would require evaluation and mitigation of impacts to resources. In addition, the OCMP would require that the appropriate Native American community be notified of the finding of any Native American remains, and that disposition of those remains be agreed upon between the mine operator and the Native American community.

This mitigation measure applies to the project and is discussed in Project Impacts 4.11-1, 4.11-2, and 4.11-3.

Standards of Significance

The project would have a significant effect on cultural resources, if it would:

- Disturb paleontological resources.
- Disturb archaeological resources.
- Disturb historical resources.
- Disturb cultural resources that are either listed of eligible to be listed on the National Register of Historic Places (NRHP); registered or eligible to be registered as a State Historical Landmark; or included in a local inventory of historic properties.
- Have the potential to cause a physical change which would affect unique ethnic cultural values.
- Restrict existing religious or sacred uses within the project area.

Project-Specific Analysis

Impact 4.11-1

Proposed mining activities could disturb paleontological resources. This is considered to be a significant impact.

Recent finds in the area, including the finding of fossilized trees and mammoth skulls in the gravel mined by Solano Concrete, indicate that the Cache Creek area contains geologic

formations consistent with fossil-bearing deposits. Paleontological resources are likely to occur in the project site.

The paleontological finds in the vicinity of the site discovered during aggregate mining activities indicate that similar materials may be present on the site. Given the nature of the alluvial deposits (a high energy, depositional setting) that would be disturbed by mining, it is likely any fossil materials would occur as fragments rather than skeletal assemblages. The potential for the occurrence of significant paleontological materials on the project site is similar to other areas along Cache Creek that are underlain by similar alluvial deposits. Therefore, the project does not present unique potential for occurrence of paleontological resources. However, disturbance or destruction of such materials would be a significant impact of the project.

Mitigation Measure 4.11-1a

Implement Mitigation Measure 4.11-1a of the OCMP Program EIR.

Mitigation Measure 4.11-1b

The applicant shall implement a training program that alerts project employees involved with earth-moving as to the nature of paleontological and archaeological resources in the region, the laws that protect the resources, and responsibilities for reporting potential findings to appropriate authorities. This program shall be developed by a qualified cultural resource professional.

Implementation of these mitigation measures would mitigate this impact to a less-than-significant level.

Impact 4.11-2

Proposed mining activities would disturb archaeological resources. This is considered to be a significant and unavoidable impact

The cultural resources survey performed on the project site identified one extensive archeological site and a few isolated findings of artifacts throughout the project site. Removal of top soil, overburden, and aggregate during Phases IV and VI would disturb and destroy the identified cultural site (Yol-69). Mining of Phase IV is expected to occur from 2011 to 2016, while mining of Phase VI is expected to occur from 2022 to 2026. Mining during the other phases of the project could also destroy potential concentrations of subsurface archaeological material which were not identified during the survey. Since the Yol-69 site is so large, it is expected that isolated areas of archaeologic material would be located throughout the remainder of the site as well.

Soil and aggregate removal from the currently mapped location of Yol-69 could result in the destruction of valuable information and materials associated with the Patwin occupation of this area. Both Yol-69 and Yol-70 (located to the west) probably represent tribelet village centers used over many hundreds of years on a seasonal basis. Based on the artifacts discovered on the surface of these sites, it appears that a full range of activities

occurred at these locations which are typical of a larger village used by the Patwin Indians. Disturbance or destruction of cultural resources contained in the Yol-69 site would result in a significant impact of the project. Cultural resources are nonrenewable resources that may provide important information about past cultures. In general, discovery of cultural resources contribute to the scientific understanding of the cultural ecology of the area, and help to fill gaps in our knowledge of the life ways of the prehistoric people who lived in a region. Archaeological data develops slowly from the work of a great number of researchers, so the accumulation of many small contributions to the database over time can become important.

Soil and aggregate removal from the Yol-69 site could result in uncovering of human remains. Because Yol-69 is such a large site, and the Patwin people had the custom of burying their dead inside their villages, it is likely that the site contains human remains. The presence of human skeletal material in the nearby Yol-70 site also suggests that burials could be uncovered during earth-moving activities at the Yol-69 site.

The OCMP Program EIR recommended the inclusion of a new cultural resources performance standard in the OCMP calling for avoidance of impacts to cultural resources, whenever possible, and an evaluation of the resource found during preliminary site survey. If a resource is found to be an important cultural resource, a mitigation plan shall be prepared and implemented at the beginning of mining operations.

Mitigation Measure 4.11-2a

No mining within the Snyder west parcel (phases IV and VI) shall be conducted until an accurate mapping of Yol-69 is completed, and the site is evaluated by an archaeologist to determine its significance and uniqueness. The following tasks shall be performed:

- *Contract a surveyor to accurately map the cultural resource site on a topographic map, based on information, preliminary map, and recommendations contained in the Yol-69 mechanical subsurface testing report (Holman & Associates, 1996). Upon completion of mechanical testing, the borders of the deposits shall be staked by the archaeologist.*

- *Mapping of the resource shall be completed prior to commencement of mining in mining areas that include the resources.*

- *Register the information obtained, including a map of the Yol-69 site, on State of California Archaeological Site Survey forms for filing at the State Historical Preservation Regional Office located at Sonoma State University. Prepare a professional report with all cultural resources information obtained and submit it for approval to the Northwest Information Center. A copy shall also be sent to Yolo County.*

- *After mapping, an archaeologist shall be contracted to evaluate the Yol-69 site and determine its significance and uniqueness as defined in Appendix K of*

CEQA. A program of in-field evaluation testing shall be undertaken inside the newly recorded borders of Yol-69 to determine its significance. The evaluation of this site shall be extensive enough to guide the development of a mitigation program if the site is found to be significant. If the site is not found to be significant or unique, no archaeological mitigation program, such as in-field data retrieval through hand excavation and recording of findings, will be required. However, an archaeologist must be present during the excavation of this site to monitor for indications of human skeletal remains.

- *If it is determined that the site contains significant cultural resources, an appropriate mitigation program shall be developed based on the information obtained during the site evaluation. This mitigation program shall include an extensive in-field data retrieval through hand excavation. This program of data retrieval must be conducted by an archaeologist and could include but not be limited to professional in-field excavation of a percent of the area to be destroyed by the project to record the artifacts encountered and other data that might contribute to the scientific understanding of the culture and the way of life of the prehistoric people who lived in the region. In addition, an archaeologist must be present during the mining of the portion of the site that was not hand excavated to monitor for any indication of human skeletal remains.*

Mitigation Measure 4.11-2b

Implement Mitigation Measure 4.11-1b.

Mitigation Measure 4.11-2c

Implement Mitigation Measure 4.11-1a of the OCMP Program EIR.

The regular monitoring of mining activities for cultural resources and human skeletal remains, evaluation of the significance of the Yol-69 site, and if the site is found to be significant, the required in-field hand excavation for data retrieval and recording of findings contained in the site would reduce the impact on cultural resources to the degree feasible and to the greatest extent required by law. These measures would also ensure adherence to the new OCMP policy recommended in Mitigation Measure 4.11-1a of the OCMP Program EIR. However, due to the loss of a potentially significant site, this impact remains significant and unavoidable.

Impact 4.11-3

Proposed mining activities could disturb or destroy historical resources. This is considered to be a less-than-significant impact.

Holman & Associates survey team identified two areas of concentration of historic resources: one at the Snyder West Parcel and the other at the southeast corner of the Snyder East Parcel. Future soil removal in these areas could uncover additional deposits of historic materials associated with the early occupation of the area. Implementation of

the OCMP performance standards as modified by Mitigation Measure 4.11-1a of the OCMP Program EIR would adequately mitigate this to a less-than-significant impact.

The Historical Resources Information System has indicated that Moore's Ditch (a recorded historic resource) is adjacent to the project site and could potentially have its conditions or current setting affected by the project activities (HRIS, 1996). During the field survey of the project site, Holman & Associates observed that the dam diverting water from Cache Creek to Moore's Ditch is located approximately one mile east of the project site. Due to this distance, the proposed project is not expected to affect the current setting of Moore's Ditch. In addition, it is possible that excavation in the Solano West parcel could uncover a small segment of the Old Capay Canal, formerly known as the Cottonwood Ditch, an irrigation canal built in the Cache Creek area in the mid-1800s. During the cultural resource survey, however, field investigators did not find any feature discernible as an irrigation canal. It appears that long-term agricultural use of the area has destroyed any remains of this historic canal.

Mitigation Measure 4.11-3a

None required.

4.12 HAZARDS

4.12 HAZARDS

INTRODUCTION

This section evaluates potential public health risks associated with the proposed project. Issues include:

- potential for release of hazardous substances during mining, processing, and/or reclamation;
- exposure of people to hazardous materials due to historic pesticide use;
- drowning hazards to the public due to steep pit slopes; and
- public health hazards due to increases in the mosquito population resulting from open bodies of water.

SETTING

Description of Regional Environment

Land uses on and near the project site consist primarily of agriculture, gravel mining, and residential/commercial in the urban areas of Capay, Esparto, Madison, and Woodland. Public health hazards associated with these land uses consist of pesticide/herbicide applications, storage of hazardous materials[1] (including fuels, lubricants, and solvents), open pit hazards, and mosquito-generating open bodies of water. Public health hazards are also associated with generation and dispersion of air pollutant emissions from processing plants, agricultural activities, and aggregate extraction; these issues are discussed in Section 4.7, Air Quality. Releases of hazardous materials that may result in degradation of groundwater and surface water quality are discussed in Section 4.4, Hydrology and Water Quality.

Descriptions of statues and regulations governing these public hazards are included in the OCMP Program EIR.

Description of Local Environment

Hazardous materials currently used by Solano Concrete for plant operations and mining activities are stored at the plant site. Diesel fuel is stored in one 10,000-gallon above

[1]A hazardous material is "...any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety, or to the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, radioactive materials, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment." (California Health and Safety Code, Section 25501)

ground storage tank at the north end of the plant area. The plant area also includes a "tank farm" that includes storage tanks for gasoline, motor oil, and waste oil, and drums for storage of oil and grease and anti-freeze. Secondary containment with capacity equal to 150 percent of the stored contents is provided for the tank farm and the aboveground diesel storage tank. A 10,000-gallon underground diesel storage tank is located near the center of the plant site, south of the asphalt plant. This tank is operated under an Underground Storage Tank Operation Permit issued by the Yolo County Environmental Health Services. The tank is monitored by a leak detection system that monitors possible differences between input and output.

In addition to the hazardous materials used and stored at the plant site, three 10,000-gallon tanks in the central portion of the plant site are used to store liquid asphalt. The material stored in the tanks has low viscosity at ambient temperature. The material contains a wide variety of organic compounds, including bitumen and benzene which are recognized as hazardous substances by the State of California. Three silos at the site store paving asphalt cement, a petroleum hydrocarbon product.

Management of the hazardous materials at the site is controlled under the Hazardous Materials Business Plan and Hazard Communication Program. Business Plans inventory all hazardous materials stored at a facility and describe emergency measures to be implemented in case of accidents or spills. Hazard Communication Programs inform employees of the hazards associated with the handling of hazardous materials. The Business Plan is updated annually and submitted to the Yolo County Office of Emergency Services in compliance with State regulations requiring such plans. There have been no reported spills from the current storage of hazardous materials at the site (Sarazan, 1996).

A computer data search of the files from local, State, and Federal regulatory agencies responsible for administering regulations pertaining to hazardous materials was conducted for this project. The purpose of the search was to ascertain whether any spills had been reported to public agencies or any regulated underground fuel storage tanks were registered with the appropriate agencies. The results of the search indicated that one underground storage tank was located at the Solano Concrete plant site. The tank was listed in the database as having had a release of petroleum. However, according to County records, the tank site was closed in 1988 after having been removed and the contaminated soils excavated (Sarazan, 1996).

In addition to chemical hazards associated with aggregate mining and processing at the site, agricultural chemicals (some of which are hazardous materials) are used in farming most of the project site. The application of these chemicals is regulated by State and Federal laws and regulations.

The project site includes open water bodies, the result of mining on the Hutson parcel. These open bodies of water have relatively steep side slopes and present potential drowning hazards to unauthorized persons entering the property. The open water bodies

also present breeding habitat for mosquitoes and a potential health hazard related to transmission of infectious diseases.

Consistency with Applicable Policies, Plans, and Regulations

SMARA and Related Regulations

The Surface Mining and Reclamation Act regulations have a number of requirements pertaining to the public health and safety. These requirements relate to slope stability and fertilizer use following completion of mining.

Section 3502(3) requires that "special emphasis on slope stability and design shall be necessary when public safety or adjacent property may be affected." The proposed pit slopes in the wet pits would be 2:1 (horizontal to vertical) or flatter above the summer average low water. Slopes below the summer average low water are proposed at 1:1 or flatter. The stability of proposed slopes is discussed in Section 4.3.

Section 3707(d) requires that the "use of fertilizers or other soil amendments shall not cause contamination of surface or groundwater." Solano Concrete proposes to revegetate the pit side slopes without the use of fertilizers to prevent potential fertilizer-rich runoff from entering the pits.

Yolo County General Plan

The Yolo County General Plan contains policies for the protection of the public health and the environment pertaining to toxic and hazardous materials, oil spills, emergency plans, and emergency response:

S 18 Yolo County shall develop emergency plans for implementation in the event of accident, fire, or flood involving toxic or hazardous materials.

S 19 Yolo County shall cooperate with other agencies in prevention and control of potential oil spills, including coordination with the State Oil Spill Program and this program shall be prescribed for application in local emergency and safety plans, standards, and ordinances.

S 21 Yolo County shall develop, review, and maintain a County Emergency Plan and such Plan shall be a part of the Safety and Seismic Safety Element of this General Plan, as amended, by reference.

S 22 Yolo County shall respond to catastrophic emergencies by:

- Continuing government
- Directing and controlling emergency operations
- Saving lives and protecting property
- Repairing and restoring essential public systems and services
- Protecting and managing use of remaining resources
- Coordinating operations with other jurisdictions
- Establishing emergency operating centers and maintaining communications.

The County has prepared an Emergency Response plan in accordance with the requirements of General Plan policies (McCanta, 1995). Solano Concrete has prepared an emergency response plan as part of their Hazardous Materials Business Plan; the emergency response plan would not conflict with the County plan.

OCMP and Implementing Ordinances

The OCMP contains numerous policies to minimize the potential impacts to the public health from off-channel mining and reclamation activities. The policies and mitigation measures provided in the OCMP Program EIR are listed in other parts of this section. Relevant OCMP policies for the proposed project are listed below.

PS. 2.5-2: The operator shall immediately notify the Community Development Director of any events such as fires, explosions, spills, land or slope failures, or other conditions on the site which could pose a hazard to life or property outside the permitted area. Upon request from any County agency, the operator shall provide a written report of any such event, within thirty (30) days, which shall include, but not be limited to, a description of the facts of the event, the corrective measures used, and the steps taken to prevent the recurrence of the incident. This condition does not supersede nor replace any requirement of any other governmental entity for reporting requirements.

A copy of the operator's approved Business Emergency Response Plans and the approved Spill Prevention Control and Countermeasure Plans shall be submitted to the Yolo County Health Department, prior to the commencement of mining.

The project proponent has prepared a Business Plan inventorying hazardous materials used on the site. The Business Plan does not include notification provisions required in this Performance Standard. While such notification procedures are not required to be included in the Business Plan by the Health and Safety Code, the County could request inclusion of this information in the Business Plan.

PS. 3.5-4: All surface mining operations that propose off-channel excavations below the groundwater level shall develop and maintain a groundwater monitoring program. At a minimum, the program shall consist of three (3) monitoring wells, one up-gradient of the wet pit and two down-gradient. Monitoring wells shall be installed at least six (6) months prior to excavation below the groundwater level. The water level shall be recorded and water quality tests performed for all monitoring wells and submitted to the County prior to commencement of the wet pit mining. The test results shall provide baseline data for future comparison and analysis.

Once wet pit mining has commenced, groundwater levels shall be monitored quarterly, while groundwater quality shall be monitored annually. The analysis of groundwater quality shall include, but may not be limited to, the following: mineral constituents, nitrate, pH, electrical conductivity, turbidity, and total coliform. A report to the County shall be submitted annually regarding the results of the groundwater monitoring program.

The project proponent would need to comply with this Performance Standard, as revised through the OCMP Program EIR mitigation measures. It would be particularly important to ensure that groundwater monitoring would commence six months prior to mining activities.

PS. 2.5-4: During operations, a series of benches may be excavated in a slope. The maximum vertical height between benches shall not exceed ten (10) feet, and all banks shall not exceed 2:1 (horizontal to vertical). Slopes shall not exceed 1:1 (horizontal to vertical) below the summer low water level of exposed groundwater in water filled excavations.

The proposed project conforms with this Performance Standard. However, changes in the Standard, as proposed by the OCMP Program EIR mitigation measures, would require modifications to the proposed mining plan.

PS. 2.5-8: Unnecessary personnel shall be excluded from off-channel excavations. Open pits shall be fenced with a four strand barbed wire fence or the equivalent, prior to the commencement of excavation. Fencing may enclose the property of which the mining site is a part, the mining site, or both. In addition, signs shall be installed at the project boundaries and access road, indicating that the excavation area is a danger zone.

The project proposes fencing around the project boundary and limiting access to the plant site by a gate at the access road. These measures would not be sufficient to comply with this Performance Standard.

PS. 2.5-16: Except where benches are used, all banks above groundwater level shall be sloped no steeper than 2:1 (horizontal to vertical). Proposed steeper slopes shall be evaluated by a slope stability study, prepared by a qualified engineer. Slopes below the groundwater level shall be no steeper than 1:1 (horizontal to vertical).

The proposed project conforms with this Performance Standard. However, changes in the Standard, as proposed by the OCMP Program EIR mitigation measures, would require modifications to the proposed mining plan.

PS. 2.5-18: All final reclaimed slopes shall have a minimum safety factor equal to or greater than the critical gradient as determined by an engineering analysis of slope stability. Final slopes less than five (5) feet below the groundwater shall be designed in accordance with the reclaimed use. Reclaimed wet pit slopes located five (5) feet or more below groundwater level shall not exceed 1:1 (horizontal:vertical) in order to minimize the effects of sedimentation and biological clogging on groundwater flow and to prevent stagnation.

The proposed project conforms with this Performance Standard. However, changes in the Standard, as proposed by the OCMP Program EIR mitigation measures, would require modifications to the proposed mining plan.

PS. 3.5-14: Reclamation plans including ponds, lakes, or other bodies of water shall be referred to the Yolo County Flood Control and Water Conservation District and the Mosquito Abatement District for review and comment prior to approval.

The County would need to ensure that reclamation plans be submitted to the District for review and information.

IMPACTS AND MITIGATION MEASURES

Project-Specific Implementation of Program EIR Mitigations

The OCMP EIR evaluated the potential impacts of mining and reclamation activities related to hazards to public health. These impacts included potential health effects related to the release of hazardous materials (OCMP Impact 4.12-1), historic use of pesticides (OCMP Impact 4.12-2), drowning hazards (OCMP Impact 4.12-3), and mosquito breeding (OCMP Impact 4.12-4). The OCMP EIR presented mitigation measures, where necessary, to reduce the identified impacts to a less-than-significant level.

All of the impacts related to the exposure of people and the environment to health and safety hazards apply to the proposed project and are discussed in the following section. Implementation of OCMP Mitigation Measures 4.12-1a and 4.12-3a is required to reduced the impacts of releases of hazardous materials (Project Impact 4.12-1) and drowning hazards (Impact 4.12-3). Following compliance with these requirements, the project would be consistent with the OCMP and OCMP EIR.

Standards of Significance

The project would have a significant health hazard effect if it would result in:

- Increased potential for accidental explosion or release of hazardous substances (including but not limited to oil, pesticides, chemicals, or radiation).
- Possible interference with an emergency response plan or emergency evacuation plan.
- The creation of any health hazard or potential health hazard.
- Exposure of people to existing sources of potential health hazards.
- Increased fire hazard in areas with flammable brush, grass, or trees.

Project-Specific Analysis

Impact 4.12-1

Accidental releases of fuels and related compounds could affect public health and the environment. This is considered to be a significant impact.

Mining and reclamation activities and plant operations at the project site include the use of hazardous materials. During mining and reclamation, on-site fueling and maintenance activities could result in spillage of fuels, lubricants, and/or solvents both on the ground and in or near the open wet pits. Such spillage may not result in emergency conditions (i.e., imminent danger to life) but could affect soil and water quality and possibly worker safety. Spillage of liquid or gaseous hazardous materials at the plant site could also result in adverse effects to soil and groundwater quality and affect the health and safety of workers.

During mining, the use of pesticides, herbicides, and other materials associated with agriculture on the site would be reduced; where reclamation is to open water/wildlife habitat replacing agriculture, use of such chemical compounds would be essentially eliminated. The water quality effects of spillage or upsets associated with hazardous materials are discussed in Section 4.4, Hydrology and Water Quality.

The OCMP Program EIR Mitigation Measure 4.12-1a includes revised OCMP policies to require that no fueling of rubber-tired vehicles occur within 100 feet of open bodies of water and that the Storm Water Pollution Prevention Plan for each operator includes provision for releases of fuels during fueling activities for draglines.

Mitigation Measure 4.12-1a

Implement OCMP Program EIR Mitigation Measure 4.12-1a.

Compliance with the policies of the OCMP, as amended by OCMP Program EIR Mitigation Measure 4.12-1a, would reduce this impact to less than significant.

Impact 4.12-2

Workers may be exposed to agricultural chemicals during mining and reclamation activities. This is considered to be a less-than-significant impact.

Historic pesticide, herbicide, fungicide, or fertilizer use on the project site may have resulted in accumulation of hazardous materials in the shallow soils. Historic chemical uses may have included DDT and toxaphene prior to the 1970s. These chemicals are persistent and bio-accumulative in the environment and workers may be exposed to these chemicals during removal of topsoil, as well as during reclamation of mined areas. However, based on data collected on the lands subject to Solano Concrete's short-term application in 1995, the planning area soils do not appear to contain hazardous levels of agricultural chemicals or levels exceeding U.S. EPA's Preliminary Remediation Goals (PRGs) for site cleanup to protect the health and safety of the public.

In 1995, Solano Concrete collected six random soil samples from a 113-acre site (Farnham West parcel on property owned by Solano Concrete Company), which was the subject of a short-term mining application to Yolo County. The soil samples were collected (Kleinfelder, 1995) to determine the potential presence of pesticides and herbicides in the near surface soils. The results of the analyses of the samples indicated that the chemicals were present in three of the six locations. DDE, a breakdown of DDT (a pesticide banned in the 1970s), was detected at 2.0, 2.4, and 3.4 parts per billion. The regulatory threshold for DDE, DDD, and DDT is 1,000 parts per billion; above that threshold, the soils would be considered a hazardous waste according to CCR Title 22. The pesticide concentrations also did not exceed the PRGs (PRGs for DDT, DDD, and DDE range in concentrations from 1,200 to 1,900 parts per billion).

The fields from which the samples were collected had historical crop rotation with grains, corn, and tomatoes, similar to the crops on the project site. The soil sample results from the Solano Concrete fields are therefore considered representative of soil quality conditions on the project site.

Mitigation Measure 4.12-2a

None required.

Impact 4.12-3

Open pits have the potential to be attractive nuisance hazards. This is considered to be a significant impact.

Pits would be created within the project site as a result of aggregate extraction activities. The pits would gradually become deeper as mining progressed and have a proposed minimum of 2:1 slopes above the groundwater table and 1.5:1 below the average low groundwater level. Trespassers could fall into the pits during mining, reclamation, and after reclamation has been completed. Falling into reclaimed pits where water would be present could result in drowning. Potential victims would most likely be children attracted to the reclaimed pits. If slopes were steeper than 2:1, it would be difficult for anybody falling into the pit to crawl out.

To minimize attractive nuisance hazards, Solano Concrete has proposed to post signs and fence the property perimeter indicating that the project site is private property and a danger zone. Access to the plant is and would be controlled by a gate.

To address potential drowning hazards from the wet pits, slopes above the average summer low groundwater level would be required to be constructed at minimum of 2:1, and slopes below the average summer low groundwater level would be a minimum of 2:1. The OCMP policies and OCMP Program EIR Mitigation Measure 4.12-3a provide for 2:1 slopes from the average summer low groundwater level and five feet below the water level to provide opportunities for trespassers to crawl out of a pit.

Mitigation Measure 4.12-3a

Implement OCMP Program EIR Mitigation Measure 4.12-3a.

Adherence to the OCMP policies and OCMP Program EIR Mitigation Measure 4.12-3a would reduce this impact to less than significant.

Impact 4.12-4

Mosquito populations may increase due to expanded open bodies of water. This is considered to be a less-than-significant impact.

The creation of open bodies of water results in the possibility of providing additional breeding ground for mosquitoes. Mosquitoes typically breed in ponds and marshlands with

stagnant water and along the shores of lakes with shallow water. Open, clear bodies of water, subject to wind action, generally do not constitute a significant mosquito breeding habitat.

Adherence to OCMP policies would mitigate the potential for mosquito generation. The OCMP policies require relatively steep slopes in wet pits and referral of reclamation plans to the Sacramento-Yolo Vector and Mosquito Abatement District (District) for review.

Mitigation Measure 4.12-4a

None required.

5.0 CEQA CONSIDERATIONS

CHAPTER 5.0 CEQA CONSIDERATIONS

5.1 CUMULATIVE IMPACTS

CEQA Guidelines require that an EIR must consider the cumulative impacts of a project. A cumulative impact is considered the change in the environment from the incremental significant impact of a project when added to impacts generated by other closely related past, present, and probable future projects.

The proposed project is one of five long-term applications that the County has received for mining and reclamation within the OCMP planning area; in addition to those five applications, the County also expects that existing mining operations that have not submitted long-term applications would be mining and reclaiming lands in the planning area in the short term. For the next 50 years, the County estimates that about 2,887 acres would be mined from the planning area resulting in the removal of about 216 million tons of aggregate. The reclamation of the mined lands would result in the creation of eleven permanent lakes, agricultural uses, and habitat; this would include the Solano Concrete project. The OCMP Program EIR evaluates the potential impacts from all the long-term mining and reclamation applications. The impacts identified in the OCMP Program EIR therefore constitute the cumulative impacts analysis for this project-specific DEIR.

The OCMP Program EIR identified numerous impacts that would be unavoidable, should all the cumulative projects be implemented within the planning area. The unavoidable adverse impacts were identified as:

- Permanent loss of agricultural land (OCMP EIR Impact 4.5-2).
- Temporary loss of agricultural productivity (OCMP EIR Impact 4.5-3).
- Cumulative loss of productive agricultural land (OCMP EIR Impact 4.5-7).
- Emissions of PM_{10} (OCMP EIR Impact 4.7-1).
- Emissions of ozone precursors (ROG and NO_X) (OCMP EIR Impact 4.7-2).
- Cumulative impacts to air quality (OCMP EIR Impact 4.7-3).
- Increase in vehicle trips (OCMP EIR Impact 4.8-2).
- Impacts to views or vistas (OCMP EIR Impact 4.10-1).

The OCMP Program EIR identified other significant impacts that cumulatively would be significant in the planning area. However, the OCMP Program EIR provided mitigation measures for those impacts to reduce them to a level of less than significant. The Solano project would contribute proportionally to the cumulative impacts and would similarly be

responsible for a fair share of the cumulative mitigation measures. These measures are discussed in this EIR.

5.2 GROWTH-INDUCING IMPACTS

CEQA requires that the growth-inducing impacts of a project be addressed in an EIR [Section 21100(a)(4)]; the Guidelines state that a project is growth-inducing if it could "foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." Included in the definition of growth-inducing effects are those that would remove obstacles to population growth. Examples of growth-inducing actions include developing service areas in previously unserved areas, extending transportation routes into previously undeveloped areas, and establishing major new employment opportunities.

The OCMP Program EIR evaluated whether mining and reclamation activities in the OCMP planning area would induce growth. That EIR discussed whether the cumulative projects combined would 1) encourage growth, 2) remove obstacles to population growth, or 3) affect existing community facilities. The OCMP Program EIR analysis indicated that the cumulative projects would not induce growth in the planning area. Since the cumulative projects in the OCMP planning area would not be growth-inducing, the proposed project would also not be growth-inducing.

5.3 ALTERNATIVES

The State CEQA Guidelines require that a range of reasonable alternatives to a proposed project, or alternative location(s) of a proposed project, which could feasibly attain the objectives of the project, be described and evaluated in a comparative fashion. The CEQA Guidelines also require that the environmentally superior alternative (including consideration of the proposed project) be identified. If the alternative with the least environmental impact is the "No Project" Alternative, then one of the remaining alternatives is to be designated as the environmentally superior alternative. The CEQA Guidelines [Section 15126(d)] require the following:

- The EIR must describe a range of reasonable alternatives to the project, or to the location of the project, which could feasibly attain the basic objectives of the project, and evaluate the comparative merits of the alternatives.

- If there is a specific proposed project or a preferred alternative, explain why the other alternatives were rejected in favor of the proposal if they were considered in developing the proposal.

- The specific alternative of "no project" shall also be evaluated along with the impact. If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.

- The discussion of alternatives shall focus on alternatives capable of eliminating any significant adverse environmental effects or reducing them to a level of insignificance, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.

This project-specific DEIR is being prepared as a "tiered" EIR, which means that it "tiers" off the analysis of the Program EIR for the Off-Channel Mining Plan (OCMP). It also refers to, and incorporates by reference, the Cache Creek Resources Management Plan (CCRMP), where applicable.

The Program EIR for the OCMP considered several alternatives, including:

- Proposed Project (OCMP dated 30 October 1995);
- No Project (Existing Conditions);
- No Project (Existing Maximum Allocation);
- No Mining (Alternative Site, Importation of Finished Product);
- Plant Operations Only (Importation of Raw Materials);
- Shallow Mining (Alternative Method and Reclamation);
- Decreased Mining (Restricted Allocation);
- Decreased Mining (Shorter Mining Period); and
- Agricultural Reclamation (Reclamation to 80 Percent Agriculture).

The Program EIR for the CCRMP considered the following seven alternatives:

- Proposed Project (CCRMP dated 4 December 1995);
- No Project (Existing Conditions);
- No Project (Existing Maximum Allocation);
- No Mining (Alternative Site, Importation of Finished Product);
- Widened Channel Bank (Streamway Influence Boundary);
- Deepened In-channel Mining (Below Theoretical Thalweg);
- Gus Yates Alternative (Floodplain Alternative);

With the exception of the last two alternatives listed for the CCRMP, each of these alternatives was analyzed at the same level of detail as the proposed plans in the OCMP and CCRMP Program EIRs. (The Deepened In-channel Mining Alternative was rejected as infeasible, and the Gus Yates Alternative was analyzed comparatively.) Because a considerable amount of analysis of possible alternatives to wet pit off-channel mining has been prepared and considered in the two program EIRs, the alternatives analysis for this project does not repeat the analysis of moving the proposed mining activities outside the mining area, but instead concentrates on analyzing five different project-level alternatives. The project-level alternatives analyzed herein are as follows:

Alternative 1: No Project
Alternative 2a: Shallow Mining (Expanded Area)
Alternative 2b: Shallow Mining (Decreased Volume)
Alternative 3a: Decreased Mining (Limited Extraction Rate)
Alternative 3b: Decreased Mining (Limited Extraction Period)

The project-level alternatives analysis evaluates each impact area identified for the project in Chapter 4.0 in the context of each alternative. The differences in impacts caused by the project compared with the impacts resulting from the alternatives in each impact area are identified. Additional impacts expected to be caused by the alternative, that might not have resulted from the project, are also identified. A discussion of consistency with project objectives is also provided for each alternative. The project objectives are as follows:

- Continued extraction of aggregate resources for the processing and sale of aggregate products;

- Supply raw aggregate product (33,629,800 tons) to a processing plant in the western portion of project site to provide enough aggregate to maintain mining and processing operations for approximately 30 years;

- Concentrate mining operations in off-channel mining areas, in general support of the recommendations of the OCMP and CCRMP to move mining out of the Cache Creek channel;

- Reclamation of all mined lands in accordance with the proposed reclamation plan that would provide for creation of permanent lakes and wildlife habitat and the establishment of tree crops and conventional intensive agriculture;.

- Continued employment of approximately fourteen mining and processing personnel.

NO PROJECT ALTERNATIVE

Alternative Description

Under the No Project Alternative, the County would not approve the long-term mining and reclamation plans submitted by Solano Concrete. No additional off-channel mining or reclamation would occur, beyond the mining and reclamation that is allowed under the short-term mining permit approved by the County in 1995. The environmental impacts of this alternative were thoroughly analyzed in the certified *Solano Concrete Company, Inc. Short-Term, Off-channel Mining Permit Application EIR*. The short-term off-channel mining permit allows the extraction of approximately 2.3 million tons of aggregate from the 35-acre northern portion of the Farnham West parcel over a period of three years. This amount of mining would be completed by approximately October 1998.

The short-term permit allows the excavation of the southern 65 acres of the Farnham West parcel as a "borrow" area for backfill used to reclaim the mined area to agricultural crop production. The reclamation that has been approved under the short-term permit would

result in a lowering of the land surface for the mined and "borrowed" areas, and approximately 16 acres of agricultural land would be occupied by slopes, setback areas, and access roads. In addition, the existing permit allows the restoration of an unmined 3.1-acre area of the northern portion of the project site to oak woodland and savanna, proposed as a "net gain" to the County.

Following the completion of the mining allowed under the short-term permit, mining at the project site could continue under existing in-channel permits. It is assumed that production at the plant would continue at the currently permitted rate of 772,400 tons per year. Although this worst-case scenario is used to define the assumed level of activity at the plant, it is unlikely that the maximum permitted production level could be sustained after the aggregate mined under the short term off-channel permit was exhausted.

Under the No Project Alternative, in-stream aggregate mining would also be expected to continue. The amount of in-stream mining would be limited by the permitted annual production rate and the amount of aggregate resources available. The amount of minable in-stream aggregate is controlled by the provisions of the 1979 ordinance that prohibit in-stream mining below the "theoretical thalweg." Therefore, the amount of minable in-stream aggregate would be limited to annual replenishment deposited above the theoretical thalweg.

Consistency with Project Objectives

The No Project Alternative would not meet the proposed project objective of producing PCC-grade aggregate from the proposed mining area. The objective to move in-channel mining onto off-channel areas would not be met. Continued employment of 14 people may not occur.

Impacts of Alternative

Land Use

The No Project Alternative would be inconsistent with the OCMP (Impact 4.2-1) and with the Yolo County General Plan (Impact 4.2-2). If the OCMP and CCRMP were adopted by the County, forming the Cache Creek Area Plan (a supplement to the General Plan), then the No Project Alternative would be inconsistent with the OCMP and the General Plan, since it would allow continued in-channel mining. The No Project Alternative would not require rezoning of portions of the project site from Agricultural Preserve (A-P) or General Agriculture (A-1) to add a Sand and Gravel (SG) overlay, or potentially conflict with zoning regulations, as would the proposed project (Impact 4.2-3). The No Project Alternative would not conflict with Williamson Act regulations or contracts (Impact 4.2-3). The No Project Alternative would be consistent with SMARA and its regulations (Impact 4.2-4), with the draft Yolo County Habitat Conservation Plan (Impact 4.2-5), and with the Regional Water Quality Control Basin Plan (Impact 4.2-6), as would the proposed project.

The No Project Alternative would be consistent with agricultural policies of the Yolo County Resource Conservation District, since all mined lands would be reclaimed to agricultural

uses, unlike the proposed project, which would not be consistent with the policies (Impact 4.2-7). The No Project Alternative would be potentially incompatible with the planned Recreation Node in the northwestern portion of the mining property (assuming the CCRMP is adopted), as would the proposed project (Impact 4.2-8). The proposed project has offered to dedicate reclaimed lands in mining phase IV and V for the future Recreation Node; under the No Project Alternative no reclaimed lands would be offered to the County. The No Project Alternative would result in an intensification of land use for a smaller area (approximately 116 acres) than for the proposed project (approximately 598 acres) (Impact 4.2-9).

Geology and Soils

Under this alternative, deep pit mining of off-channel areas at the project site would occur on 35-acres of the Farnham West parcel within proposed Mining Area I. The mined areas would be refilled with processing fines and overburden. The backfill would be raised to levels above the groundwater table and restored to agriculture. Potential impacts described for the proposed project related to seismic hazards (Impact 4.3-1) would be reduced. The creation of slopes due to mining and the associated slope stability and erosion impacts (Impact 4.3-2) would be similar during the mining period. However, a reduced area of slopes during mining in the post-reclamation period would be created and the potential for erosion would be reduced. The potential for liquefaction during the mining and reclamation period would be similar. However, under this alternative, the potential for failure of reclaimed lands into open water bodies during the post reclamation period would be reduced. The impact of decreased availability of aggregate (Impact 4.3-3) would be reduced under this alternative as less aggregate would be mined. The potential for pit capture (Impact 4.3-4) would be reduced under this alternative. Although the setback from the creek, required for the proposed project and under this alternative, would be similar, the amount of area vulnerable to pit capture would be reduced. The length of time the wet pit was open would be reduced as well.

Hydrology and Water Quality

No significant changes in hydrologic conditions at the project site would occur under the No Project Alternative. The potential for flooding (Impact 4.4-1) would be present, but the acreage of lowered surfaces subject to flooding would be reduced. Evaporation impacts (Impact 4.4-2) would be reduced, but not eliminated, as mining would expose groundwater only during the mining period. Significant impacts identified for the proposed project, related to potential water quality degradation associated with equipment operated near lakes in the mining pits (Impact 4.4-3) would be similar, but would occur over a shorter period relative to the proposed project. The potential post-reclamation water quality degradation (Impact 4.4-4) would not occur under the No Project Alternative. Impacts to groundwater flow (Impact 4.4-5) would occur, but a reduced volume of the aquifer would be affected. Drainage patterns would be changed (Impact 4.4-6) as the result of off-channel mining, but the area affected would be reduced. Significant impacts associated with inundation, lowered agricultural surfaces (Impact 4.4-7) and water supply (Impact 4.4-8) would not occur.

Agriculture

Disturbance of the existing agricultural fields at the project site would not occur nor would impacts related to temporary and permanent loss of agricultural production occur beyond currently permitted levels (Impacts 4.5-1, 4.5-2, and 4.5-8). However, the proposed project would not require the disturbance of borrow area in Farnham West and Hutson parcels needed for reclamation under the current approved reclamation plans. The impact of loss of agricultural soils (Impact 4.5-3) would be reduced as mining would be reduced. The identified impacts to agricultural land and operations due to the proposed project (Impact 4.5-4) would be reduced under this alternative. The amount of lowered reclaimed surfaces (Impact 4.5-5) would be reduced. Nonrenewal of Williamson Act contracts (Impact 4.5-6) would be similar as notices of nonrenewal have already been filed. Measures to improve nonirrigated lands or Class III and IV soils elsewhere, or to enroll other lands in Williamson Act contracts or conservation easements (Mitigation Measure 4.5-2), would not be implemented. Potential impacts related to tree crop production (Impact 4.5-7) would be reduced.

Biological Resources

Under the No Project Alternative, disturbance to approximately 598 acres of agricultural cover and the associated wildlife habitat would not occur (Impacts 4.6-1 and 4.6-3). Several other impacts of the proposed project would not occur, including the incursion of mining operations into the riparian habitat on the Snyder East parcel and removal of the five specimen oaks (Impact 4.6-2), effects on habitat for special status species such as the 15 elderberry shrubs which provide suitable habitat for the Valley elderberry longhorn beetle, and the permanent loss of approximately 384 acres of suitable habitat for the Swainson's hawk (Impact 4.6-4).

Potential impacts on the wetlands associated with Cache Creek and the irrigation ditch on the Snyder East parcel would also not occur (Impact 4.6-5). However, continued in-channel mining under this alternative would result in significant impacts to in-stream habitat.

While all of these potential impacts could be mitigated to a level of less-than-significant, the benefits associated with the habitat restoration components of the project, defined in the proposed Habitat Restoration Plan, would not be achieved under this alternative (Impact 4.6-1). Although the 3.1 acres of woodland restoration on the Farnham West parcel would be implemented as part of the short-term mining permit requirements, the remaining 31.9 acres of land proposed for restoration under the project would not be restored under this alternative. Other beneficial aspects of the project which would not occur include creation of extensive hedgerow habitat around the perimeter of reclaimed agricultural fields, and the creation of open water, wetland, and woodland habitat associated with the permanent lakes, all of which would improve the habitat diversity of the site for wildlife (Impact 4.6-3).

Air Quality

Relative to the proposed project and existing conditions, the No Project Alternative would reduce the air quality impacts of aggregate mining, mined lands reclamation, and aggregate processing. The generation of PM_{10} dust caused during overburden removal, aggregate mining, and reclamation (Impact 4.7-1) at the proposed project site would occur for the duration of mining in the Farnham West parcel, only. Continued agricultural production at the project site under the No Project Alternative and dust generation related to farming would occur. Relative to the proposed project, dust generation under this alternative would be similar to existing conditions and no increase in the air quality impacts would be expected. Ozone precursor emissions (Impact 4.7-2) and carbon monoxide (Impacts 4.7-4) would also be reduced. Air quality (Impact 4.7-5) and odor (Impact 4.7-6) effects on sensitive receptors would not change and would be reduced relative to the proposed project.

The existing processing plant would continue operation under this alternative. The production rate at the asphalt hot plant would be similar to existing conditions and those of the proposed project, if it were implemented. Expected emissions related to the asphalt plant would not change. After completion of mining allowed under the short-term mining permit (approximately October 1998), it is assumed that production at the rock processing plant would continue at 772,000 tons per year; thus, emissions at the rock processing plant would remain the same. The truck trips generated by the No Project Alternative would be reduced relative to the proposed project (see Traffic and Circulation below), resulting in reduced vehicle emissions (Impacts 4.7-2 and 4.7-3) related to transportation of aggregate products to customers.

Traffic and Circulation

Under the No Project Alternative, the rate of aggregate processing at the Solano Concrete Madison plant is assumed to remain at 772,000 tons (full allocation). This level of activity would generate 28 trips per day under existing conditions, and would generate 33 trips per day under cumulative (year 2027) conditions (Table 5-1). The No Project Alternative would represent a decrease of 159 daily trips (existing conditions) or 162 trips (cumulative conditions) compared to the proposed project.

TABLE 5-1: **Project Alternative Trip Generation Comparison.**

	Difference in Trips Generated from Existing Ten-Year Average					
		Alternative				
Condition	Proposed Project	1	2a	2b	3a	3b
Existing Conditions	187	28	187	-242	28	187
Cumulative Conditions	195	33	195	-242	33	195

Source: Fehr & Peers Associates.

Impacts to the nonstandard intersection of the Solano Concrete driveway and SR 16 (Impact 4.8-1), and to the SR 16/County Road 98 intersection in Woodland (Impact 4.8-2), would be lessened, but not to a less-than-significant level. Improvements at both of these intersections would still need to be addressed in the form of a left-turn lane and traffic signal, respectively.

Noise

The noise impacts (Impacts 4.9-1, 4.9-2, and 4.9-3) associated with mining and reclamation activities proposed by the project would not occur above existing conditions under the No Project Alternative. Noise associated with mining and reclamation activities and operation of the asphalt plant would be similar to existing conditions and noise generated by these activities would be reduced due to the decreased period of operations.

Aesthetics

The potentially significant impacts on visual resources that have been identified for the proposed project (Impacts 4.10-1, 4.10-2, and 4.10-3), and the less-than-significant visual impacts caused by potential light and glare by off-channel mining of the site (Impact 4.10-4) would not occur beyond existing conditions under the No Project Alternative. Relative to the proposed project, these impacts would be reduced in that a shorter duration of mining and reclamation activities would occur within a reduced area.

Cultural Resources

Off-channel mining and reclamation activities proposed by the project would not occur beyond existing conditions under the No Project Alternative and, therefore, potential increased disturbance of paleontological, archaeological, human skeletal remains, and historical resources associated with the project (Impacts 4.8-1, 4.11-2, 4.11-3, and 4.11-4) would not occur.

Hazards

Expansion of the existing mining and reclamation activities would not occur under this alternative, and would not cause continued impacts related to direct release of hazardous materials to the open mining pits (Impact 4.12-1), exposure of workers to chemicals during site grading (Impact 4.12-2), drowning in open water (Impact 4.12-3), or mosquito breeding in open pits (4.12-4).

Additional Impacts Generated by Alternative

Implementation of the No Project Alternative would not result in additional impacts beyond those associated with the project. Impacts related to in-channel and currently permitted off-channel mining of the project site would continue.

ALTERNATIVE 2: SHALLOW MINING ALTERNATIVE

Alternative Description

Under this alternative, the depth of the proposed off-channel mining at the project site would be reduced to ten feet above the seasonal high groundwater level. Reclamation of the mined areas (except perimeter slopes) would be to lowered agricultural fields. Information presented by the applicant and reported in the OCMP Program EIR indicates that, if mining depths were to be restricted to ten feet above the average seasonal high groundwater level, aggregate production at the proposed project site would be reduced to 1,242,278 tons over a 30-year period. This production tonnage would require excavation of approximately 1,038,189 cubic yards of aggregate resources. To generate this volume of aggregate from the 598-acre site, the average thickness of minable aggregate would be approximately one foot. The thickness of minable aggregate under this alternative is restricted by the amount of aggregate materials located below the bottom of the nonmarketable overburden deposits (extending, on average, to approximately nine feet below the ground surface) and ten feet above the depth of seasonal high groundwater level (on average, 10 feet below the ground surface). This estimated thickness is supported by subsurface data collected at the project site.

At the project site, the thickness of the overburden ranges from less than three feet in the north-central portion of the project to greater than 15 feet in the northeastern and southern portions of the project site. The average thickness of overburden is approximately nine feet. The depth to the seasonal high groundwater level is also variable at the project site. The depth to seasonal high groundwater ranges from 16 feet Mining Area V in the eastern portion of the site to 26 feet in Mining Area II in the western portion of the site. The average depth to the seasonal high groundwater level is approximately 20 feet. These data support the applicant's estimate of the minable aggregate at the project site under the shallow mining restrictions. Under the averaged conditions for overburden thickness and groundwater level depths, the Shallow Mining Alternatives would, therefore, be economically impractical, if not infeasible. However, specific portions of the site could present conditions (i.e., deeper groundwater levels and thin overburden deposits) which could be economically mined. These conditions may be met in the western portion of the project site and adjacent areas. The following analysis provides an evaluation of the environmental impacts of the two variations of the Shallow Mining Alternatives.

Alternative 2a

For Alternative 2a, the mining area would be expanded beyond the 598-acre area proposed by the project to allow for extraction of 33.6 million tons of aggregate. Based on the average overburden thickness and the depth to seasonal high groundwater level, the 598-acre proposed mining area would, theoretically, need to be expanded to about 14,876 acres. Under this alternative, the proposed 598-acre mining area would be mined to a depth of approximately 10 feet. Based on the depth restriction to mining under this alternative, it is unlikely that land containing conditions conducive to economic shallow mining is available.

It is assumed that the reclamation plans for Alternative 2a would be similar to those of the proposed project, except that there would be no wet pits. Mined lands would be reclaimed to a combination of row crops and tree crops. It is assumed that the 14,876 acres of additional lands that would be mined, if available, would also be reclaimed to row or tree crops.

It is assumed that the additional areas in the southern portion of the site would be mined in accordance with the proposed schedule under the long-term mining plan. Soil excavation, salvaging, and backfilling techniques described for the proposed project would apply. The temporary soil stockpiles currently proposed for locations south of Phases I and II would have to be moved to other reclaimed or unmined areas of the project site.

It is also assumed that the 35 acres of restored oak woodland habitat would be included in this alternative as a "net gain" of the mining activities (3.1 acres of this habitat would be restored as part of the approved short-term mining permit).

Alternative 2b

Under Alternative 2b, the 598-acre mining area proposed under the proposed project would not be expanded; therefore, total aggregate production would be significantly reduced, since mining would be restricted to a depth of approximately 10 feet. Production during the 30-year permit period would be reduced from 33.6 million tons of aggregate to 1.2 million tons. The other assumptions pertaining to Alternative 2a would apply to this alternative, except that the locations of the proposed temporary stockpiles would not need to be moved to other portions of the mining site.

Consistency with Project Objectives

Shallow mining of aggregate resources at the project site would allow for immediate removal of PCC-grade resources at shallow depths and conserve deeper available resources; the proposed reclamation to agriculture under this alternative would not preclude extraction of deeper resources at some later date. Alternative 2a would meet the proposed project's objective of harvesting 33.6 million tons of PCC-grade aggregate from the project site. However, the environmental impacts and costs associated with the required expansion of the project to an area of 14,876 acres would make Alternative 2a infeasible.

Alternative 2b would not meet the proposed project objective of harvesting 33.6 million tons of PCC-grade aggregate from the project site. These alternatives would not meet the objective of creation of permanent lakes and associated wildlife habitat. The objectives of moving mining to an off-channel location and continued employment of 14 people would be met.

Impacts of Alternatives

Land Use and Planning

Under Alternative 2a, impacts regarding land use compatibility and consistency with applicable plans would be significantly greater than those of the proposed project, since a total of almost 15,000 acres would theoretically need to be mined, as opposed to the 598 acres proposed. If a total of 15,000 acres could be identified for mining by the applicant within the 28,000-acre OCMP mining area, Alternative 2a may be found consistent with the OCMP (Impact 4.2-1) and the Yolo County General Plan (Impact 4.2-2). However, the impacts of the much larger mining area related to the need for rezoning of lands and potential conflicts with the Williamson Act would be much greater than the proposed project (Impact 4.2-3). Similarly, it is possible that Alternative 2a could be designed to be consistent with SMARA and its regulations (Impact 4.2-4), with the draft Yolo County Habitat Conservation Plan (Impact 4.2-5), and with the Regional Water Quality Control Basin Plan (Impact 4.2-6), although these plan consistency impacts would be more difficult to address than the proposed project, because of the much larger mining area involved.

Alternative 2a would be consistent with agricultural policies of the Yolo County Resource Conservation District, since all mined lands would be reclaimed to agricultural uses, unlike the proposed project, which would not be consistent with the policies (Impact 4.2-7). Alternative 2a would be potentially incompatible with the planned Recreation Node in the northwestern portions of the mining property, as well as other planned Recreation Nodes (assuming the CCRMP is adopted), to a greater degree than the proposed project (Impact 4.2-8). The Shallow Mining Alternative would result in an intensification of land use for a much larger area (approximately 15,000 acres) than for the proposed project (approximately 598 acres) (Impact 4.2-9).

For Alternative 2b, land use and plan consistency impacts would be similar to, or less than, impacts related to the proposed project. Under this alternative, the same amount of land would be mined and reclaimed (598 acres), but much less aggregate would be harvested, potentially reducing land use impacts.

Geology and Soils

The impacts to the proposed project site related to liquefaction (Impact 4.3-1) would be negligible as mining pits would not extend below the groundwater table and, therefore, backfill would not include loose, saturated sediments. Under Alternatives 2a and 2b, the restricted mining depth under this alternative would limit the height and length of slopes which would be excavated, reducing erosion hazards (Impact 4.3-2). The reduction in slope height would tend to promote greater slope stability. However, expansion of the mining area under Alternative 2a could result in increased slope area and the erosion impacts would be increased relative to the proposed project (Impact 4.3-2). Relative to the proposed project, this alternative would result in extraction of the same volume of aggregate resources. Therefore, the impact of decreased availability of aggregate resources (Impact 4.3-3) under Alternative 2b would be similar. The potential for flooding of mining areas (Impact 4.3-4) would be similar to that described for the proposed project. However, the potential for the reclaimed mining area to cause capture of the river would

be minimized by the fact that the reclaimed surface would be above the present stream channel. This condition would promote flow of water from inundated pits back to the creek channel.

Under Alternative 2b, as in Alternative 2a, the restricted mining depth under this alternative would limit the height and length of slopes which would be excavated. The reduction in slope height would tend to promote greater slope stability. Under this alternative the "footprint" of the mining area would be the same as that of the mining area proposed by the project. The reduction in mining depth would therefore, result in decreased slope area exposed to erosion during mining and during reclamation (Impact 4.3-2). The potential for pit capture (Impact 4.3-4) would be similar to that described for the proposed project. However, the potential for the reclaimed mining area to cause capture of the river would be minimized by the fact that the reclaimed surface would be above the present stream channel. This condition would promote flow of water from inundated pits back to the creek channel. Relative to the proposed project, this alternative would result in extraction of a reduced volume of aggregate resources. Therefore, the impact of decreased availability of aggregate resources (Impact 4.3-3) under Alternative 2b would be reduced.

Hydrology and Water Quality

Under the Shallow Mining Alternatives 2a and 2b, mining would extend to depths (approximately ten feet) above the seasonal high groundwater table. Therefore, there would be no open water lakes. The reclaimed agricultural surface would be approximately the same distance above the seasonal high groundwater level as under the proposed project. The potential for flooding (Impact 4.4-1) would be similar to that described for the project. Under these conditions, significant impacts related to the potential for releases of contaminants to surface/subsurface water (Impacts 4.4-3 and 4.4-4) would not occur. Significant impacts associated with inundation of lowered agricultural surfaces (Impact 4.4-7) and water supply (Impact 4.4-8) would be similar to those of the proposed project.

Under Alternatives 2a and 2b, aquifer materials (sand and gravel) below the groundwater table would not be removed. The effect of replacement of aquifer material with finer-grained sediment (Impact 4.4-5) would not occur under both alternatives and the filtration function of the aquifer would not be significantly changed. Impacts associated with alteration of drainage patterns (Impact 4.4-6) for Alternative 2b would be similar to those described for the proposed project and increased under Alternative 2a as the area would be expanded.

Agriculture

For Alternative 2a, impacts related to the temporary (Impact 4.5-1) and permanent (Impact 4.5-2) loss of agricultural lands would be greater than for those caused by the proposed project. The area to be mined would be 14,278 acres larger than for the proposed project. The impact of annual temporary disturbance to agricultural land (Impact 4.5-1) would be substantially greater than for the proposed project. The mining pits under Alternative 2a and 2b would not be as deep as the pits for the proposed project and the amount of agricultural lands permanently converted to slopes could be reduced relative to the

proposed project (Impact 4.5-2) by blending the low slopes with surrounding agricultural fields. Relative to the proposed project, the impact of loss of agricultural soil (Impact 4.5-3) would be increased under Alternative 2a as more soil would be handled. Under Alternative 2b, the impact would be similar to that of the proposed project. The impact to agricultural operations (Impact 4.5-4) would be increased as the mining area is expanded under Alternative 2a and similar to that of the project under Alternative 2b. Under Alternative 2a, the impacts related to nonrenewal of Williamson Act contracts (Impact 4.5-6) would likely increase with the expanded mining area. These impacts would be similar to the project under Alternative 2b. Assuming some tree crops would be planted under Alternatives 2a and 2b, the associated impacts (Impact 4.5-7) would be similar. The area of the reclaimed row and tree crops would be larger than proposed by the project's reclamation plan and would likely expand to areas closer to SR 16. The reclaimed agricultural fields would not be as low in finished elevation as the reclaimed fields for the proposed project; thus, potential impacts on crop productivity due to lowered elevation would be less (Impact 4.5-5).

For Alternative 2b, impacts related to the disturbance of farmland and the permanent loss of prime agricultural lands would be similar to those caused by the proposed project, since the size of the mining area would be the same. However, the reclaimed agricultural fields would not be as low in elevation as the reclaimed areas of the proposed project.

Biological Resources

Potential impacts of Alternative 2a would be greater than those of the proposed project due to the additional acres that would be mined to meet the mineral extraction objectives. Depending on the specific location of the aggregate extraction area, anticipated impacts include temporary loss of additional acres of agricultural cover (Impact 4.6-1), removal of several more mature oaks (Impact 4.6-2), and possible relocation of the drainage ditch on the Snyder East parcel (Impact 4.6-6), all representing an increase in anticipated impacts to identified resources. Substantial expansion of the mining area would most likely require removal of the significant fence row habitat, including trees. Additional acres of suitable foraging habitat for Swainson's hawk would be temporarily disturbed during aggregate extraction in the expansion area (Impact 4.6-4), which would produce a greater impact than the project. The effect on potential habitat for other special-status species would also be increased (Impact 4.6-5). The permanent effects on suitable foraging habitat for Swainson's hawk would depend on the portion of reclaimed agriculture that is devoted to tree crops where prey would be inaccessible.

The creation of 161 acres of marshland habitat due to the open water habitat of the lakes, proposed as part of the project would not occur under Alternative 2a. The hedgrerow and creek restoration components of the project would occur under this alternative, including restoration of 35 acres along the creek corridor, but the absence of the permanent lakes and the associated wetlands and woodland habitat would limit the habitat diversity of the site for wildlife, which would reduce the beneficial effects of this alternative on wildlife habitat (Impact 4.6-3).

Potential impacts of Alternative 2b would be similar to those of the proposed project, with 598 acres of agricultural habitat affected by mineral extraction and no change in the extent of existing cover affected by mining (Impact 4.6-1). Impacts would also be similar for the identified incursion into the riparian habitat on the Snyder East parcel and the removal of the five specimen oaks (Impact 4.6-2). Effects on habitat for special status species, such as the 15 elderberry shrubs that provide suitable habitat for the Valley elderberry longhorn beetle (Impact 4.6-5), would remain the same, as would the temporary loss of suitable foraging habitat for Swainson's hawk (Impact 4.6-4).

The creation of 161 acres of suitable habitat due to the open water habitat of the permanent lakes would not occur under this alternative. The hedgrerow and creek restoration components of the project would occur under this alternative, including restoration of 35 acres along the creek corridor, but the absence of the permanent lakes and the associated wetlands and woodland habitat would limit the habitat diversity of the site for wildlife, which would reduce the beneficial effects of the project on wildlife habitat (Impact 4.6-3).

Air Quality

Alternative 2a would result in an increase in PM_{10} dust production (Impact 4.7-1) relative to the proposed project. Because dust generation is primarily related to excavation of overburden materials, and a larger area would be excavated under this alternative, an increase in dust production would occur. Areas of mining proposed under this alternative would be located closer to nearby residences, potentially affecting sensitive receptors (Impact 4.7-4). Increased haul route distances from the mining areas located south of the project's proposed mining areas would also contribute to reduced fugitive and exhaust emissions related to transport of aggregate to the processing plant. Exhaust emissions from haul trucks transporting aggregate to customers would be similar under this alternative to the proposed project. Under Alternative 2a, emissions of ozone precursors would be higher than for the proposed project (Impacts 4.7-2 and 4.7-3).

Under Alternative 2b, air emissions would be reduced relative to the proposed project because less material would be excavated and therefore less fugitive dust (Impacts 4.7-1 and 4.7-3) and less exhaust emissions (Impacts 4.7-2 and 4.7-3) would be generated. Impacts to sensitive receptors (Impact 4.7-4) would be increased under Alternative 2a and similar to the project under Alternative 2b.

Traffic and Circulation

Under Alternative 2a, the level of mining activity would generate the same number of daily trips per day from the processing plant under existing conditions (187) and cumulative conditions (195) as the proposed project (Table 5.1). Impacts to the nonstandard intersection of the Solano Concrete driveway and SR 16 (Impact 4.8-1), and to the SR 16/County Road 98 intersection in Woodland (Impact 4.8-2) would be the same as for the proposed project, and would require mitigation. The expansion of the mining area could require the use of public roads for hauling of raw aggregate to processing plant sites. This change would result in additional impacts on traffic and circulation.

Under Alternative 2b, there would be a net decrease in the amount of mining volume and a subsequent reduction in traffic. This alternative would result in a net decrease of 242 daily trips, equal to 429 fewer trips than for the proposed project. For future cumulative conditions, Alternative 2b would generate 437 fewer daily trips than the proposed project. The trip generation for this Shallow Mining Alternative 2b is less than the ten-year historic average traffic level for the Solano Concrete plant. Impacts 4.8-1 and 4.8-2 would, therefore, be reduced under this alternative.

Noise

Under Alternative 2a, the mining area would be expanded and thus would be closer to many more of the existing residences, bringing the mining noise source closer to the receptors and potentially exposing local residents to excessive noise levels and nuisance noise (Impacts 4.9-2 and 4.9-3). Noise associated with the asphalt and rock processing plants would be similar to existing conditions as both plants would be operated at full allotment.

The noise impacts associated with off-channel mining under the Shallow Mining Alternative 2b would be similar to those described for the proposed project (Impacts 4.9-1, 4.9-2, and 4.9-3). Reclamation under Alternatives 2a and 2b would be completed at an elevation similar to surrounding areas. Therefore, reclamation activities at these elevations would not be buffered by surrounding slopes. Noise impacts would be increased during later stages of reclamation.

Aesthetics

Under Alternative 2a, excavation and reclamation activities would extend closer to SR 16 and could encroach on other vista and views, increasing the visual intrusion presented by these activities on views experienced by motorists traveling on SR 16 (Impacts 4.10-1, 4.10-2, and 4.10-4) and on adjacent land uses (Impact 4.10-3).

Under Alternative 2b, the impacts of visual intrusion on views caused by off-channel mining and reclamation (Impacts 4.10-1 through 4.10-4) would be the same as under the proposed project.

Cultural Resources

Under Alternative 2a, impacts to the cultural resources would be greater than those identified for the proposed project, because a larger area would be disturbed, increasing the possibility of disturbing buried cultural and paleontological resources (Impacts 4.11-1, 4.11-2, and 4.11-3).

Under Alternative 2b, impacts to cultural resources related to off-channel mining and reclamation activities would be similar to those identified for the project (Impacts 4.11-1, 4.11-2, and 4.11-3). Both the project and this alternative would result in disturbance of surface sediments that could contain cultural resources.

Hazards

Both of the Shallow Mining Alternatives would not result in the creation of wet pits, therefore, project impacts related to direct release of hazardous materials to the open mining pits (Impact 4.12-1), accidents on pit slopes (Impact 4.12-3), and mosquito breeding in open pits (Impact 4.12-4) would not occur. Under Alternatives 2a and 2b, workers could still be exposed to hazardous materials (Impact 4.12-2) from historic agricultural operations during site grading. Under Alternative 2a, the exposure to residual agricultural chemicals would increase relative to the proposed project as more volume of surface soil would be handled.

Additional Impacts Generated by Alternative

Implementation of Alternative 2a, with a large expansion of the mining area would create additional impacts. More sensitive receptors in additional locations would be exposed to air quality, aesthetics, and noise impacts. The likelihood of use of public roads as raw aggregate haul routes would affect traffic, pavements, and bridges. Alternative 2b would not create these added impacts.

ALTERNATIVE 3: DECREASED MINING ALTERNATIVE

For this alternative, overall mining within the project site would be limited (reduced) in two different ways. For the first scenario, Alternative 3a, the annual rate at which aggregate could be excavated would be reduced over the 30-year mining permit period. Under the second scenario, Alternative 3b, the annual rate could be increased over the historic excavation, but the mining period would be limited to 15 years. Both alternatives would result in about one-third less aggregate resources mined, compared to the proposed project, but Alternative 3b would allow mining at a faster rate than Alternative 3a. It is assumed that the reclamation plans for Alternatives 3a and 3b would be similar to those of the proposed project, i.e., mined lands would be reclaimed to a combination of row crops, tree crops, lakes, and habitat.

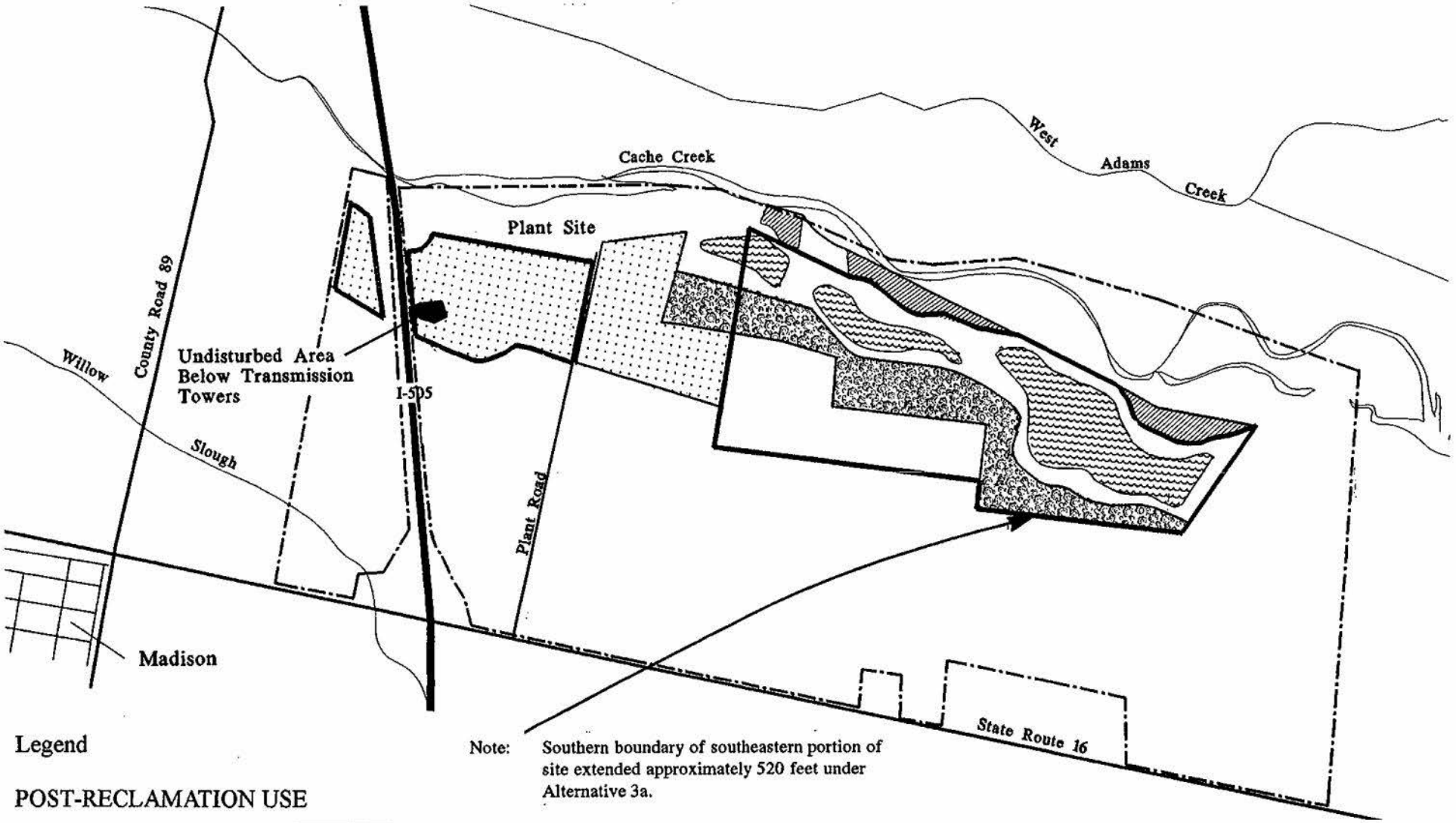
For the purposes of this analysis, it is assumed that, under both Alternatives 3a and 3b (Figure 5-1), Mining Area V and the southern portion of Mining Area IV would not be mined, as now proposed under the proposed 30-year plan. For both Decreased Mining Alternatives, it is assumed that the reclamation plans for the lands that are mined would remain the same, and that the "net gain" elements of the project would be implemented.

Alternative 3a

Under Alternative 3a, the annual rate of aggregate extraction would be limited to the currently permitted rate of 772,400 tons per year, as opposed to the annual rate of 1,445,783 tons annually which is proposed under the long-term mining application. The reduced annual extraction rate would result in a total of approximately 23.2 million tons being harvested over 30 years, instead of the 33.6 million tons as requested by the applicant. Under Alternative 3a, excavation would occur to the same depths as requested in the long-term application, but the amount of aggregate to be mined would be 69 percent (23.2 million/33.6 million) of the total amount requested by the applicant. Instead of 598

DECREASED MINING ALTERNATIVES 3A AND 3B

Figure 5-1



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acres, mining would occur on only about 407 acres, assuming that the variation in proposed mining depths among the various parcels of land remains constant.

Alternative 3b

Under Alternative 3b, the applicant would be limited to a mining period of 15 years, instead of the proposed 30-year period. Solano Concrete would be allowed to excavate to the same depth and at the same annual rate as under the proposed long-term mining plan 1.45 million tons/year), but the company would not be allowed to mine beyond 15 years. Thus, the total amount of aggregate that could be mined over the permit period would be 65 percent (21.75 million/33.6 million) of the requested 33.6 million tons (approximately 21.75 million tons). The mining area would be reduced in size accordingly. It is estimated that instead of the proposed 598-acre mining area, mining would be confined to about 374 acres of the project site, assuming that the variation in proposed mining depths among the various parcels of lands remains constant.

Consistency with Project Objectives

Both of the Decreased Mining Alternatives would fail to meet the proposed project objective of harvesting 33.6 million tons of PCC-grade aggregate from the proposed mining area. The goals of moving mining to off-channel areas, reclamation to permanent lakes, and continued employment would be met.

Impacts of Alternatives

Land Use and Planning

Under both of the Decreased Mining Alternatives, impacts related to land use compatibility and consistency with plans would be similar to the proposed project. Alternatives 3a and 3b could be designed to be consistent with the OCMP (Impact 4.2-1) and the Yolo County General Plan (Impact 4.2-2). Impacts related to the need for rezoning of lands and potential conflicts with the Williamson Act (Impact 4.2-3) would be similar or somewhat less for Decreased Mining Alternatives since the Alternatives 3a and 3b involve smaller mining areas (400 or 425 acres) than the proposed project (598 acres). The Decreased Mining Alternatives could be designed to be consistent with SMARA and its regulations (Impact 4.2-4), with the draft Yolo County Habitat Conservation Plan (Impact 4.2-5), and with the Regional Water Quality Control Basin Plan (Impact 4.2-6).

Alternatives 3a and 3b would be inconsistent with agricultural policies of the Yolo County Resource Conservation District, as is the proposed project, although the level of inconsistency could be considered somewhat less because of the reduced amount of agricultural land that would be permanently converted to nonagricultural uses (Impact 4.2-7). The Decreased Mining Alternatives could be potentially incompatible with the planned Recreation Node in the northwestern portion of the mining property, like the proposed project, if adequate access is not planned (Impact 4.2-8). The proposed project has offered to dedicate reclaimed lands in mining Phases IV and V for the future recreation Note, under the Decreased Mining Alternatives mining would not occur in Phases IV and V, so the reclaimed lands may not be offered to the County for a future Recreation Node.

The Decreased Mining Alternatives would result in an intensification of land use for a smaller area (approximately 374 to 407 acres) than for the proposed project (approximately 598 acres) (Impact 4.2-9).

Geology and Soils

Under Alternatives 3a and 3b, deep pit mining of off-channel areas at the project site would occur. The mined areas would be refilled with processing fines and overburden. Reclamation would be to a combination of open space and agricultural uses. Potential impacts described for the proposed project related to seismic hazards (Impact 4.3-1) would be reduced slightly, a consequence of the reduction in backfilled areas that may be susceptible to liquefaction. Decreased mining, relative to the proposed project would reduce the amount of slopes created and subject to erosion (Impact 4.3-2). The impact of decreased availability of aggregate (Impact 4.3-3) would be reduced under this alternative as less aggregate would be mined. The potential for pit capture (Impact 4.3-4) would be reduced under this alternative. Although the setback from the creek required for the proposed project and under this alternative would be similar, the amount of area vulnerable to pit capture would be somewhat reduced.

Hydrology and Water Quality

The Decreased Mining Alternatives would result in creation of lakes, similar to those under the proposed project. The number and acreage of the lakes would be reduced, but the types of impacts related to deep pit mining would be similar. Significant impacts identified for the proposed project related to flooding (Impact 4.4-1) and water quality degradation in the pits (Impacts 4.4-3 and 4.4-4) would be similar for the Decreased Mining Alternatives. The impact of evaporation (Impact 4.4-2) would be reduced as lake area would decrease. Impacts on groundwater flow (Impact 4.4-5) would be similar, but slightly reduced as less area would be mined. Significant impacts associated with alteration of drainage (Impact 4.4-6) and inundation of lowered agricultural surfaces (Impact 4.4-7) would also be similar although a smaller area would be affected. The impacts on groundwater use (Impact 4.4-8) would be similar to those described for the proposed project.

Agriculture

For both of the Decreased Mining Alternatives, impacts related to the temporary disturbance of farmland (Impact 4.5-1) and the permanent loss of prime agricultural lands (Impact 4.5-2) would be less than those caused by the proposed project. The area to be mined would be approximately 191 to 224 acres smaller than for the proposed project, so impacts to agricultural lands would be significantly less. The potential for permanent loss of agricultural soils (Impact 4.4-3) would also be reduced with less handling of soil. The depth of the mining pits under both Alternatives 3a and 3b would be similar to the pits for the proposed project and the reclaimed agricultural fields would be as low in finished elevation as the reclaimed fields for the proposed project; thus, potential impacts on crop productivity due to lowered elevation and atmosphere would be the same (Impact 4.5-5).

Impacts on adjacent agricultural uses (Impact 4.5-4) would be similar. The impact of nonrenewal of Williamson Act contracts (Impact 4.5-6) would be similar to the proposed project for both alternatives. Potential impacts related to tree crops (Impact 4.5-7) would be similar to those of the proposed project. The cumulative loss of agricultural lands would be similar to the proposed project.

Biological Resources

The reduction in the area of mineral extraction under Alternative 3a would serve to reduce impacts associated with the proposed project. General impacts on existing vegetative cover would be reduced (Impact 4.6-1). This impact would not be significant. Assuming a similar setback is provided from the edge of the upper terrace along the fringe of the Cache Creek corridor, impacts to sensitive resources, such as the edge of the riparian habitat on the Snyder East parcel would be reduced by the restriction of mining area (Impact 4.6-2), and individual elderberry shrubs that provide suitable habitat for the Valley elderberry longhorn beetle could be avoided under this alternative (Impact 4.6-5). Several of the mature trees which would be removed by the project could be retained (Impact 4.6-2), reducing this impact. This would include at least one oak tree in the Phase IV mining area that would not necessarily be affected under this alternative.

The extent of suitable foraging habitat for Swainson's hawk disturbed by mining would be reduced under this alternative; the effects on permanent loss would depend on the extent of reclamation areas devoted to tree crops and open water habitat of the lakes (Impact 4.6-4), but it is assumed that this impact would be reduced. Beneficial aspects of the project which would presumably also occur under this alternative include creation of extensive hedgerow habitat around the perimeter of reclaimed agricultural fields, restoration of 35 acres along the creek corridor, and the creation of open water, wetland, and woodland habitat associated with the lakes, all of which would improve the habitat diversity of the site for wildlife (Impact 4.6-3) and reduce this impact.

The reduction in the area of mineral extraction under Alternative 3b would serve to reduce anticipated impacts associated with the proposed project, increasing anticipated impacts only slightly in comparison to Alternative 3a. As with Alternative 3a, sensitive resources such as the edge of the riparian habitat on the Snyder East parcel (Impact 4.6-2) and individual elderberry shrubs which provide suitable habitat for the Valley elderberry longhorn beetle could be avoided under this alternative (Impact 4.6-5), reducing these impacts. Several of the mature trees that would be removed by the project could be retained (Impact 4.6-2), reducing this impact. This would include at least one oak tree in the Phase IV mining area that would not be affected under this alternative.

The extent of suitable foraging habitat for Swainson's hawk disturbed by mining would be reduced from the project as proposed and would affect an additional 33 acres in comparison to Alternative 3a (Impact 4.6-4). The effects on permanent loss of suitable habitat for Swainson's hawk would be reduced as less agricultural land would be reclaimed to nonagricultural uses. Beneficial aspects of the project that would presumably occur under this alternative include creation of extensive hedgerow habitat around the perimeter

of reclaimed agricultural fields, restoration of 31.9 acres along the creek corridor, and the creation of open water, wetland, and woodland habitat associated with the lakes, all of which would improve the habitat diversity of the site for wildlife (Impact 4.6-3) and reduce the impacts on wetlands. Impacts to wetlands (Impact 4.6-6) would be similar to the proposed project.

Air Quality

The Decreased Mining Alternative 3a would result in a reduction in PM_{10} dust (Impact 4.7-1) and ozone precursors (Impact 4.7-2) relative to the proposed project, because less material would be excavated, hauled on unpaved roads, and processed at the plant each year. Under this alternative, the total area of land disturbed (during mining and reclamation) would be reduced from 598 to 374 or 407 acres, relative to the proposed project, contributing to a reduction of dust and exhaust emissions. Emissions of ozone precursors related to transport of aggregate to the processing plant and transport of aggregate to customers (Impact 4.7-4) would also be reduced under Alternative 3a. Therefore, effects on attainment of air quality goals (Impact 4.7-3) would be reduced. Impacts to sensitive receptors (Impact 4.7-5) would be similar.

Under Alternative 3b, the annual air emissions would be the same as for the proposed project for 15 years; during this time impacts from dust, emissions of ozone precursors and delay of nonattainment State and Federal standards will remain the same as the proposed project (Impacts 4.7-1, 4.7-2, and 4.7-3). Although air quality impacts would be reduced under Alternatives 3a and 3b, the impacts resulting under these alternatives would be significant and unavoidable.

Traffic and Circulation

Under Decreased Mining Alternative 3a, the level of mining activity would generate 120 truck trips per day, under both existing conditions and cumulative conditions, impacting the nonstandard section of SR 16 between the Solano Concrete driveway and I-505, and the driveway entrance to the plant (Impact 4.8-1). Ten daily truck trips would travel through the SR 16/County Road 98 intersection in Woodland (Impact 4.8-2), reducing the impact, but not to a less-than-significant level, and the intersection would still require mitigation.

Alternative 3b would generate 130 truck trips per day under existing conditions and 140 trips per day under cumulative conditions, impacting SR 16 between the Solano Concrete driveway and I-505, and the driveway entrance to the plant (Impact 4.8-1). Impacts to the SR 16/County Road 98 intersection in Woodland (Impact 4.8-2) would be lessened, since 60 trucks per day would travel through the intersection, but not to a less-than-significant level. The intersection would still require mitigation.

Noise

Generally, the noise impacts associated with off-channel mining and reclamation under the Decreased Mining alternatives would be similar to those described for the proposed project (Impact 4.9-1). Impacts to sensitive receptors (Impacts 4.9-2 and 4.9-3) during mining of the Snyder parcel would be reduced by avoiding mining at the southern portion of the

parcel which is closer to the existing residence; this would remove the mining noise source farther from the receptor. Under Alternative 3a, production at the plants would be maintained at 772,400 tons per year for the 30 year mining period, as opposed to the proposed project's production level of 1.44 million tons per year, resulting in less noise than the project.

Under Alternative 3b, noise associated with the asphalt and rock processing plants could be similar to existing conditions during the 15-year mining period, as both plants would be operated at full allotment. However, the noise source(s) would be in operation over a shorter period.

Aesthetics

The impacts of visual intrusion on views (Impacts 4.10-1, 4.10-2, 4.10-3, and 4.10-4) caused by off-channel mining and reclamation under the Decreased Mining Alternatives would be similar to those of the proposed project. Under Alternative 3b, this visual intrusion would last 15 years, instead of the 30-year duration experienced under the proposed project and Alternative 3a.

Cultural Resources

Impacts to paleontological (Impact 4.11-1) and cultural (Impacts 4.11-2, 4.11-3, and 4.11-4) resources related to off-channel mining and reclamation activities proposed under both of the Decreased Mining Alternatives would be slightly reduced relative to those identified for the project because a smaller area of the project would be disturbed. Impacts to cultural resources (Impacts 4.11-1, 4.11-2, 4.11-3, and 4.11-4) would remain significant, however, because archeological site Yol-69 would still be expected to be affected by mining activities.

Hazards

Alternatives 3a and 3b would both result in excavation of mining pits with steep slopes that would extend to depths below the groundwater table. The impacts related to direct release of hazardous materials to the open mining pits (Impact 4.12-1), accidents on pit slopes (Impact 4.12-3), and mosquito breeding in open pits (Impact 4.12-4) would be similar to those of the proposed project. Exposure to workers from historic agricultural chemicals (Impact 4.12-2) would be reduced as less agricultural soil would be handled.

Additional Impacts Generated by Alternative

Implementation of Alternatives 3a and 3b would not generate any additional impacts beyond those identified for the proposed project. All significant and unavoidable impacts identified for the project would remain significant and unavoidable.

COMPARISON OF FEASIBLE ALTERNATIVES

The feasibilities of the No Project, the Shallow Mining, and the Decreased Mining Alternatives were assessed by comparison with the objectives of the proposed project (Table 5-2). Shallow Mining Alternative 2a would be infeasible due to the required

TABLE 5-2: **Impact Summary for Project Alternatives.**

	Impact	Project (Before Mitigation)	Project Alternatives 1:	2a:	2b:	3a:	3b:
Land Use and Planning							
4.2-1	Consistency with OCMP	S	=	=	=	=	=
4.2-2	Consistency with Yolo County General Plan	LS	=	=	=	=	=
4.2-3	Consistency with Yolo County Zoning Ordinance and Williamson Act	S	-	+	=	=	=
4.2-4	Consistency with SMARA	LS	-	=	=	=	=
4.2-5	Consistency with Habitat Conservation Plan	LS	-	=	=	=	=
4.2-6	Consistency with RWQCB Basin Plan	LS	-	=	=	=	=
4.2-7	Consistency with Resource Conservation District policies	SU	-	-	=	=	=
4.2-8	Compatibility with existing and planned land uses	S	=	+	=	=	=
4.2-9	Intensification of land use	LS	-	+	=	=	=
Geology and Soils							
4.3-1	Seismic shaking	S	-	-	-	=	=
4.3-2	Failure and/or erosion of slopes	S	-	+	-	-	-
4.3-3	Decreased availability of aggregate	LS	-	=	-	-	-
4.3-4	Potential permanent inundation of mined areas	S	-	=	=	-	-
Hydrology and Water Quality							
4.4-1	Flooding	S	-	=	=	=	=
4.4-2	Evaporation	LS	-	-	-	-	-
4.4-3	Potential degradation of water quality during mining and reclamation	S	=	-	-	=	=
4.4-4	Potential degradation of water quality during post-reclamation	S	-	-	-	=	=
4.4-5	Impacts to groundwater levels and flow	LS	-	-	-	=	=
4.4-6	Alteration of drainage patterns	LS	-	=	+	=	=
4.4-7	Flooding of reclaimed lowered agricultural surfaces	S	-	=	=	-	-

Alternatives: 1 - No Project; 2a - Shallow Mining (Expanded Area); 2b - Shallow Mining (Decreased Volume); 3a -Decreased Mining (Limited Extraction Rate); 3b - Decreased Mining (Limited Extraction Period).

Significance: LS - Less than significant; S - Significant; SU - Significant and unavoidable.

= Similar to project; - reduced impact; + increased impact.

Table 5-2 - *continued*

	Impact	Project (Before Mitigation)	Project Alternatives 1:	2a:	2b:	3a:	3b:
4.4-8	Water supply	LS	-	=	=	=	=
Agriculture							
4.5-1	Temporary loss of agricultural production	LS	-	+	-	-	-
4.5-2	Permanent conversion of prime farmland	SU	-	-	-	-	-
4.5-3	Permanent loss of agricultural soils	LS	-	+	=	-	-
4.5-4	Impacts to agricultural lands and operations	LS	-	+	=	=	=
4.5-5	Lowered reclaimed agricultural fields	S	-	-	-	=	=
4.5-6	Nonrenewal of Williamson Act contracts	LS	=	+	=	=	=
4.5-7	Tree crop agriculture conflicts with agricultural uses	LS	-	=	=	=	=
4.5-8	Cumulative loss of agricultural land	SU	-	-	-	=	=
Biological Resources							
4.6-1	Disturbance of agricultural cover and native habitat	LS	-	+	=	-	-
4.6-2	Loss of mature oaks and disturbance to sensitive natural communities	S	-	+	=	-	-
4.6-3	Disturbance of existing wildlife habitat	S	-	+	-	-	-
4.6-4	Loss of foraging habitat for Swainson's hawk	S	-	+	-	-	-
4.6-5	Effects on suitable habitat for special-status species	S	-	+	=	-	-
4.6-6	Effects on wetlands	S	+	+	=	=	=
Air Quality							
4.7-1	Increased PM_{10} emissions	SU	-	+	-	-	=
4.7-2	Increased emissions of ozone precursors	SU	-	+	-	-	=
4.7-3	Effects on attainment of air quality goals	SU	-	+	-	-	=
4.7-4	Vehicle trips causing CO hot spots	LS	-	=	-	-	=
4.7-5	Effects on sensitive air quality receptors	LS	-	+	-	=	=
4.7-6	Subject sensitive receptors to objectionable odors	LS	-	=	-	-	=

Alternatives: 1 - No Project; 2a - Shallow Mining (Expanded Area); 2b - Shallow Mining (Decreased Volume); 3a - Decreased Mining (Limited Extraction Rate); 3b - Decreased Mining (Limited Extraction Period).

Significance: LS - Less than significant; S - Significant; SU - Significant and unavoidable.

= Similar to project; - reduced impact; + increased impact.

Table 5-2 - *continued*

	Impact	Project (Before Mitigation)	Project Alternatives 1:	2a:	2b:	3a:	3b:
Traffic and Circulation							
4.8-1	Additional truck traffic on nonstandard segment of SR 16	S	-	=	-	-	-
4.8-2	Unacceptable operations at SR 16/ County Road 98/Main Street intersection	S	-	=	-	-	-
Noise							
4.9-1	Increased ambient noise levels	S	-	+	=	-	-
4.9-2	Exposure of sensitive receptors to increased noise	S	-	+	=	-	-
4.9-3	Vibration or nuisance noise	S	-	+	=	-	-
Aesthetics							
4.10-1	Impacts on public views and vistas	S	-	+	=	=	=
4.10-2	Changes to public views and vistas	LS	-	+	=	=	=
4.10-3	Visual incompatibility	LS	-	+	=	=	=
4.10-4	Light and glare	LS	-	+	=	=	=
Cultural Resources							
4.11-1	Disturbance of paleontological resources	S	-	+	=	-	-
4.11-2	Disturbance of archaeological resources	SU	-	+	=	-	-
4.11-3	Disturbance of human skeletal remains	LS	-	+	=	-	-
Hazards							
4.12-1	Releases of fuels and related compounds	S	-	-	-	=	=
4.12-2	Exposure to agricultural chemicals	LS	-	+	=	-	-
4.12-3	Open pits as hazards	S	-	-	-	=	=
4.12-4	Increased mosquito populations	LS	-	-	-	=	=

Alternatives: 1 - No Project; 2a - Shallow Mining (Expanded Area); 2b - Shallow Mining (Decreased Volume); 3a - Decreased Mining (Limited Extraction Rate); 3b - Decreased Mining (Limited Extraction Period).

Significance: LS - Less than significant; S - Significant; SU - Significant and unavoidable.

= Similar to project; - reduced impact; + increased impact.

expansion of the mining area to over 14,000 acres. Shallow Mining Alternative 2b may be economically infeasible and would not meet the project objective of extraction of 33.6 million tons over the next 30 years. The comparison of the project to the No Project, Shallow Mining, and Decreased Mining alternatives indicates that some of the significant impacts identified for the proposed project would also occur under the Shallow Mining and Decreased Mining alternatives. The impacts that would be avoided under the Shallow Mining Alternative would be hydrology and water quality impacts related to wet pit mining and reclamation to open water bodies and potential impacts related to liquefaction of backfill materials. All impacts identified for the proposed project would occur under the Decreased Mining Alternative, but many impacts would be reduced due to the reduction in mining area or the duration of mining.

Although the severity of some of the significant impacts for the project would be reduced under the Shallow Mining and Decreased Mining alternatives, the impacts would require mitigation measures similar to those recommended for the project. Implementation of the proposed project, the Shallow Mining and the Decreased Mining alternatives would result in the permanent loss of prime agricultural land due to construction of perimeter slopes around the reclaimed areas. Additional losses of agricultural land would occur under the proposed project and Decreased Mining Alternatives due to the creation of open-water bodies and surrounding habitat uses. Temporary loss of agricultural lands during the mining period would be substantially increased under Alternative 2a. However, the Shallow Mining and Decreased Mining alternatives would result in less agricultural land lost to the construction of slopes and nonagricultural reclaimed uses such as habitat and lakes.

Considering the impacts of the alternatives, the No Project Alternative would result in the fewest impacts to the environment relative to the proposed project and would, therefore, be the environmentally superior alternative. The No Project Alternative would, however, result in continued in-channel mining along Cache Creek. Potential impacts resulting from in-channel mining, including adverse effects on channel stability and riparian ecosystems would continue. The No Project Alternative would not meet the project objectives of mining 33.6 million tons of aggregate in the off-channel portion of the applicant's property (Table 5-2).

5.4 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The CEQA Guidelines specify that, if the No Project Alternative is the superior alternative, the DEIR should identify an environmentally superior alternative among the other alternatives. The Decreased Mining Alternative (Alternative 3b) is environmentally superior to the proposed project, since land use, biological, geologic, and agricultural impacts would be less than the proposed project. The reduced period of mining and reduced area of land disturbed by mining relative to the proposed project and Alternatives 2a, 2b, and 3a would also reduce impacts related to loss of agricultural land and productivity, air quality, traffic and circulation, noise, aesthetics, and health hazards.

6.0 REPORT PREPARATION

CHAPTER 6.0 REPORT PREPARATION

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Neimann, Brian, 1995, Dispatcher, Yolo County Transit Authority, personal communication, 21 November.

Noble, Lillie, 1995, Project Manager, Teichert Aggregates, personal communications, October, November, and December.

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Sarazan, Bruce, 1996, Inspector with Yolo County Department of Environmental Health, personal communication with Yane Nordhav of BASELINE 17 January.

6.3 PERSONS CONTACTED

Mr. Ben Adamo, Cache Creek Aggregates. October, November, and December 1995 - telephone and facsimile communications.

Mr. Larry Andrews, Project Engineer, Cunningham Engineering. January through May 1996 - telephone conversations and personal meetings.

Mr. Jim Antone, Associate Air Quality Planner, Yolo-Solano Air Quality Management District. March 5 1996 - telephone conversation.

Mr. Ken Ayamo, Principal, Ag West, Inc. January and March 1996 - telephone conversations.

Mr. Mike Bartlett, Yuba County Planning & Building Services, Marysville, CA. February 20, 1996 - telephone conversation.

Ms. Christy Barton, Assistant General Manager, Yolo County Flood Control & Water Conservation District, Woodland, CA. January 16, 1996 - telephone conversation.

Mr. John Bencomo, Yolo County Planning Department, Woodland, CA. January 16, 1996 - telephone conversation.

Mr. Phil Berger, Hydrogeologist, U.S. Environmental Protection Agency, Office of Drinking Water. March 18, 1996 - written communication.

Mr. Jim Brake, Traffic Operations, California Department of Transportation, District 3. January 1, 1996 - telephone conversation.

Ms. Mara Bresnick, Zentner and Zentner. February to March 1996 - telephone conversations.

Mr. David Brown, Project Manager, Lilburn Corp., January through May 1996 - telephone conversations.

Mr. Barry Burns, Esparto Water Service. February 20, 1996 - telephone conversation.

Mr. Mac Carpenter, Malcolm Carpenter and Associates, Colma, CA. January through March 1996 - telephone conversations.

Mr. Art Champ, U.S. Army Corps of Engineers, Sacramento. January 25, 1996 - telephone conversation.

Mr. Ken Champion, Office of Transportation Planning, California Department of Transportation, District 3. January 9, 1996 - telephone conversation.

Mr. Ron Cole, Curator, Museum of Wildlife and Fishery Biology, UC Davis. May 2, 1996 - telephone conversation

Mr. Jon Constantino, Permit Engineer, Yolo-Solano Air Quality Management District. March 15 1996 - telephone conversation.

Mr. Al Dias, Fresno County Public Works and Development Services, Fresno, CA. February 20, 1996 - telephone conversation.

Mr. Jim Eagan, Director, Yolo County Flood Control and Water Conservation District, Woodland, CA. February 20, 1996 - telephone conversation.

Mr. Joe Farnham, Woodland, CA. January, February, and March 1996 - personal and telephone conversations.

Mr. Kelly Geer, Fish and Wildlife Biologist, Bay Delta Division, California Department of Fish and Game. October 20, 1995 - telephone conversation.

Ms. Dana Gimmel, Project Engineer, Kleinfelder, Inc. January and March 1996 - telephone conversations.

Mr. Stanley Grant, Ph.D., Professor of Environmental Engineering, U.C. Irvine. March 13, 1996 - written communication.

Ms. Ronee Gray, Traffic Census, California Department of Transportation, District 3. November 14, 1995 - telephone conversation and personal communication.

Mr. Carl Hauge, State Hydrogeologist, California Department of Water Resources. January 16, 1996 - telephone conversation.

Mr. Tom Horgan, Town of Yolo Water Service. March 7 and 18, 1996 - telephone conversations.

Mr. Paul Horton, Seacor. January 16, 1996 - telephone conversation.

Mr. Richard Hughes, Principal Safety Engineer, Mining and Tunnel Division, California Occupational Safety and Health Standards Board. February 23, 1996 - telephone conversation.

Ms. Katherine Johnson, Historical Resources Information System, Northwest Information Center, Sonoma State University, California. February 8, 1996 - telephone conversation.

Mr. John Joyce, Director, Yolo County Public Works Department. October, November, and December, 1995 - personal and telephone communications.

Ms. Alice Karl, biologist for Lilburn Corporation, preparers of the Cache Creek Aggregates, Teichert (Woodland), and Teichert (Esparto) EIRs. May 1 and 6, 1996 - telephone conversation.

Mr. Ken King, Traffic Operations, California Department of Transportation, District 3. November 27, 1995 - telephone and facsimile communication.

Ms. Vicki Kretsinger, Ludhorff & Scalmanini. February 29, March 4, 7, 1996 - telephone conversations.

Mr. Kit Kustis, Engineering Geologist, California Division of Mines and Geology. January 19, 1996 - telephone conversation.

Mr. Derryl Look, Associate Air Pollution Specialist, California Air Resources Board (CARB), Emissions Inventory Section. March 15, 1996 - telephone conversation.

Mr. Tony Lopes, Manager, Madison Service District. February 27, 1996 - telephone conversation.

Mr. Robert MacArthur, Northwest Hydraulic Consultants, West Sacramento, CA. January through March 1996 - telephone conversations.

Mr. Robert MacArthur and Mr. Edward Wallace, Principals, Northwest Hydraulics, Inc. January through May 1996 - numerous telephone conversations and personal meetings.

Mr. Bruce Macler, Manager of Groundwater Disinfection Rule, U.S. Environmental Protection Agency. March 19, 1996 - telephone conversation.

Mr. Dan McCanta, Emergency Coordinator with Yolo County Communications and Emergency Response Agency. January 17, 1996 - personal communication.

Ms. Julie McCauley, Tulare County Planning and Development Department, Visalia, CA. February 20, 1996 - telephone conversation.

Mr. Richard McHenry, Water Resource Control Engineer, Central Valley Regional Water Quality Control Board. January 16 and 19, 1996 - telephone conversations.

Mr. Bob Mendiola, San Benito County Planning, Hollister, CA. February 20, 1996 - telephone conversation.

Mr. Mickey Miyashiro, California Air Resources Board (CARB). March 15, 1996 - telephone conversation.

Mr. Jess Morehouse, District Engineer, Health Services, Clean Water Program. March 1, 1996 - telephone conversation.

Mr. David Morrison, Resource Management Coordinator, Yolo County Community Development Agency. January and February 1996 - numerous personal, telephone, and facsimile communications.

Mr. Brian Neimann, Dispatcher, Yolo County Transit Authority. November 21, 1995 - telephone and facsimile communication.

Ms. Lillie Noble, Project Manager, Teichert Aggregates. October, November, and December 1995 - telephone and facsimile communications.

Ms. Sydney Olsen, Assistant, Humboldt County Planning Department, Eureka, CA. February 20, 1996 - telephone conversation.

Ms. Michelle Orr, Hydrologist, Phillip Williams and Associates. March 1996 - telephone conversation.

Mr. Marshall Payne, Geologist for Lilburn Corp. February and March 1996 - telephone conversations.

Mr. John Pelka, EDAW, San Francisco, CA. February 26, 1996 - telephone conversation.

Mr. John Perry, Syar Industries. October, November, and December 1995 - telephone and facsimile communications.

Mr. Harrison Phipps, Water Quality Specialist, City of Woodland, Department of Public Works. February 23 and March 23, 1996 - telephone conversations.

Mr. Art Plunkett, Maintenance, Operations, and Transportation Supervisor, Esparto Unified School District. November 8, 1995 - telephone communication.

Mr. James Pompy, Manager (Mine Reclamation Unit), California Division of Mines and Geology. January 19, 1996 - telephone conversation.

Ms. Iris Preistaff, David Keith Todd Engineers. January 18, 1996 - telephone conversation.

Mr. Dan Reiff, Plant Manager, Teichert Aggregates. October and November 1995 - telephone communications.

Dr. John Rueter, Professor, University of California - Davis. March through May 1996 - telephone conversations.

Mr. Anthony Russo, Vice President, Solano Concrete, Fairfield, CA. January through May 1996 - personal, written, facsimile, and telephone communications.

Mr. Bruce Sarazan,, Inspector with Yolo County Department of Environmental Health. January 17, 1996 - personal communication.

Mr. Roger Schoonover, Wildlife Biologist, California Department of Fish and Game. May 2, 1996 - telephone conversation.

Mr. Ken Scribner, Associate Engineer, State Reclamation Board. January 19, 1996 - telephone conversation.

Mr. John Simons, Groundwater Ecologist, U.S. Environmental Protection Agency, Office of Drinking Water. March 18, 1996 - telephone conversation.

Mr. Eldon Sims, Supervisor, Transportation Department, Woodland Joint Unified School District. November 8, 1995 - telephone communication.

Dr. Darrell Slotten, Professor, University of California - Davis. March through May 1996 telephone conversations.

Mr. David Smith, Air Quality Specialist, Yolo-Solano Air Quality Management District. March 15, 1996 - telephone conversation.

Mr. Stan Sorensen, Assistant Civil Engineer, Yolo County Public Works Department. November 2, 1995 - telephone and facsimile communication.

Dr. Randy Southard, Professor, University of California - Davis. February and March 1996 - telephone conversations.

Ms. Kim Tarbell, Project Manager, Teichert Aggregates. October, November, and December 1995 - telephone and facsimile communications.

Mr. Jon Taylor, California Air Resources Board (CARB), Emissions Inventory Section. March 15, 1996 - telephone conversation.

Mr. Tom To, Director, Yolo County Environmental Health, Woodland, CA. January and February 1996 - telephone conversations.

Mr. Tom Tracy, Assistant Director, Yolo County Public Works Department. October, November, and December 1995 - personal, telephone and facsimile communications.

Ms. Heidi Tschudin, Contract Planner to Yolo County. October, November, and December of 1995 and January of 1996 - numerous personal, telephone, and facsimile communications.

Dr. Jeffery Unruh, Geologist, William Lettis & Associates. February 1996 - telephone conversation.

Mr. Lonnie Watts, Regional Water Quality Control Board, Fresno, CA. February 20, 1996 - telephone conversation.

Mr. Vince Wong, Assistant General Manager, Zone 7, Alameda, CA. January 31, 1996 - telephone conversation.

Mr. Kevin Yarris, GIS Specialist, Yolo County Planning and Community Development Department. January 17, 1996 - personal communication.

Ms. Sue Yee, Associate Water Resources Control Engineer, Central Valley Water Quality Control Board. February 15 and 20, 1996 - telephone conversations.

7.0 APPENDICES

7.1 NOTICE OF PREPARATION AND INITIAL STUDY

County of Yolo

COMMUNITY DEVELOPMENT AGENCY 292 West Beamer Street Woodland, CA 95695

PLANNING DIVISION (916) 666-8020 | FAIR HOUSING (916) 665-8018 | BUILDING DIVISION (916) 666-8037 | BUSINESS LICENSE (916) 666-8812

NOTICE OF PREPARATION
NOTICE OF SCOPING MEETING

1-19-96

TO:

FROM: County of Yolo
Community Development Agency
292 West Beamer Street
Woodland, CA 95695

SUBJECT: **NOTICE OF PREPARATION AND NOTICE OF SCOPING MEETING FOR SOLANO CONCRETE COMPANY, INC. LONG-TERM OFF-CHANNEL MINING PERMIT ENVIRONMENTAL IMPACT REPORT**

LEAD AGENCY: County of Yolo
292 West Beamer Street
Woodland, CA 95695

CONTACT: David Morrison, Resource Management Coordinator

The County of Yolo has required that a project-level Environmental Impact Report be prepared for the **SOLANO CONCRETE COMPANY, INC. LONG-TERM OFF-CHANNEL MINING PERMIT** project. This EIR will tier off of the program-level EIRs being written for the Off-Channel Mining Plan (OCMP) and the Cache Creek Resources Management Plan (CCRMP). The County of Yolo will be the lead agency and will need to know the views of your agency as to the scope and content of the EIR based on your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use this EIR when considering relevant permits or other approvals for the project. The County is also seeking input from residents, property owners, and concerned citizens as to the issues that should be addressed in the EIR. The project description and location are summarized below. A meeting to discuss the appropriate scope of the EIR has been scheduled, as indicated below.

PROJECT DESCRIPTION: The project site is located in an area of unincorporated Yolo County immediately south of Cache Creek, north of State Route 16 in the area extending from just west of Interstate I-505 to approximately 13,000 feet east of the highway (see Figure 1, Vicinity Map). Solano Concrete Company, Inc. (1601 Cement Hill Road, Fairfield, CA 94533) has submitted an application for a Long-Term Off-Channel Mining Permit to extract sand and gravel from the terrace deposits south of Cache Creek at the project site (see Figure 2, Project Site). The application includes a Reclamation Plan for the mined areas (see Figure 3, Reclamation Plan). The project also requests rezoning of areas of the project site currently zoned as Agricultural

Preserve (A-P) to Agriculture-General (A-1) with a Sand and Gravel (S-G) overlay to allow the proposed commercial mining.

The applicant has requested mining of 598 acres (Figure 2) and extraction of approximately 33,629,000 tons of aggregate. The project consists of various land use applications to the County that would allow extraction of aggregate from open, off-channel mining pits on seven contiguous parcels of land totaling 1,828 acres in area. All seven of the proposed mining areas (Areas I through VII in Figure 3) are located outside of the active channel of Cache Creek. The mining of the area would be phased in over an approximate 30-year period, depending on market demand. As part of the application, Solano Concrete Company, Inc. has requested an increase in the annual excavation rate from 772,400 tons/year under their existing use permit to 1,200,000 tons/year. The aggregate would be processed at the existing Solano Concrete rock and asphalt plants, located north of the northeastern portion of the mining area.

The mining pits would extend to depths ranging up to 70 feet below the groundwater table ("wet pits"), resulting in the creation of open lakes during the mining period. Upon completion of mining, the mining pits would be sequentially reclaimed to a combination of uses (Figure 3). In general, the northern margins of five of the seven mining areas would be converted to permanent lakes bounded by wildlife habitat zones. The areas adjacent to and south of the reclaimed lakes would be converted to tree crop production areas. Remaining portions of mining areas would be reclaimed as agricultural fields for row crop production. The surface of the tree crop and row crop production areas would be reclaimed at an elevation that is lower than the existing ground surface but above the seasonal high groundwater level.

The application also proposes amendment of the reclamation plan approved by the Board of Supervisors in September 1995 for Solano Concrete's Short-Term Off-Channel Mining Permit. The previously approved reclamation plan required reclamation of all mined areas of the previously mined Hutson parcel and the Farnham West parcel, which is currently being mined, to tree crop or row crop production. The current application proposes reclamation of the northern 13 acres of the combined Hutson and Farnham West parcels to permanent lakes. In addition, the proposed reclamation plan would preclude the necessity of borrowing soil from the unmined southern portions of the these parcels to complete reclamation to agriculture. The project, therefore, would require amendment of the reclamation plans for the Hutson and Farnham West mining areas.

All of the proposed mining areas are currently zoned as Agricultural Preserve (A-P) and are under Williamson Act contracts. Mining in the A-P zone is currently prohibited by the Yolo County Zoning Ordinance, with the exception of mining conducted to prevent erosion along Cache Creek. The Draft OCMP proposes a change in the County Zoning Ordinance to allow mining in the A-P zone, which, if adopted, would resolve this inconsistency.

In addition to the proposed mining and reclamation described above, the application proposes restoration of approximately 35 acres of previously mined (before the enactment of SMARA) or unmined land within the project site to oak woodland habitat. This restoration is proposed as a "net gain" to Yolo County, pursuant to County Resolution 94-82.

DESCRIPTION OF ALTERNATIVES: The project alternatives that will be examined in the EIR will include the following:

Alternative 1: No Project

If the project as proposed were not approved, no new mining would occur at the site. Rezoning of areas of the project site currently zoned Agricultural Preserve to Agriculture General would not occur. The continued operation of the previously permitted mining operation on portions of the project site and continued operation of the existing permitted processing facility would be assumed. This alternative would also assume that the "net gain" elements of the proposed project would not be implemented.

Alternative 2: Shallow Mining

Under this alternative the EIR will evaluate the degree to which reducing the depth of off-channel mining at the project site may avoid potential impacts of the proposed project. Specifically this alternative will reduce the depth of mining to a level no greater than ten feet above the historic average high groundwater elevation, which would allow reclamation of the mining areas (except perimeter slopes) to lowered agricultural fields which would not be inundated by seasonal high groundwater. Under Alternative 2a the mining area would be expanded to allow for extraction of a volume of aggregate material similar to that requested by the applicant. Under Alternative 2b the mining area would be held to that proposed in the application, thus resulting in a decrease in volume. Evaluation of this alternative will include an analysis of the potential increase in the temporary annual loss of agricultural productivity in the mining area. This alternative assumes that proposed "net gain" elements of the project are implemented.

Alternative 3: Decreased Mining

This alternative examines limiting mining in two different ways. Alternative 3a would limit the annual rate of aggregate extraction and processing to the currently permitted rate. Assuming the same depth of mining as proposed in the application, and assuming a 30-year mining period, the area of mining (and disturbance) would be decreased accordingly. Alternative 3b would limit the period of mining to 15 years. Assuming the proposed maximum annual rate of extraction and the same proposed depth of mining, the volume of materials to be extracted over the life of the permit would be decreased accordingly. Alternative 3a identifies the extent to which potential areas of impact are affected by decreasing the area of mining disturbance. Alternative 3b identifies the extent to which potential areas of impact are affected by decreased the length of time over which they take place. This alternative assumes that proposed "net gain" elements of the project are implemented.

AREAS OF POTENTIAL IMPACT: It is anticipated that the project-level documents will address the following issue areas:

Land Use and Planning

Comparison and discussion of consistency with the OCMP and/or CCRMP as may be applicable. Examination of compatibility with existing and planned land uses in the area, as identified areas at the site are mined and then reclaimed over time. Identification of project-specific potential for land use or planning impacts associated with proposed mining (method or intensity), phasing of mining, or proposed reclamation.

Geology and Soils

Identification of project-specific geological and soils setting information. Identification of project-specific potential for geological or soils impacts associated with proposed mining (method or intensity), phasing of mining, or proposed reclamation. Project-specific potential for pit capture or impacts to Caltrans bridges.

Hydrology and Water Quality

Identification of project specific hydrological and water quality information. Identification of project-specific potential for hydrological or water quality impacts associated with proposed mining (method or intensity), phasing of mining, or

proposed reclamation. Project-specific potential for impacts to groundwater quality.

Agriculture

Identification of project-specific agriculture information. Identification of project-specific potential for impacts to agriculture associated with proposed mining (method or intensity), phasing of mining, or proposed reclamation. In particular, project-proposed agricultural reclamation (row crops, tree crops, or pasture) will be analyzed.

Biological Resources

Identification of project-specific biological information. Identification of project-specific potential for impacts to biological resources associated with proposed mining (method or intensity), phasing of mining, or proposed reclamation. In particular, proposed habitat restoration will be analyzed.

Air Quality

Identification of project-specific air emissions and control technology, including emissions associated with the specific mining, phasing, intensity of operations, type of operations, hauling, reclamation, and post-reclamation activities.

Traffic and Circulation

Identification of truck trips associated with the specific proposal, and safety hazard impacts associated with the specific site, operations, and post-reclamation activities. Modeling of project and cumulative conditions will be performed to determine project impacts under various scenarios.

Noise

Project-specific noise issues (operational noise and noise from trucks entering, leaving, or on the site) will be evaluated where residents are in close enough proximity to be impacted.

Aesthetics

Evaluation of project-specific aesthetic issues based on a particular operation's proximity to a sensitive receptor or public right-of-way. Examination of the project-specific aesthetic impacts associated with the proposed reclamation and post-reclamation activities.

Cultural Resources

Evaluation of project-specific paleontological, archaeological, historical, or cultural issues where there is particular site sensitivity.

Hazards

Evaluation of potential public health hazards will be addressed where there is a particular sensitivity, for example, a proposed new or expanded asphalt plant or other technology that might include hazardous substances. Impacts associated with the reclaimed site will be evaluated including operational safety and/or site security.

Public Services and Utilities

Evaluation of impacts associated with recreation, groundwater supply (recharge), surface water distribution (canal/recharge system), and maintenance of public roads both during mining and post-reclamation.

Other

Thresholds for significance will be identified for each issue area, and used to reach conclusions regarding impact. For all areas of impact identified in the EIR, relevant mitigation measures will be identified that fully or partially mitigate the impact, to the degree feasible. These measures will be written so that they can be implemented by the individual

operators. Previous EIRs, technical studies, and the OCMP and CCRMP program-level EIRs will be used as an initial source of data and potential mitigation measures. Where the most appropriate mitigation is a modification of the project proposal, this will be so identified.

INITIAL STUDY: An Initial Study has been prepared for the project that provides a discussion of all pertinent environmental issue areas. A copy of this Initial Study may be attached or is available for review at the County Community Development Agency (see address above).

SCOPING MEETING: A public scoping meeting has been scheduled for Monday, January 29, 1996 at 7:30 pm at the Planning Commission Chambers at 292 West Beamer Street in Woodland, CA 95695. A second meeting may be held at 7:30 pm on January 30th at the same location, if needed. The purpose of this meeting is to receive comments regarding the appropriate scope of the EIR and also to solicit public suggestions regarding the scope of the analysis of alternatives to the project. If you have questions or need additional information please contact David Morrison at 916-688-8020 or Heidi Tschudin at 916-447-1809.

RESPONSES: Due to the time limits mandated by State law, your response to this notice must be sent at the earliest possible date but not later than 30 days after receipt. Based on our mailing, this 30 day period will run from **January 19, 1996 through February 19, 1996.**

PLEASE SEND YOUR RESPONSES TO: David Morrison, Resource Management Coordinator, at the address shown above. Please remember to include in your comments the name of the contact person in your agency. We will be pleased to answer your questions. Please contact David directly at (916) 666-8020 or Heidi Tschudin, Contract Planner at (916) 447-1809 should you need more information.

Date: January 18, 1996 Name: HEIDI TSCHUDIN

Signature: [signature] Title: PROJECT MANAGER

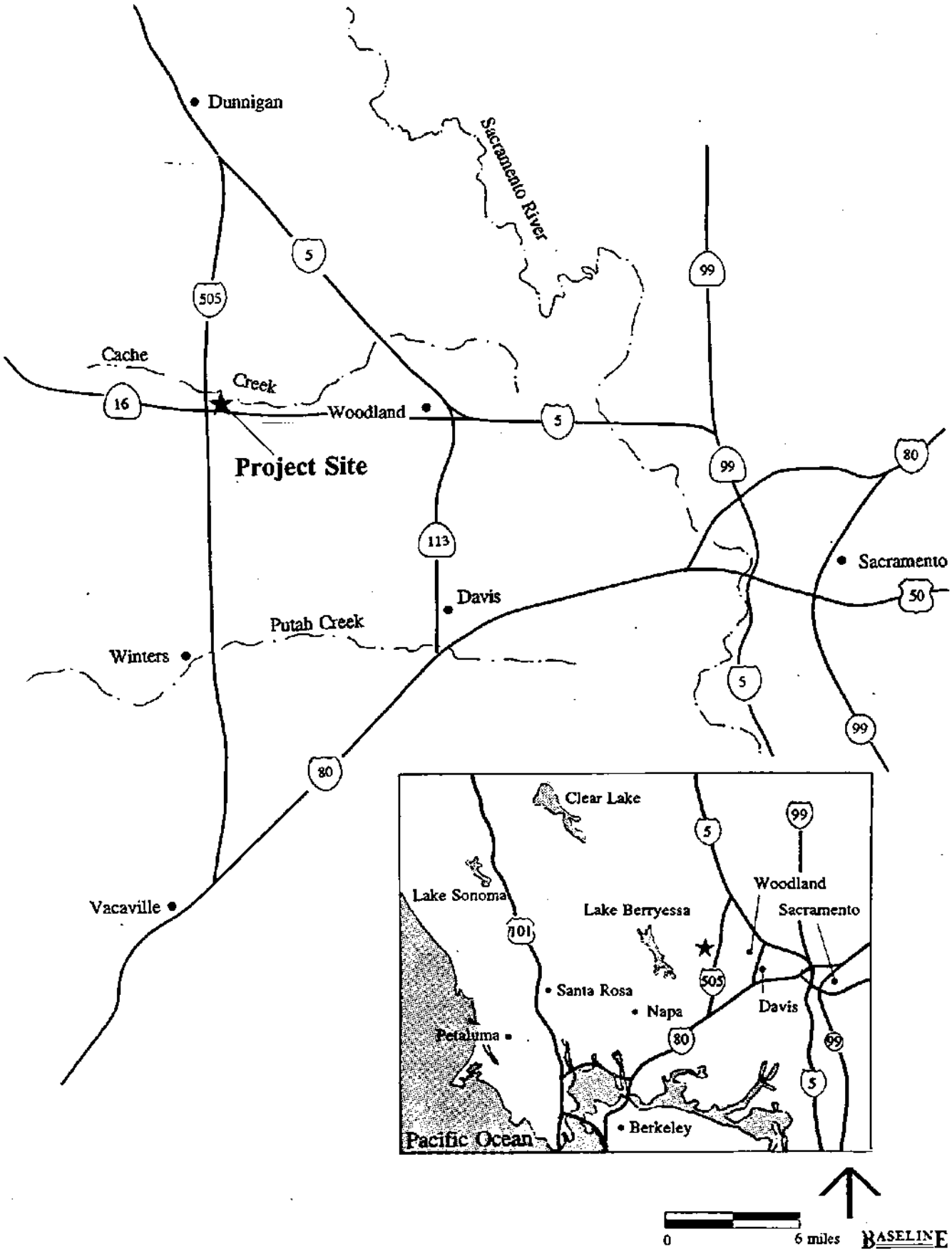
Telephone: 916-447-1809

Reference: CEQA Guidelines Sections 15082 (a), 15103, 15375

95263SOL.NOP-1/16/96

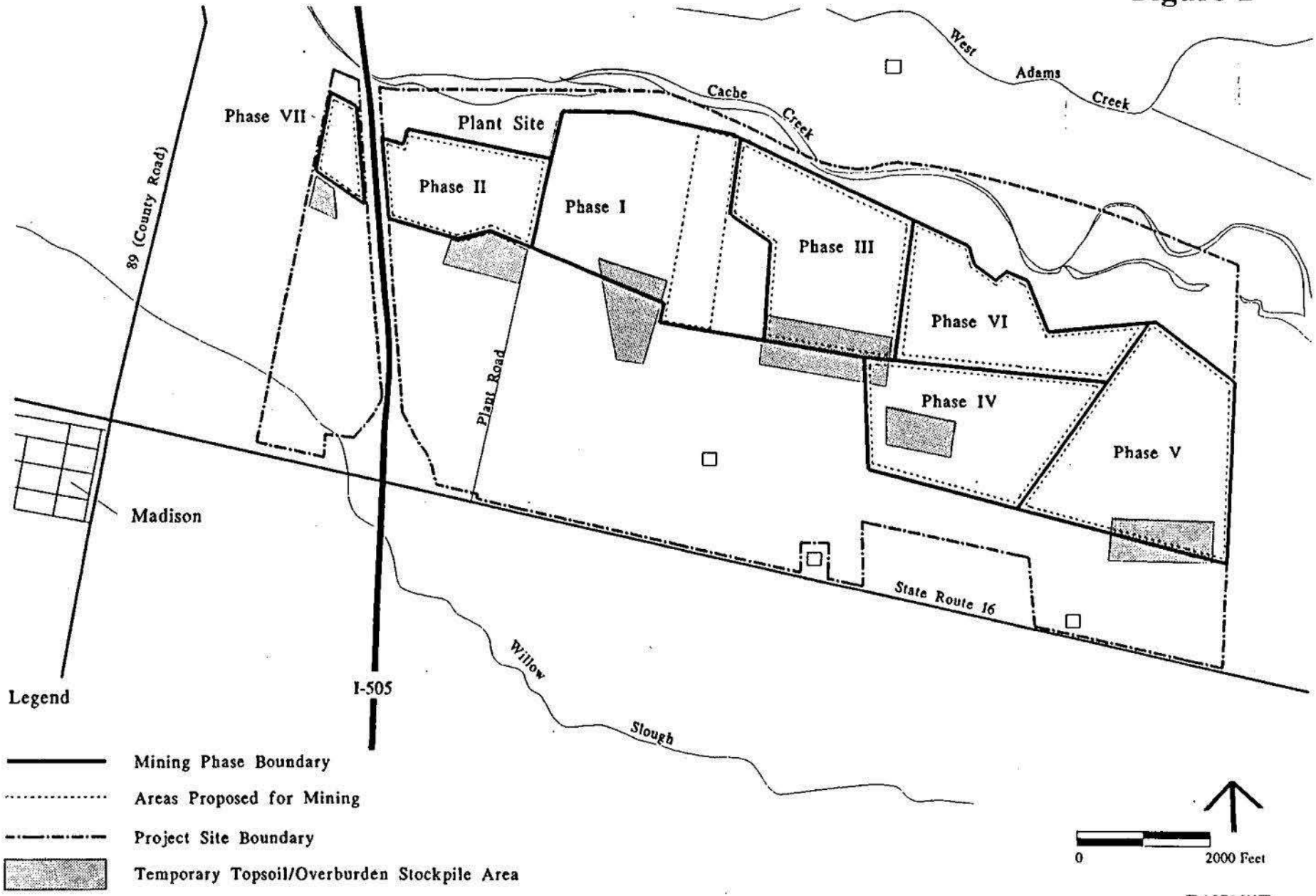
REGIONAL LOCATION

Figure 1



GENERALIZED MINING PLAN

Figure 2

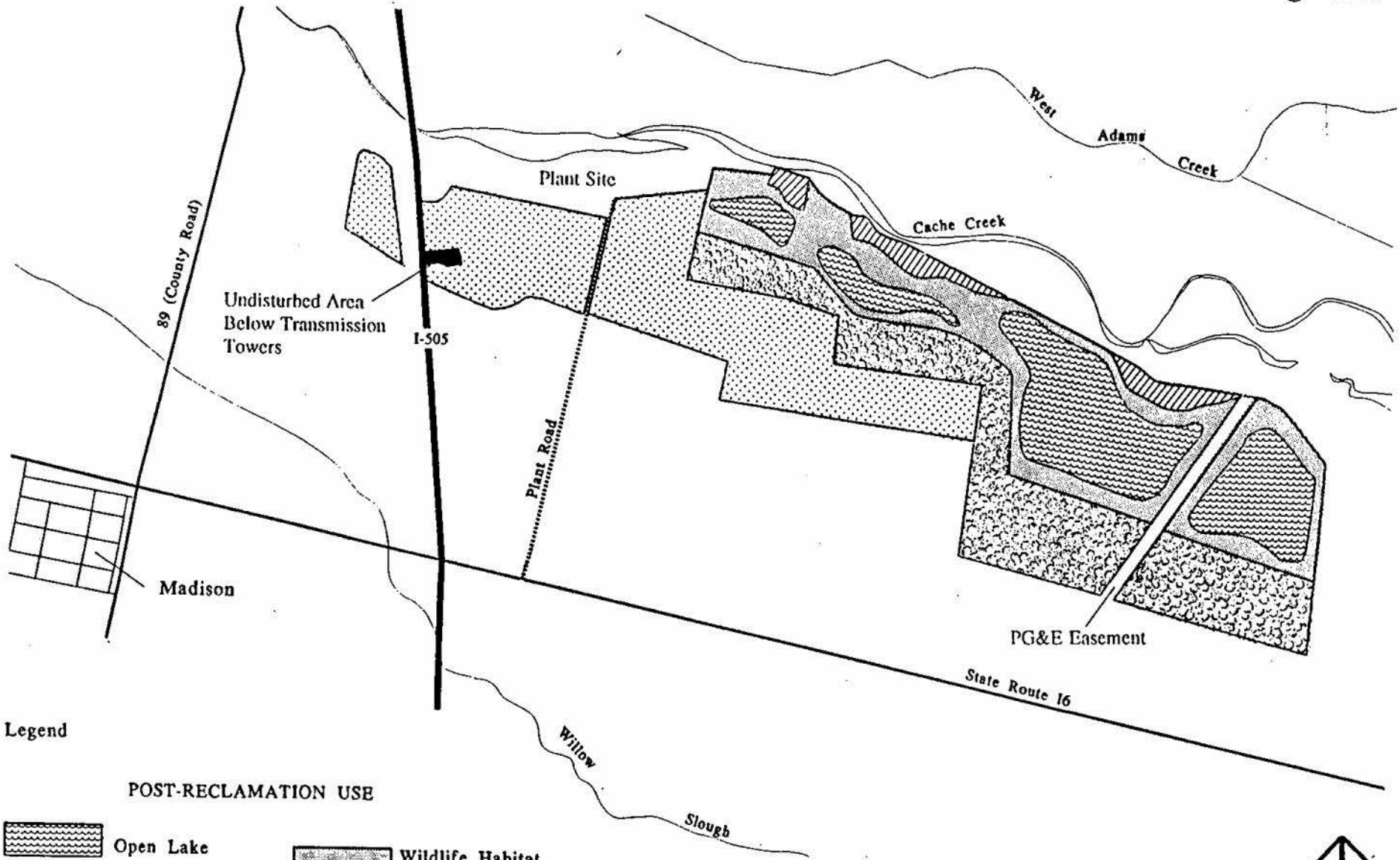


BASELINE

95263-00.02 1/8/96, Cadd File N, 95263GMP Solano Long-Term

GENERALIZED RECLAMATION PLAN

Figure 3



95263-00.02 1/3/96, Cadd File N. 95263RREC Solano Long-Term

BASELINE

ENVIRONMENTAL CHECKLIST FORM

1.	**Project Title:**	Environmental Impact Report on Solano Concrete Company, Inc., Long-term, Off-channel Mining Permit Application
2.	**Lead Agency Name and Address:**	Yolo County Community Development Agency 292 West Beamer Street Woodland, CA 95695
3.	**Contact Person and Phone Number:**	David Morrison, Resource Management Coordinator (916) 666-8020
4.	**Project Location:**	In unincorporated Yolo County immediately south of Cache Creek, north of State Route 16, and extends approximately 400 feet west of and 13,000 feet east of the I-505 bridge over Cache Creek.
5.	**Project Sponsor's Name and Address:**	Anthony Russo Solano Concrete Company, Inc. 1601 Cement Hill Road Fairfield, CA 94533
6.	**General Plan Designation:**	Agriculture
7.	**Zoning:**	A-P; A-1; A-1/S-G

8. **Description of Project:**

The project site is located in an area of unincorporated Yolo County immediately south of Cache Creek, north of State Route 16 in the area extending from just west of Interstate I-505 to approximately 13,000 feet east of the highway (see Figure 1, Vicinity Map). Solano Concrete Company, Inc. (1601 Cement Hill Road, Fairfield, CA 94533) has submitted an application for a Long-Term Off-Channel Mining Permit to extract sand and gravel from the terrace deposits south of Cache Creek at the project site (see Figure 2, Project Site). The application includes a Reclamation Plan for the mined areas (see Figure 3, Reclamation Plan). The project also requests rezoning of areas of the project site currently zoned as Agricultural Preserve (A-P) to Agriculture General with a Sand and Gravel (S-G) overlay to allow the proposed commercial mining (Figure 3).

The applicant has requested mining of 598 acres (Figure 2) and extraction of approximately 33,629,000 tons of aggregate. The project consists of various land use applications to the County that would allow extraction of aggregate from open, off-channel mining pits on eight contiguous parcels of land totaling 1,828 acres in area. All seven of the proposed mining areas (Areas I through VII in Figure 3) are located outside of the active channel of Cache Creek. The mining of the area would be phased in over an approximate 30-year period, depending on market demand. As part of the application, Solano Concrete Company, Inc. has requested an increase in the annual excavation rate from 772,400 tons/year under their existing use permit to 1,200,000 tons/year. The aggregate would be processed at the existing Solano Concrete rock and asphalt plants, located north of the northeastern portion of the mining area.

The mining pits would extend to depths ranging up to 70 feet below the ground surface, resulting in the creation of open lakes during the mining period. Upon completion of mining, the mining pits would be sequentially reclaimed to a combination of uses (Figure 3). In general, the northern margins of five of the seven mining areas would be converted to permanent lakes bounded by wildlife habitat zones. The areas adjacent to and south of the reclaimed lakes would be converted to tree crop production areas. Remaining portions of mining areas would be reclaimed as agricultural fields for row crop production. The surface of

the tree crop and row crop production areas would be reclaimed at an elevation that is lower than the existing ground surface but above the seasonal high groundwater level.

The application also proposes amendment of the reclamation plan approved by the Board of Supervisors in 1995 for the short-term off-channel mining permit. The previously approved reclamation plan required reclamation of all mined areas of the Farnham West parcel, which is currently being mined, to tree crop or row crop production. The application also requests amendment of the reclamation plan approved by the Board of Supervisors in 1978 for the previously mined Hutson parcel, which was amended in 1995 to allow for reclamation to tree crops, in addition to the previously approved row crop reclamation. The current application proposes reclamation of the northern 13 acres of the combined Hutson and Farnham West parcels to permanent lakes. In addition, the proposed reclamation plan would preclude the necessity of borrowing soil from the unmined southern portions of the these parcels to complete reclamation to agriculture. The project, therefore, would require amendment of the reclamation plans for both the Hutson and Farnham West mining areas.

The Farnham West and Hutson parcels are zoned A-1/S-G (General Agriculture/Sand and Gravel). A portion of the Solano West parcel is zoned A-1. All of the remaining proposed mining areas are currently zoned as Agricultural Preserve (A-P) and are under Williamson Act contracts. Mining in the A-P zone is currently prohibited by the Yolo County Zoning Ordinance, with the exception of mining conducted to prevent erosion along Cache Creek. The draft OCMP proposes a change in the County Zoning Ordinance to allow mining in the A-P zone, which, if adopted, would resolve this inconsistency.
In addition to the proposed mining and reclamation described above, the application proposes restoration of approximately 35 acres of previously mined (before the enactment of SMARA) or unmined land within the project site to oak woodland habitat. This restoration is proposed as a "net gain" to Yolo County, pursuant to County Resolution 94-82.

9. **Surrounding Land Uses and Setting:** The project is bounded to the north by Cache Creek, to the east and west by agricultural fields, and to the south by agricultural fields and rural residences along State Route (SR) 16. The regional topography consists of low rolling hills and broad alluvial plains formed at the base of the eastern flank of the California Coastal Range. The predominant land use for the region is agriculture.

10. **Other agencies whose approval is required (e.g., permits, financing approval, or participation agreement):**
Expansion of plant production could require approval from the Yolo County Air Quality Management District. Modification of production could also require adjustment to the Waste Discharge Requirements issued by the Regional Water Quality Control Board (RWQCB), as well as the Storm Water Pollution Prevention Plan (SWPPP). Temporary or permanent loss of Swainson's hawk foraging habitat could require Section 2081 agreement with the California Department of Fish and Game. Modifications to levees or separators may require a Streambed Alteration agreement with the California Department of Fish and Game, as well as a 404 permit from the U.S. Army Corps of Engineers. A Caltrans encroachment permit for modification of the driveway on State Route 16 may also be required.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" or "Potentially Significant Unless Mitigated," as indicated by the checklist on the following pages.

☒ Land Use and Planning	☒ Transportation/Circulation	☒ Utilities and Service Systems
☒ Geological Problems	☒ Biological Resources	☒ Cultural Resources
☒ Water	☒ Noise	☒ Mandatory Findings
☒ Air Quality	☒ Public Services	

DETERMINATION

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment and a NEGATIVE DECLARATION will be prepared. ☐

I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the project. A NEGATIVE DECLARATION will be prepared. ☐

I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required. ☒

I find that the proposed project MAY have a significant effect(s) on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets, if the effect is a "potentially significant impact" or "potentially significant unless mitigated." An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed. ☐

I find that although the proposed project could have a significant effect on the environment, there WILL NOT be a significant effect in this case because all potentially significant effects (a) have been analyzed adequately in an earlier EIR pursuant to applicable standards and (b) have been avoided or mitigated pursuant to that earlier EIR , including revisions or mitigation measures that are imposed upon the proposed project. ☐

Signature

1-20-96

Date

DAVID MORRISON

Printed Name

For

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) *A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question.* A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) 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.

3) "Potentially Significant Impact" is appropriate if an effect is significant or potentially significant, or if the lead agency lacks information to make a finding of insignificance. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Potentially Significant Unless Mitigated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR of negative declaration. Section 15063(c)(3)(D). Earlier analyses are discussed in Section XVII at the end of the checklist.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). See the sample question below. A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

7) This is only a suggested form, and lead agencies are free to use different ones.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
I.	**LAND USE AND PLANNING.** *Would the proposal:*				
a)	Conflict with general plan designation or zoning?	☒	☐	☐	☐
b)	Conflict with applicable environmental plans or policies adopted by agencies with jurisdiction over the project?	☐	☐	☐	☒
c)	Be incompatible with existing land use in the vicinity?	☒	☐	☐	☐
d)	Affect agricultural resources or operations (e.g., impacts to soils or farmlands, or impacts from incompatible land uses)?	☒	☐	☐	☐
e)	Disrupt or divide the physical arrangement of an established community (including a low-income or minority community)?	☐	☐	☐	☒

a) The application proposes mining in areas currently zoned Agricultural Preserve (A-P). The draft OCMP proposes amendment of the A-P zone to allow mining consistent with state law. The County Zoning Ordinance currently restricts aggregate mining in A-P zones to sand and gravel extraction required for erosion control. The application requests that those parcels currently zoned A-P be rezoned to General Agriculture (A-1) with a Sand and Gravel (S-G) overlay. The rezoning would require cancellation of existing Williamson Act contracts, unless the A-P district regulations are amended, as recommended in the draft OCMP.

b) The project is consistent with existing adopted environmental plans and policies by agencies of jurisdiction. Environmental review will determine if the project would conform with the goals, policies, actions, and performance standards of the draft Off-Channel Mining Plan (OCMP) and draft Cache Creek Resources Management Plan (CCRMP) with respect to land use issues.

c) The application proposes excavation and reclamation of mining pits in areas that are currently under agricultural production. The majority of land surrounding the mining proposed mining areas are also under agricultural production. The northern portions of the mining areas are bounded by the south channel bank of Cache Creek. Residences are located south of State Route 16, along the southern boundary of the proposed mining area. Noise and dust generated during mining and reclamation activities could impact the closest residences.

d) The project proposes a series of mining areas on 598 acres of land, the majority of which is currently under agricultural production. The mining will be phased over an approximate 30-year period, resulting in temporary interruption of agricultural production in the active mining and reclamation areas. The application proposes reclamation of 446 acres of the mined lands to row crop (223 acres) and tree crop (223 acres) production. Another 161 acres of the mined areas within the project site would be reclaimed as three open lakes. The remaining 91 acres of mined land, including slopes surrounding lowered agricultural surfaces and open lakes, would be reclaimed for wildlife habitat. The reclamation of approximately 36 percent of the portions mined parcel and actively mined Farnham West parcel, to non-agricultural use would result in the permanent loss of agricultural land.

e) The proposed project would be implemented in an rural agricultural area and would not, therefore, disrupt or divide the physical arrangement of an established community.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
II.	**POPULATION AND HOUSING.** *Would the proposal:*				
a)	Cumulatively exceed official regional or local population projections?	☐	☐	☐	☒
b)	Induce substantial growth in an area either directly or indirectly (e.g., through projects in an undeveloped area or extension or major infrastructure)?	☐	☐	☐	☒
c)	Displace existing housing, especially affordable housing?	☐	☐	☐	☒

a) The project would not result in increased population. Increases in the existing number of employees (14) are not expected to affect population projection.

b) The project would not directly or indirectly induce growth in the area of the project site. The production of aggregate proposed by the project is driven by market demand, which is reflective of growth induced by influences outside the control of the project.

c) The project would not displace any existing housing. The project would be conducted on agricultural land and would not remove existing residential units.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
III.	**GEOLOGIC PROBLEMS.** *Would the proposal result in or expose people to potential impacts involving:*				
a)	Fault rupture?	☐	☐	☐	☒
b)	Seismic ground shaking?	☐	☐	☒	☐
c)	Seismic ground failure, including liquefaction?	☒	☐	☐	☐
d)	Seiche, tsunami, or volcanic hazard?	☐	☐	☒	☐
e)	Landslides or mudflows?	☐	☒	☐	☐
f)	Erosion, changes in topography or unstable soil conditions from excavation, grading, or fill?	☒	☐	☐	☐
g)	Subsidence of the land?	☐	☒	☐	☐
h)	Expansive soils?	☐	☐	☒	☐
I)	Unique geologic or physical features?	☐	☐	☐	☒

a) No evidence of active faults (i.e., geomorphic conditions indicative of recent fault displacement) has been identified within the project site boundaries. The project site is not within an Alquist-Priolo Earthquake Fault Zone, which is an area recognized by the California Division of Mines and Geology as containing active faults.

b) The project site is located within a seismically active region. The closest potential source of earthquakes is the Coast Range-Sierran Block Boundary Zone, a complex broad zone of folds and faults at the western margin of the Central Valley. The site is located within this broad zone, which is considered capable of generating a magnitude 7 earthquake. An earthquake of this magnitude could cause moderate to strong ground shaking at the project site.

c) Potential strong ground shaking that could occur at the project site could result in liquefaction of loose, saturated granular sediments. The backfilled areas proposed in the reclamation plan could be subject to liquefaction and related seismically induced settlement.

d) Distance of the site from San Francisco Bay and its ground surface elevation preclude the site from being affected by a tsunami. Seiches could possibly develop in open mining pits during local, regional, or distance earthquakes. Wave action generated during the formation of a seiche would be short in duration and would not likely cause damage to reclaimed features in excess of other wave action. The volcanic hazard at the site is minimized by its distance (128 miles) from the closest active volcanic center, Mt. Lassen.

e) The project proposes the excavation of deep mining pits in unconsolidated alluvial deposits. The mining plan proposes mining pit slopes of 1.5:1 (horizontal to vertical ratio) below the groundwater table and not greater than 3:1 for slopes above the groundwater table. Slope stability analyses performed for the proposed project and submitted with the application indicate that the slopes would be stable under static and seismic conditions.

f) The excavation of mining pits proposed by the project will significantly increase slopes at the project site. The project also proposes to store excavated overburden in stockpiles that would be up to 40 feet in height with 2:1 side slopes. The soil exposed on these slopes could be subject to significant erosion, particularly when unvegetated. The application proposes that stockpiles be vegetated. However, active stockpiles would continually expose soil to erosion.

g) The project proposes backfilling of some mined areas with overburden and processing fines delivered to mining pits as slurry from the processing plant. The methods of backfilling present the potential for compaction and/or consolidation of the soils and sediments through time. These processes could result in subsidence of the land surface, possibly causing drainage problems. The draft OCMP includes a Performance Standard (5.5-3) that requires mining operators to resurvey all agricultural reclaimed lands and to re-level in areas in which settlement has occurred. The application commits to this performance standard.

h) The application does not propose permanent structures or thick fills that would be adversely affected by shrink-swell processes associated with expansive soils.

i) The project site does not include any unique geologic or physical features; therefore, no such features would be affected by the project.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
IV.	**WATER.** *Would the proposal result in:*				
a)	Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?	☒	☐	☐	☐
b)	Exposure of people or property to water related hazards such as flooding?	☒	☐	☐	☐
c)	Discharge into surface waters or other alteration of surface water quality (e.g., temperature, dissolved oxygen or turbidity)?	☒	☐	☐	☐
d)	Changes in the amount of surface water in any water body?	☒	☐	☐	☐
e)	Changes in currents, or the course or direction of water movements?	☐	☐	☐	☒
f)	Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations or through substantial loss of groundwater recharge capability?	☒	☐	☐	☐
g)	Altered direction or rate of flow of groundwater?	☒	☐	☐	☐
h)	Impacts to groundwater quality?	☒	☐	☐	☐
i)	Substantial reduction in the amount of groundwater otherwise available for public water supplies?	☒	☐	☐	☐

b) The south bank of Cache Creek adjacent to the project site has satisfactory freeboard to prevent flooding during a 100-year event. The proposed mining sites and aggregate processing area would not be subject to flooding during the 100-year storm. The project proposes some grading of the land separating proposed excavation areas from the creek to improve bank stability. The potential impacts related to flooding will be discussed in the EIR.

c) The project would result in discharge of process water into excavated pits. The process would contain fine-grained sediments, and eventually backfill portions of the excavated pits. Discharge of process waters to other surface waters (including Cache Creek) would not occur. It is possible that chemicals (fuels, lubricants, and/or hydraulic oil) could be released from equipment working near or in open-water lakes.

d) The project would result in changes in the amount of surface water in a water body. Large open-water lakes would be created as part of the project, and therefore, surface water storage would be increased locally. Specific County recharge programs are not yet available, but may include use of mining excavations for recharge galleries, which could affect surface water storage volumes and flows in Cache Creek.

e) Extraction or reclamation would occur in no surface water streams or creeks, therefore no change in currents, course, or direction of water movements would be expected.

f) The project could result in the reduction of the quantity of groundwater in the aquifer. The open-water lakes proposed by the project would allow groundwater to evaporate, resulting in a loss of storage and an increased absorption rate. Additional pumping of groundwater would be required to accommodate increased processing at the plant site.

g) The project would result in local changes to the characteristics of the shallow (less than 100 feet deep) aquifer. Wet-pit mining is proposed to a maximum depth of 70 feet (up to 54 feet below average high groundwater). Portions of the wet-pit excavations would be backfilled with fine-grained sediments and portions would remain as open-water lakes. Backfilled excavations could lower permeability in some areas, which may reduce groundwater levels downgradient of the bakfilled pits, creating decreased yields to nearby wells and reduced localized aquifer recharge from flows in Cache Creek.

h) The project could result in impacts to groundwater quality. This issue will be analyzed in the EIR.

i) The project could result in the reduction of the quantity of groundwater in the aquifer. The open water lake proposed in the project would allow groundwater to evaporate, resulting in a loss of storage. In addition, changes to the shallow aquifer through backfilling with fine-grained sediments could alter groundwater flow rates, causing reduced yields to nearby wells.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
V.	**AIR QUALITY.** *Would the proposal:*				
a)	Violate any air quality standard or contribute to an existing or project air quality violation?	☒	☐	☐	☐
b)	Expose sensitive receptors to pollutants?	☒	☐	☐	☐
c)	Alter air movement, moisture, or temperature, or cause any change in climate?	☐	☐	☒	☐
d)	Create objectionable odors?	☐	☐	☒	☐

a) The mining and reclamation activities proposed by the project would involve operation of heavy equipment (haul trucks, bulldozers, scrapers, motor graders, and excavators) on exposed silty soil. These operations would result in the generation of dust. The dust generated by these activities may exceed the air quality standard for respirable dust (PM_{10}). Operation of internal combustion engines for this equipment would increase the emission of exhaust at the project site. The project also proposes to increase processing of aggregate resources at the existing processing plant located in the northeastern portion of the project site. The increased production at the rock processing and asphalt plants could increase generation of dust, carbon monoxide (CO), nitrogen oxide (NOx), sulfur oxides (SOx), and volatile organic compounds (VOC). Increased truck trips associated with the requested increased production rate could also result in increased exhaust emissions.

b) The closest sensitive receptor to the proposed mining and reclamation activities is a resident that is approximately 1,600 feet south of the southeasternmost mining area. The distance of this and other residences in the area away from the mining/reclamation activities and processing plant site indicates that the impacts on sensitive receptors is expected to be low. However, the impact of air emissions on residents would be addressed in this EIR.

c) The proposed project would result in significant lowering of the existing landscape throughout the proposed mining area. The lowering of the land surface and creation of the proposed 161 acres of open lakes portion of the project site could result in locally cooler temperatures. However, the potential for impairment to reclaimed agricultural uses appears slight and could be offset by a change in cropping systems.

d) It is unlikely that the proposed project would result in objectionable odors. Circulation of water within the proposed lake (caused by wind currents, thermal stratification, and groundwater flow) would reduce the potential for excessive algal growth commonly associated with stagnant water.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
VI.	**TRANSPORTATION/CIRCULATION.** *Would the proposal result in:*				
a)	Increased vehicle trips or traffic congestion?	☒	☐	☐	☐
b)	Hazards to safety from design features (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☒	☐	☐	☐
c)	Inadequate emergency access or access to nearby uses?	☐	☐	☒	☐
d)	Insufficient parking capacity on-site or off-site?	☐	☐	☐	☒
e)	Hazards or barriers for pedestrians or bicyclists?	☒	☐	☐	☐
f)	Conflicts with adopted policies supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒
g)	Rail, waterborne or air traffic impacts?	☐	☐	☐	☒

a) The application requests an increased permitted annual production rate to 1,200,000 tons/year. An estimated increase in truck trips, from 35,284 to 55,636 trips (including estimated trips related to aggregate recycling), could result from processing of the maximum allowable annual production rates. Potential impacts related to the increase in truck trips could include roadway pavement deterioration on SR 16. The potential project-specific and cumulative impacts of the proposed project will be addressed in detail in the EIR.

b) Potential impacts could include limited sight distances, truck related accidents, and conflicts with other trucks. The project does not propose modifications to existing roadways, and would continue to use the highway at increased levels. The increase in truck traffic could affect sight distances along SR 16. The potential project-specific and cumulative impacts of the proposed project will be addressed in the EIR.

c) Emergency access to the project site is provided by the private paved access roadway to the plant site from SR 16. This roadway and farming roads that intersect SR 16 provide adequate emergency access to the project site and surrounding areas.

d) The processing plant site provides adequate on-site parking areas under existing conditions.

e) The increased levels of truck trips could result in conflicts with school buses, which in turn could create hazards for pedestrians boarding and departing the buses. This issue will be analyzed in the EIR.

f) No alternative transportation policies are proposed for the area of the project site. The total number of employees proposed (14) does not fall within the thresholds of the County Vehicle Trip Reduction Ordinance.

g) Neither rail, waterborne, nor air traffic would be impacted by the proposed project.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. BIOLOGICAL RESOURCES. *Would the proposal result in impacts to:*					
a)	Endangered, threatened or rare species or their habitats (including but not limited to plants, fish, insects, animals, and birds)?	☒	☐	☐	☐
b)	Locally designated species (e.g., heritage trees)?	☒	☐	☐	☐
c)	Locally designated natural communities (e.g., oak forest, coastal habitat, etc.)?	☐	☐	☐	☒
d)	Wetland habitat (e.g., marsh, riparian and vernal pool)?	☒	☐	☐	☐
e)	Wildlife dispersal or migration corridors?	☒	☐	☐	☐

a) The application proposes mining and reclamation of areas that are predominantly under agricultural production. The area just north of the mining area includes annual grasslands, oak woodland, riparian wetland, creek channel, and riparian scrub habitats. The natural habitat areas would not be disturbed by mining and reclamation activities. Numerous elderberry plants, host plant for the valley elderberry longhorn beetle, have been identified at the northern portion of the proposed site but would be avoided and protected during mining and reclamation. The proposed mining would result in disturbance of agricultural fields which are recognized as foraging habitat for Swainson's hawk. The application commits the applicant to entering into a 2081 agreement with the California Department of Fish and Game to mitigate impacts to this habitat. Although not currently identified at the project site, habitat for bank swallows could be created by excavation of steep slopes adjacent to open water (a consequence of wet pit mining).

b) Fence-row habitat and windbreaks separating the agricultural fields may contain northern California black walnut and oak trees. Excavation, haul roads, and other mining activities may result in the elimination or impairment of these areas, thereby limiting protective cover, as well as perching and roosting opportunities.

c) Locally designated natural communities have not been identified at the project site.

d) The applicant has had prepared a wetlands delineation map for the project site and has submitted the map to the U.S. Army Corps of Engineers (USCOE). The USCOE has reviewed and verified the map which identifies approximately 184 acres of jurisdictional areas, including wetlands. The wetland areas are, in general, concentrated along the active channel of Cache Creek, outside the areas to be disturbed by proposed mining and reclamation activities. Wetland areas do exist in areas proposed by the application for habitat restoration on unmined lands.

Topsoil used in the reclamation of the proposed wetland areas may be contaminated with hazardous levels of chemicals. These substances could be absorbed by the lants and animals associated with the reclaimed wetlands, thereby impacting the quality of hte habitat.

e) Although the project site is currently subject to intensive cultivation some migratory species may pass through the project site. Special status species known to be on or adjacent to the project site or which could possibly use existing habitat at the site include valley elderberry longhorn beetle (identified at the site).

Annual grasslands occupy the slopes and transition areas between the fields and other habitat areas at the northern margin of the project site. Woodland habitat has been established in pockets along the south bank of Cache Creek. Lower terraces or excavated areas along the Cache Creek channel support riparian forest habitat and wetlands. These areas would not be disturbed by proposed mining and reclamation activities, although noise and dust impacts from mining operations may affect nearby wildlife migrating along the channel.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. ENERGY AND MINERAL RESOURCES. *Would the proposal:*				
a) Conflict with adopted energy conservation plans?	☐	☐	☐	☒
b) Use non-renewable resources in a wasteful and inefficient manner?	☐	☐	☒	☐
c) 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?	☐	☐	☐	☒

a) Although the project would require electrical power for operation of some processing plant equipment and petroleum fuels for other equipment, the project does not conflict with any adopted conservation plans. The project would not require the development of new sources of energy.

b) The project would require the use of petroleum fuels for the excavation and transport of mined and processed aggregate products. The energy consumption required for the mining, processing, transportation, and reclamation activities would be consistent with other existing aggregate production activities. The use of these fuels is not, therefore, significantly wasteful or inefficient.

c) The project proposes the excavation and processing of approximately 33.6 million tons of aggregate materials. These sand and gravel deposits are classified as Portland Cement Concrete (PCC) aggregate resources by the California Division of Mines and Geology (Dupras, 1988). The site falls within a Mineral Resource Zone 2 (MRZ-2) that indicates that significant mineral resources are known to exist. The area has also met the criteria for sectorization, indicating that the extraction of the resources is not restricted by incompatible land uses. The reclamation uses proposed in the project would not restrict the future availability of these known mineral resources.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
IX.	**HAZARDS.** *Would the proposal involve:*				
a)	A risk of accidental explosion or release of hazardous substances (including, but not limited to: oil, pesticides, chemicals or radiation)?	☐	☒	☐	☐
b)	Possible interference with an emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
c)	The creation of any health hazard or potential health hazard?	☐	☒	☐	☐
d)	Exposure of people to existing sources of potential health hazards?	☐	☐	☐	☒
e)	Increased fire hazard in areas with flammable brush, grass, or trees?	☐	☐	☐	☒

a) Transportation, storage, and handling of fuels, lubricants, and other chemicals at the plant or mining areas could create the potential for an explosion or release of hazardous substances if not mitigated. However, Solano Concrete has implemented a Storm Water Pollution Prevention Plan (SWPPP) and Spill Prevention Control and Countermeasure Plan (SPCCP) that reduces the potential risk of releases of hazardous substances and provide emergency response procedures to mitigate potential impacts to less than significant levels.

b) The proposed project would not interfere with any emergency response plan or emergency evacuation plan. The setting of the site is relatively isolated rural, agricultural fields. Evacuations and emergency response related to emergencies at the existing plant site would be accommodated by the paved private access road.

c) The creation of steep-sided excavations flooded with water may present a hazard to workers and visitors at the mining area. The Solano application indicates that the project boundaries would be posted and fenced to notify people of the potential hazards of the excavation and limit access to unauthorized persons.

When filled with water, the proposed open excavations may become a breeding area for mosquitos. The Yolo-Solano Mosquito Abatement District inspects flooded open pits in the area and implements measures to prevent mosquito larvae from hatching and control breeding as needed.

d) Potential health hazards to employees and visitors are currently regulated and enforced by the Mines Safety and Hazard Administration (MSHA) and the Occupational Safety and Hazard Administration (OSHA). In addition, the existing operation has complied with various other requirements, including a Storm Water Pollution Prevention Plan (SWPPP), a Spill Prevention Plan, a National Pollution Discharge Elimination System (NPDES) permit (all of which are related to water quality), and an Authority to Operate permit (relating to air quality).

e) The project site would be surrounded to south, west, and east by agricultural fields and to the north by the riparian area along Cache Creek, which are environments that do not generally present fire hazards. In addition, the mining areas would be stripped of vegetation and separated from unmined areas by setbacks and haul roads forming fire breaks.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
X.	**NOISE.** *Would the proposal result in:*				
a)	Increases in existing noise levels?	☒	☐	☐	☐
b)	Exposure of people to severe noise levels?	☐	☐	☒	☐

a) The operation of heavy equipment in the proposed mining and reclamation areas would increase noise levels adjacent to the project site. The site is located in an agricultural area of relatively low ambient noise levels. Mining and reclamation activities would typically be conducted from 6:00 am to 6:00 pm (daytime). However, the application also indicates that mining activities may occur during periods of high demand from 6:00 pm to 6:00 am (nighttime). The application presents limits to nighttime noise (80 dBA for property boundary; 60 dBA for off-site residences) and nighttime noise (65 dBA at property boundary) that are consistent with the recommendations of the draft OCMP. The operations of this equipment would require the use of backup beepers for safety. The beepers may be perceived as a nuisance sound.

b) The closest sensitive receptor to the proposed mining and reclamation activities is a resident that is approximately 1,600 feet south of the southeasternmost mining area. This and other residences are outside estimated noise contours, representing the maximum allowable noise thresholds for daytime noise levels (80 dBA).

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
XI.	**PUBLIC SERVICES.** *Would the proposal have an effect upon, or result in a need for new or altered government services in any of the following areas:*				
a)	Fire protection?	☐	☐	☒	☐
b)	Police protection?	☐	☐	☒	☐
c)	Schools?	☐	☐	☒	☐
d)	Maintenance of public facilities, including roads?	☒	☐	☐	☐
e)	Other governmental services?	☒	☐	☐	☐

a) The project would not create any foreseeable increase in equipment or personnel for the Madison Fire Protection District that serves the area of the project.

b) No additional police services are expected from the County Sheriff's Office for the proposed project. The applicant indicates that patrolling of the site during nonworking hours would be performed by Solano Concrete personnel.

c) The project would not likely require new or modification to existing educational facilities.

d) Increased truck traffic related to the requested increase in permitted annual production rates could present significant impacts on the maintenance of roadways. The impact of increased truck trips would require further analysis.

e) The increased scale and intensity of the project, as well as the increased regulatory requirements will require additional compliance inspection and mitigation monitoring, that could have significant impacts on government services. The impact of increased monitoring responsibilities will require further analysis.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. UTILITIES AND SERVICE SYSTEMS. *Would the proposal result in a need for new systems or supplies, or substantial alterations to the following utilities:*					
a)	Power or natural gas?	☐	☐	☐	☒
b)	Communications systems?	☐	☐	☐	☒
c)	Local or regional water treatment or distribution facilities?	☐	☐	☐	☒
d)	Sewer or septic tanks?	☐	☐	☐	☒
e)	Storm water drainage?	☒	☐	☐	☐
f)	Solid waste disposal?	☐	☐	☐	☒
g)	Local or regional water supplies?	☒	☐	☐	☐

a) The proposed project could be served by existing energy supplies. The mining and reclamation activities would be performed primarily by diesel-powered equipment using readily available fuel sources. This equipment would be served by on-site permitted aboveground fuel storage tanks. The primary power supply for the processing plant would be existing electrical supply lines and propane stored in existing on-site aboveground tanks.

b) No changes in existing communication systems at the Solano Concrete facility would be required for the proposed project.

c) The project site is not currently served by local or regional water treatment or distribution facilities. The water supply for the existing facility is on-site private wells, a condition that would not change under the proposed project. Water treatment for the existing plant operation is limited to the management of processing water, which is controlled by Waste Discharge Requirements permitted by the Regional Water Quality Control Board. The management of wastewater would not be modified under the proposed project.

d) The existing plant is equipped with toilet facilities and septic tank/leach field system. Portable toilets would be provided for the mining and reclamation activities proposed by the application. These sanitation facilities would not require additional sewage treatment systems.

e) The project proposes modifications to existing topography that would result in changes to storm water drainage patterns.

f) No additional solid waste would be generated by the project.

g) The project could result in the reduction of the quantity of groundwater in the aquifer. The open-water lake proposed by the project would allow groundwater to evaporate, resulting in a loss of storage. In addition, changes to the shallow aquifer through backfilling with fine-grained sediments could alter groundwater flow rates, causing reduced yields to nearby wells.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. AESTHETICS. *Would the proposal:*					
a)	Affect a scenic vista or scenic highway?	☐	☐	☐	☒
b)	Have a demonstrable negative aesthetic effect?	☐	☒	☐	☐
c)	Create light or glare?	☐	☐	☐	☒

a) The project site is not bounded by a scenic highway nor is it directly visible from a scenic highway or vista.

b) The project site is located on relatively flat topography. Mining and reclamation activities would be located more than 1,000 feet from accessible viewpoints along SR 16, south of the project site. Views from this vantage would have a minor effect on the aesthetics of the rural landscape. However, views from I-505 could be affected by mining activities. This potential impact will be analyzed in the EIR.

c) Daytime mining and reclamation activities would not require lighting. The existing plant site is lighted for security reasons at a level of intensity similar to farming compounds of the area. The application proposes possible nighttime mining operations during peak periods of aggregate demand. Night operations would require use of headlights on excavation equipment and lighting for dragline operations used for excavation below the groundwater table. The draft OCMP includes a Performance Standard (2.5-10) that requires mining operators to direct light sources away from adjoining properties and public rights of way.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. CULTURAL RESOURCES. *Would the proposal:*					
a)	Disturb paleontological resources?	☒	☐	☐	☐
b)	Disturb archaeological resources?	☒	☐	☐	☐
c)	Affect historical resources?	☐	☐	☐	☒
d)	Have the potential to cause a physical change which would affect unique ethnic cultural values?	☐	☐	☐	☒
e)	Restrict existing religious or sacred uses within the potential impact area?	☐	☐	☐	☒

a) Paleontological resources (including mammoth skulls) have been identified in the alluvial deposits of the Lower Cache Creek basin during previous in-channel and off-channel mining operation, and could be uncovered during proposed excavation activities at the project site. The disturbance or damage to these resources could be a significant impact and would be evaluated under the analysis provided by the EIR.

b) Cultural resource investigations at the project site indicate that one recorded archaeological site has been identified. Significant impacts would be reduced or eliminated by conducting additional surveys to determine if more archaeological areas may be present, marking the boundaries of the areas and avoiding them during mining, or if it is decided the areas cannot reasonably be avoided, an archaeological excavation (in the presence of a Native American representative) to remove and preserve the artifacts would be conducted. The impact proposed mining and reclamation activities on known or potential archaeological resources would be further evaluated in the EIR.

c) No historic cultural resources were identified at the project site.

d) The project is not expected to result in a physical change that could adversely affect unique ethnic cultural values in the project area.

e) No existing religious or sacred uses have been identified at or near the site.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. RECREATION. *Would the proposal:*				
a) Increase the demand for neighborhood or regional parks or other recreational facilities?	☐	☐	☐	☒
b) Affect existing recreational opportunities?	☐	☐	☐	☒

a) The project would not result in increased demand for recreational facilities.

b) The proposed project would not adversely impact any existing recreational opportunities. The project would be conducted on private rural lands that may offer hunting or wildlife observation by authorized persons; this opportunity would not be significantly affected by the proposed project.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the project have the potential to 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 of restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐
b) Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	☒	☐	☐	☐
c) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a 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)	☒	☐	☐	☐
d) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

XVII. EARLIER ANALYSES (see attached page)

Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, one or more effects have been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case a discussion should identify the following on attached sheets:

a) **Earlier analyses used.** The following documents are available in the Yolo County Community Development Agency, 292 West Beamer Street, Woodland, California:

BASELINE Environmental Consulting, 1995, *Environmental Impact Report, Solano Concrete Company, Inc., Short-term, Off-channel Mining Permit Application*, prepared for Yolo County Community Development Agency, July.

CH2M HILL, 1994, *Final Cache Creek Aggregate Resource Inventory*, report prepared for Yolo County Community Development Agency.

EIP Associates, Northwest Hydraulic Consultants, and David Keith Todd, Consulting Engineers, 1995, *Technical Studies and Recommendations for the Lower Cache Creek Resource Management Plan*, prepared for Yolo County Community Development Agency, October.

Environ, 1980, *Draft Environmental Impact Report, Sand and Gravel Operations along Cache Creek between Capay and Yolo*, prepared for County of Yolo.

Solano Concrete Company, Inc., 1995, *Long-term Mining Application and Related Studies*, December.

Yolo County, 1995a, *First Draft Off-channel Mining Plan for Lower Cache Creek*, October.

Yolo County, 1995b, *First Draft Cache Creek Resources Management Plan*, December.

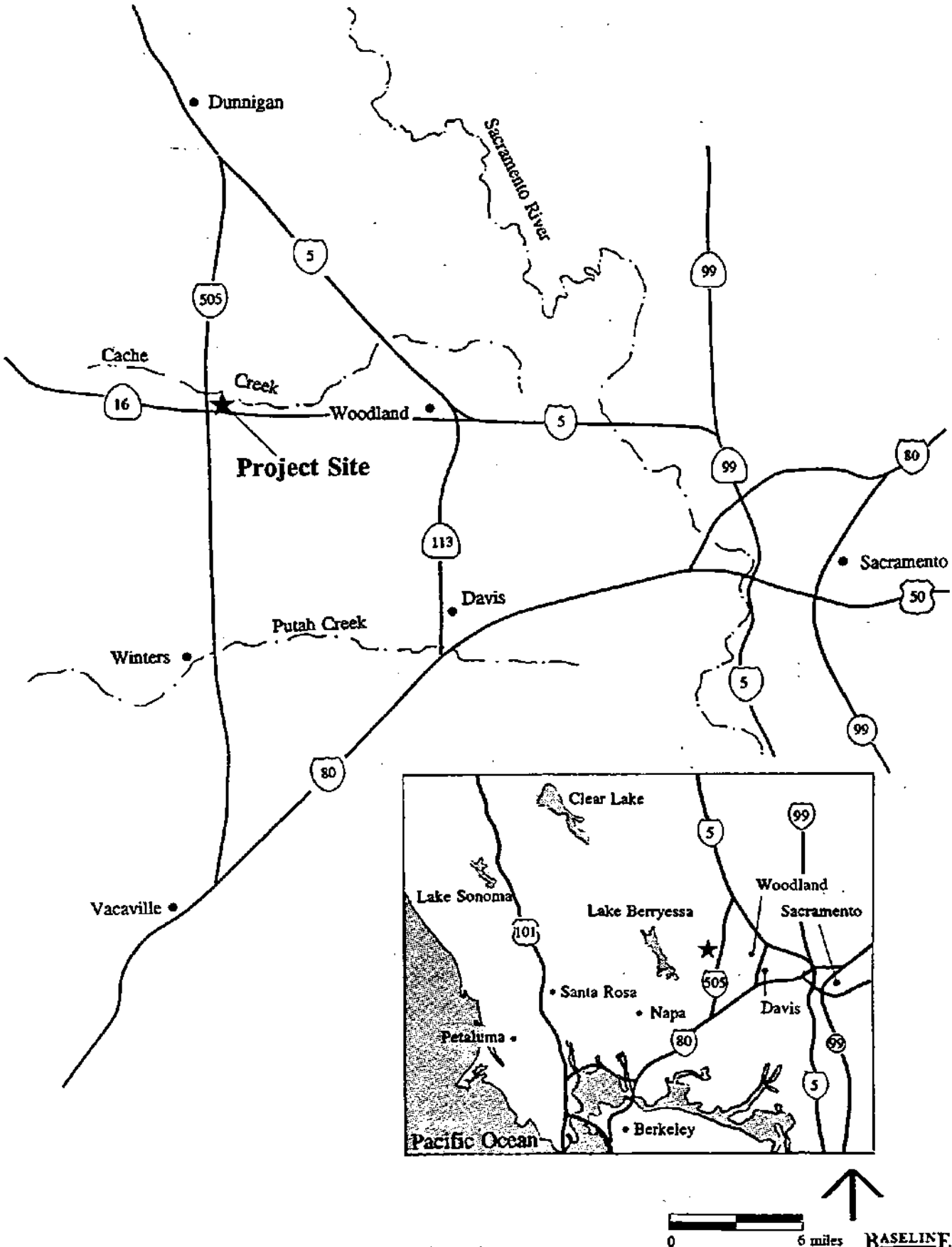
b) **Impacts adequately addressed.** All potentially significant impacts associated with the project will be analyzed in the EIR.

c) **Mitigation measures.** Mitigation measures addressing each impact will be presented in the EIR.

Authority: Public Resources Code Sections 21083 and 21087.
Reference: Public Resources Code Sections 21080(c), 21080.1, 21080.3, 21082.1, 21083, 21083.3, 21093, 21094, 21151; *Sundstrom v. County of Mendocino*, 202 Cal. App. 3d 296 (1988); *Leonoff v. Monterey Board of Supervisors*, 222 Cal App. 3d 1337 (1990).

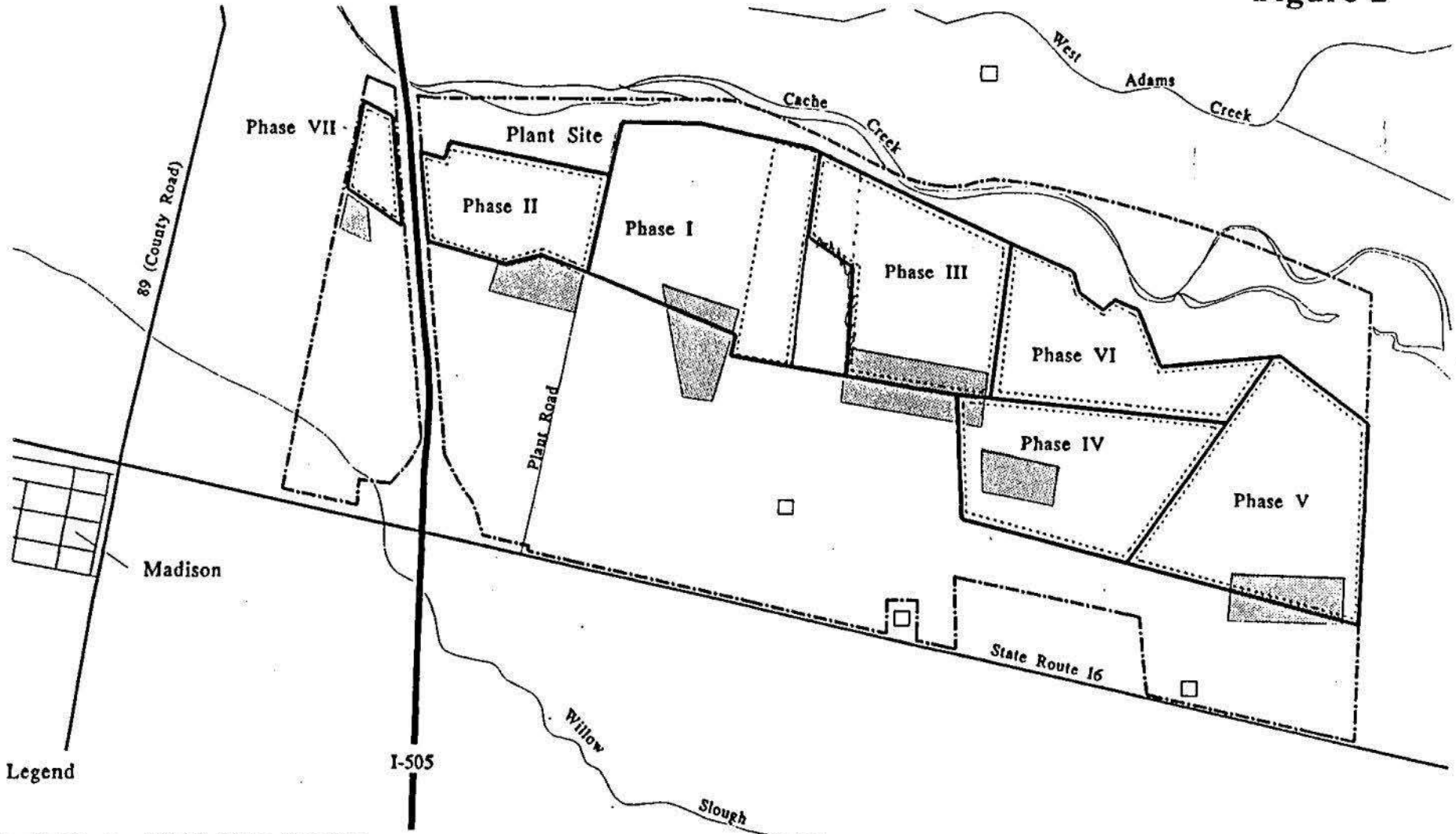
REGIONAL LOCATION

Figure 1



GENERALIZED MINING PLAN

Figure 2



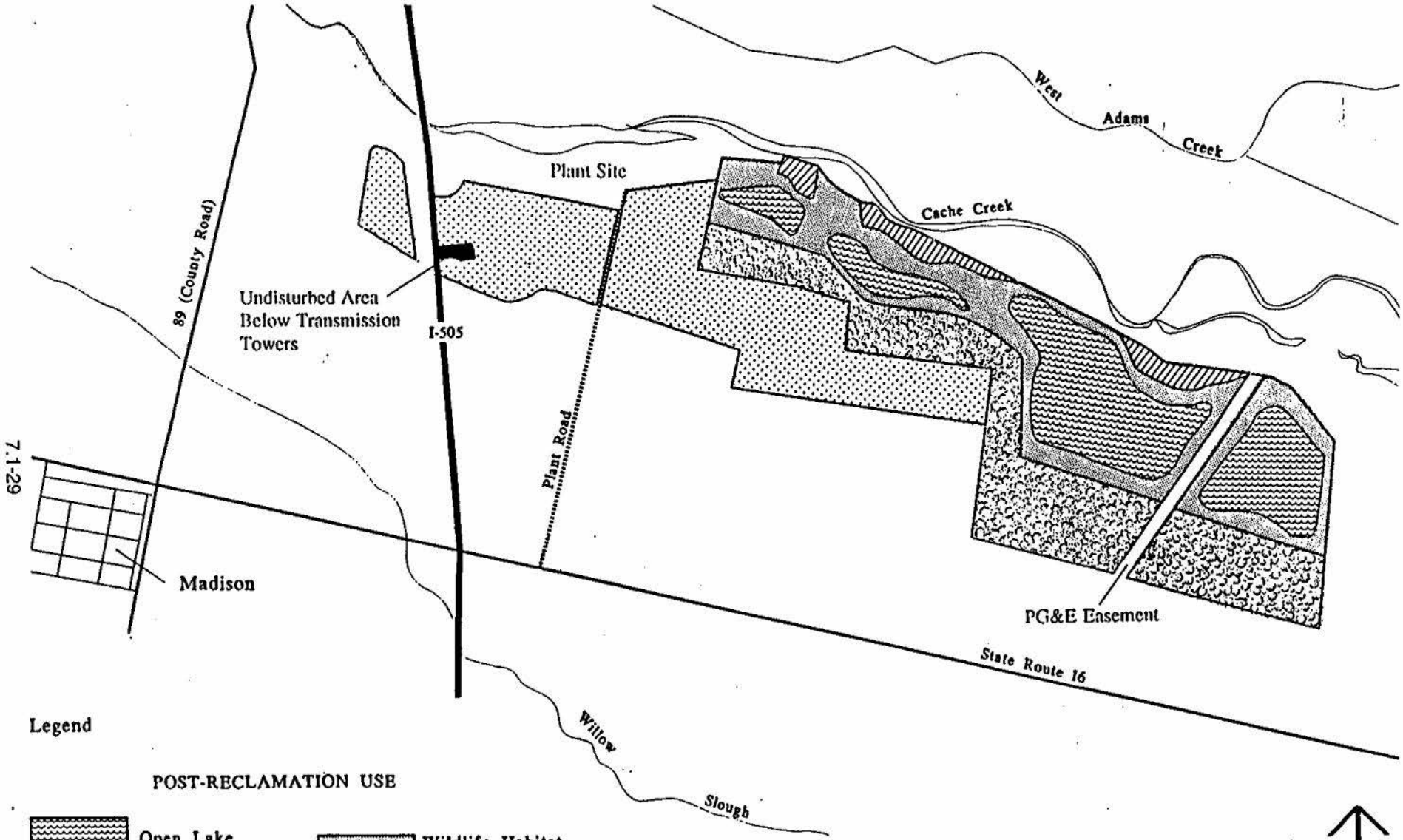
BASELINE

7.1-28

95263-00.02 1/8/96, Cadd File N, 95263GMP Solano Long-Term

GENERALIZED RECLAMATION PLAN

Figure 3



95263-00.02 1/3/96, Cadd File N. 95263RREC Solano Long-Term

7.2 COMMENTS ON NOP

State of California

GOVERNOR'S OFFICE OF PLANNING AND RESEARCH

1400 TENTH STREET
SACRAMENTO 95814

PETE WILSON
GOVERNOR

LEE GRISSOM
DIRECTOR

DATE: January 19, 1996

TO: Reviewing Agencies

RE: SOLANO LONG TERM OFF CHANNEL MINING PERMIT EIR
SCH# 96012034

Attached for your comment is the Notice of Preparation for the SOLANO LONG TERM OFF CHANNEL MINING PERMIT EIR draft Environmental Impact Report (EIR).

Responsible agencies must transmit their concerns and comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of this notice. We encourage commenting agencies to respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

DAVID MORRISON
YOLO COUNTY
292 WEST BEAMER STREET
WOODLAND, CA 95695

with a copy to the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the review process, call Kristen Derscheid at (916) 445-0613.

Sincerely,

Antero A. Rivasplata

ANTERO A. RIVASPLATA
Chief, State Clearinghouse

Attachments

cc: Lead Agency

RECEIVED
JAN 24 1996
By_____

NOP Distribution List

SCH#_____

S = sent by lead agency
X = sent by SCH

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916/324-1833

[ ] Tom Micone
California Highway Patrol
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Planning and Analysis Division
P.O. Box 924898
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State and Consumer Services

[ ] Robert Sleppy
Dept. of General Services
400 R Street, Suite 5100
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501 J Street, Suite 400
Sacramento, CA 95814
916/445-3160

California Environmental Protection Agency

[X] Barbara Fry
Air Resources Board
2020 L Street
Sacramento, CA 95815
916/322-8267

[ ] Mark deBie
Calif. Waste Management Board
8800 Cal Center Drive
Sacramento, CA 95826
916/255-2367

[ ] Wayne Hubbard
State Water Resources Control Board
Division of Clean Water Programs
P.O. Box 944212
Sacramento, CA 94244-2120
916/227-4308

[ ] Phil Zentner
State Water Resources Control Board
Division of Water Quality
P.O. Box 944213
Sacramento, CA 94244-2130
916/657-0912

[ ] Mike Falkenstein
State Water Resources Control Board
Division of Water Rights
901 P Street, 3rd Floor
Sacramento, CA 95814
916/657-1377 (8-437)

[ ] Dept. of Toxic Substances Control
CEQA Tracking Center
400 P Street, Fourth Floor
P.O. Box 806
Sacramento, CA 95812-0806
916/324-3119

Regional Water Quality Control Board

[ ] NORTH COAST REGION (1)
5550 Skyline Blvd., Suite A
Santa Rosa, CA 95403
707/576-2220 (8-590)

[ ] SAN FRANCISCO BAY REGION (2)
2101 Webster, Suite 500
Oakland, CA 94612
510/286-1255

[ ] CENTRAL COAST REGION (3)
81 Higuera Street, Suite 200
San Luis Obispo, CA 93401-5427
805/549-3147 (8-629)

[ ] LOS ANGELES REGION (4)
101 Centre Plaza Drive
Monterey Park, CA 91754-2156
213/266-7556

[X] CENTRAL VALLEY REGION (5)
3443 Routier Road, Suite A
Sacramento, CA 95827-3098
916/255-3000

- ○ Fresno Branch Office
  3614 East Ashlan Avenue
  Fresno, CA 93726
  209/445-5116 (8-421)
- ○ Redding Branch Office
  415 Knollcrest Drive
  Redding, CA 96002
  916/224-4845 (ATS 441)

[ ] LAHONTAN REGION (6)
2092 Lake Tahoe Boulevard
South Lake Tahoe, CA 96150
916/542-5400

- ○ Victorville Branch Office
  15428 Civic Drive, Suite 100
  Victorville, CA 92392-2359
  619/241-6583

[ ] COLORADO RIVER BASIN REGION (7)
73720 Fred Waring Drive, #100
Palm Desert, CA 92260-2564
619/346-7491

[ ] SANTA ANA REGION (8)
2010 Iowa Avenue, Suite 100
Riverside, CA 92507
714/782-4130 (8-632)

[ ] SAN DIEGO REGION (9)
9771 Clairemont Mesa Blvd., Suite B
San Diego, CA 92124-1331
619/265-5114 (8-636)

[ ] OTHER: _____

[ ] OTHER: _____

YOLO COUNTY DEPARTMENT OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH SERVICES
10 Cottonwood
Woodland, CA 95695
(916) 666-8646

LAND USE PROJECT EVALUATION

PROJECT DESCRIPTION

Title: NOP-EIR Solano Concrete Co, Inc. Long Term Off-Channel Mining Permit

Type: NOP-EIR

Location: Immediately South of Cache Creek, North of S.R. 16, West of I-505

Applicant: Solano Concrete Co., Inc. APN: _____

Date Received by E.H.: 1/22/96

Environmental Health has evaluated/reviewed the above referenced project proposal and would like to comment as follows:

The proposed EIR would need to address the following:

1. A detailed analysis of the possible impact that the proposed long-term, deep wet pit mining will have on groundwater quality, especially any impact on drinking water supply wells nearby. Mitigation measures to these impacts, if any, should also be discussed.

2. The control of run-off from surrounding land into the wet pit needs to be discussed. Of particular importance is how to keep agricultural chemicals from entering the wet pit, both during mining and after it is reclaimed into a wetland habitat pit.

3. The EIR should also discuss the possible impact that the post mining wetland habitat may have upon groundwater quality, especially when it is part of a deep pit reaching 70 feet below the groundwater table.

4. It appears that monitoring wells around the mining area will be used to monitor groundwater quality. A detailed description of the elements (both chemical and biological) to be monitored and the frequency of monitoring should be included in the EIR.

5. How will sanitary facilities and drinking water be provided to workers during mining activities?

Continued on next page.

Environmental Health Recommends:

☐ Approval of Project.

☐ Approval with Condition:

_____

_____

_____

_____

☒ EIR ☐ ND

☐ No Recommendation until the following additional information is available for evaluation:

_____

_____

_____

☐ Others:

_____

_____

☐ **This project requires no further review or evaluation by Environmental Health.**

Our office ☐ has ☒ has not previously reviewed an application on any portion of this project.

PROJECT EVALUATED BY: Thomas Y. To Date: February 1, 1996

Contact Person: Thomas To (666-8646)

Historical Resources Information System

ALAMEDA
COLUSA
CONTRA COSTA
DEL NORTE
HUMBOLDT
LAKE
MARIN
MENDOCINO
MONTEREY
NAPA
SAN BENITO
SAN FRANCISCO
SAN MATEO
SANTA CLARA
SANTA CRUZ
SOLANO
SONOMA
YOLO

Northwest Information Center
Foundation Center, Bldg. 300
Sonoma State University
1801 East Cotati Avenue
Rohnert Park, California 94928-3609
(707) 664-2494 • Fax (707) 664-3947

January 30, 1996 File No.: 96-YO_10

County of Yolo
Community Development Agency
292 West Beamer Street
Woodland, CA 95695

re: Notice of Preparation and Notice of Scoping Meeting for Solano Concrete Company, Inc. Long-Term Off-Channel Mining Permit

Attn: David Morrison, Resource Management Coordinator

Records at this office were reviewed to determine if this project could adversely affect historical resources. The review for possible historic structures, however, was limited to references currently in our office. The Office of Historic Preservation has determined that any building or structure 45 years or older may be of historic value. Therefore, if the project area contains such properties they should be evaluated by a historian prior to commencement of project activities. Please note that use of the term historical resources includes both archaeological sites and historic structures.

___X A portion of the proposed project area has been surveyed (S #2955) and contains the archaeological site: CA-YOL-69 and is adjacent to CA-YOL-70. A study of the unsurveyed portions of the project area is recommended prior to commencement of project activities. It is also recommended that CA-YOL-69 be relocated and that project specific recommendations be made. In addition the proposed project area is located adjacent to a recorded historic resource (HRI #5695-0343-0000). See comment section.

____ The proposed project area has the possibility of containing unrecorded archaeological site(s). A study is recommended prior to commencement of project activities.

____ The proposed project area contains a listed historic structure ( ). See recommendations in the comments section below.

____ Study # identified one or more historical resources. The recommendations from the report are attached.

____ Study # identified no historical resources. Further study for historical resources is not recommended.

____ There is a low possibility of historical resources. Further study for historical resources is not recommended.

__X_ Comments: The 1986 Yolo County Historic Resources Survey identified the Moore Ditch as appearing eligible for listing in the National Register of Historic Places (see enclosed forms). It is therefore recommended that, prior to commencement of project activities, an historian familiar with Yolo County history assess the current status of the ditch and determine how project activities may be affect it and its setting.

If archaeological resources are encountered during the project, work in the immediate vicinity of the finds should be halted until a qualified archaeologist has evaluated the situation. If you have any questions please give us a call (707) 664-2494.

Sincerely,

Katherine Johnson for

Leigh Jordan
Coordinator

UC DAVIS: DEPARTMENT OF ENGLISH

Feb. 14, 1996

Dave Morrison, Resource Management Coordinator
Planning Division
Community Development Agency
292 West Beamer St.
Woodland, CA 95695

Dear Mr. Morrison:

I would like to submit a few comments on the "project level" EIRs being designed for the next thirty years of gravel mining in Cache Creek by four leading aggregate companies in Yolo county. These comments are a response to your request for public suggestions on "the scope of the analysis of alternatives to the project(s)", but I hold them equally pertinent to the fundamental issues that are supposed to drive the Resource Management Plan being prepared for the Creek.

First, a brief summary. Gravel extraction in Cache Creek has proceded for seventeen years under a set of "interim" regulations adopted in 1979. In 1980 the Supervisors mandated the preparation of a "Long Term Management Plan", and more than a half-million dollars was ultimately spent on a draft document (the Dames & Moore report), in the next five years. The Board then consigned the study to archival oblivion after a sustained and intense protest from citizens who found it incompetent, uninformed, and dangerous.

Meanwhile, gravel production on Cache Creek was rising, so in 1987 the allowable limit on extraction was raised. Cache Creek Aggregates proposed building the first processing plant north of Esparto, at the mouth of Capay Valley, and a "Consensus Committee" began work on a new management plan (still under construction). A citizens' lawsuit has stalled the gravel plant at Capay, and the Board itself abruptly terminated the "consensus process," after the aggregate industry was unable to steer the process in pursuit of its own goals.

It is against this background that the current scoping and inputting should be viewed. For two decades gravel mining on the Creek has brought acrimonious controversy over the kind and level of damage that results; and in the course of this controversy the county has labored mightily and spent flagrantly to achieve, in the end, essentially nothing in the way of substantial or permanent protection for <u>any</u> interest involved--not the public's nor the industry's nor, certainly, the beaver's or blue heron's.

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One might even argue that, with the best of intentions, they have only insured that the process will take as long as possible and be as painful and expensive as possible.

All the same, there are changes. The balance of power shifts, and it shifts always according to the Golden Rule ("Those who have the gold, rule." --Charles Hurwitz, Maxxam CEO). As the controversy has run on here for twenty years, so have the gravel trucks run without cease all over the North State, to the great profit of those who own them and fill them. These companies can afford the EIR drafts and finals. They can pay for the lawyers and expert witnesses to defend those documents. They can make contributions to campaigns, hire lobbyists and buy full-page ads to sway opinion in both the backrooms and the streets. They do not like to spend so much on grease, of course, and when they express their displeasure forcefully enough the wheels of officialdom do finally grind into motion.

We are clearly at that point now. The creekbed in the designated area has been stripped of aggregate, lowered as much as 20 feet, with some embarrassing consequences (washed-out bridges, lowered water table, failed wells). A gang of obstinate troublemakers from the countryside will interfere with any move to expand in-channel mining up the creek, and the watershed delivers only negligible quantities of new aggregate in the winter season. Meanwhile the demand for our region's PC-grade material is improving. These conditions are all visible in the documents under discussion here. The four companies who propose to apply for long-term permits have all planned to move into off-channel extraction, a kind of mining for which the county has no in-place ordinances or policies. All four propose a substantial (in one case more than 100%) increase in the limit of production, so that they could, in the next 30 years, take out almost twice as much aggregate as the County yielded in the previous 100 years--a total of around 150 million tons. Finally, all four must apply for a crucial rezoning of large acreages, to allow mining on lands now protected by "Agricultural Preserve" designation.

In short, the county's gravel industry wants to expand radically both in size and mode of operation, with an accompanying fundamental change in land policy. Such breathtaking new dimensions do, indeed, suggest that the "scope" of the planned EIRs should be carefully considered; after all, the operations sketched so far would leave thousands of acres under water, take thousands more out of agricultural production for many years, and remove significant portions of an active aquifer (in a region where drought is a constant threat). In fact, the startling nature of these projected off-channel, long-term EIRs gives us our most valuable insight into the potential "scope" of their analysis. We understand finally that a simple assumption underlies all these documents. It is this: Life, as we know it in Yolo County, would be impossible without the aggregate industry. Or in the jargon of the EIR, the No Project

Alternative is No Alternative At All; it is a paradox, or nonsense, not worth the paper and ink to list it. No one in his or her right mind could realistically believe the Yolo Supervisors would ever consider not authorizing large-scale gravel mining.

Yet a few citizens in the county seem not to be in their right mind, at least on this issue, and persist in recommending exactly this solution, no matter how absurd that stance may appear to others. It is a curious thing that most of them are small farmers who live close to the creek, sometimes near stretches where mining has already occured. Evem more remarkable is the naive simplicity of their arguments against any massive extraction of sand and gravel from their neighborhood. You might argue that it is better to simply ignore this quixotic fringe, but I want to recommend that the proposed EIRs review the most far-fetched reasons for, and the broadest consequences of actually ending large-scale aggregate mining; that is, that they give a really earnest pretense of evaluating the NPA. This expansion in the usual scope of the analysis would give the Board a cachet of fairness and breadth; it might also lay to rest once and for all the dream that these protesters keep purveying.

To that end, let me detail the objections, beginning with the most serious. The critics of the aggregate industry argue that mining is incompatible with farming and can do expensive damage to the environment, including urban water supplies. They claim an old and outdated law (the Williamson Act) protects agricultural land by specifically forbiding activities like mining, and that by the proposed zoning change the County would accelerate the industrial and urban sprawl already eating at its farmland. They further claim water moves from the western Yolo mountains to the rest of the county, and passes under the earth through layers of sand and gravel, which purify it. They argue that to remove these layers with huge machines and leave large, deep holes full of stagnant water would be a bad thing, would cost more than is delivered. Of course they cannot deny that gravel is worth much more, by the ton, than water; they have to argue that a "long term" economic analysis is necessary, one which includes an assessment of such possible costs as a chlorination program for several towns, mosquito control, drowned children and animals, and flooding of "lowered" fields.

Even a cursory glance shows that the loss in ag production for the lands converted to bogs or rubble in these projects would be a mere two or three million a year (as opposed to a profit in mining of ten to fifteen times as much), and although the gravel income ends after 30 years, it is preposterous to think that responsible politicians in a modern society would base a decision on a benefit measurable only over centuries, of concern only to their grandchildren's grandchildren. Perhaps that is why your scoping procedure has not bothered to include any mention of economic analysis in the EIR process, but in fact such an analysis is a golden opportunity to reveal some of the eventual

exciting consequences of the projects, as opposed to the blander scenario of leaving the area to row crops, orchards, grass and oaks.

As part of a whole demographic and cultural trend (concrete, one could say, is the very foundation of that trend), the conversion of ag land to industrial production will act as a precedent for further rezoning, and will attract more investment in real estate, home-building, and commercial services. These in turn demand more resources, more aggregate, in an exponential increase. After thirty years, with new subdivisions and improved roads, and the vanishing of more inefficient and outdated farms, the opposition to mining up-stream and even further off-channel will have weakened; the citizens will realize that they are then living in an aggressively expanding suburban-urban environment, with a valuable resource still in place, reaching from Capay to Rumsey (another twenty-two miles of easy in-channel extraction); they will realize their own properties have multiplied in value by a factor of ten as a result of this growth; they will enthusiastically vote to build on this base for another thirty or even sixty years, toward union with the great metropolitan regions to the south and east. This projection is not, by the way, just another alarmist fantasy of the ecofringies; the Board of Supervisors, past and present, is fond of reminding us that "development is inevitable," and a quick review of aerial photos over the last thirty years will demonstrate how swiftly, drastically, and irrevocably this growth has occured, always at the expense of rural or wilderness areas.

By contrast, to arrest this trend (admittedly, we repeat, an absurd concept) would condemn rural Yolo county to very slow advancement along its archaic path of family-owned agriculture. The lands in question would be little changed from what they are now, producing vegetables, fruits, livestock, and a little firewood. The total value of such production would never amount to more than a fraction of the income from the complex of industries to which mining is intimately linked. Insofar as investors regarded the County as a stern defender of traditional farming (AP designation) they would shy away, and the area might actually decline. Malls might close, roads become untended and lonely, prices fall, and people leave. The tax base would not support a vigorous bureaucracy, an active and technologically sophisticated planning department capable of generating comprehensive studies, reviews, guidelines, draft resolutions, etc. Consequently even the environment would be neglected: there would be no funds for controlling noxious plants, restoring riparian habitat, restyling quarry pits and clay trenches as wetlands and wildlife preserves.

On the other hand, farming on a small scale and using the primitive methods now coming into fashion (organic, sustainable, minimal) leaves the watershed intact and does not fill the air with smoke, debris, and chemicals. Such farming also leads gradually to a local culture that understands and respects

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waterways, slopes and vegetation, so that not so much restoration and reclamation and inspection and regulation are necessary. This culture has a way of regulating and restoring itself; it may not require extensive government "services" (welfare, counseling, reclamation plans, police, etc.), so that its small economic contribution does not bring a lot of hidden costs.

The staunch advocates of this way of life along Cache Creek will say, on the issue of mining vs. farming, that good farming does not spoil or take anything from the earth, and that people cannot eat stones. Of course such comments will be dismissed as romantic rhetoric, but they may stimulate a little reflection. As the rest of California, the United States, and the inhabited continents of earth hurl themselves into hi-tech, digital, competitive, super production and consumption for an ever-expanding population, into "inevitable" development, one might at least trifle with the shadow of a doubt. Could it be that the vast wealth to be accumulated, the endless products and services foreseen, the continuous building and paving...could they actually have a limit? Is it possible that development is not inevitable, but actually constrained by the supply of--ludicrous as it sounds--plain food and water? Is it possible that a few backward islands, where a culture has integrated successfully into a "bioregion" and is able to support itself indefinitely, will become tiny beacons of hope for desperate billions? And could this happen simply because they are models of the most elementary common sense? Because a handful of visionaries said, decades ago, Hey, let's not dig everything up and sell it, let's not replace orchards with gravel mines and parking lots? Could a Board of Supervisors in a prosperous area--SacWooDavis--actually have such a vision?

Not really, of course. We who are not in our right mind do maintain a grip on reality. We know that the aggregate industry will receive most of what it asks for, and fairly promptly. But I urge you to convey the impression that such reflection is possible, such "scope" of analysis permitted. What harm can it do to pretend that "No Project" is at least an imaginative possibility, a fantasy to be entertained? We would only be playing with an infinitesimal shadow of doubt, a moment of wondering whether our prosperity and progress, our economic growth, our cutting and drilling and mining and building, is taking us exactly where we wanted to go. We would be careful not to imply anything outrageous, like some connection between the vanishing of farmland and open space, the rapid exhaustion of resources, the pollution of the environment, and disturbing statistics on the rise of homeless, imprisoned, addicted, diseased, and malnourished people in our cities.

Very truly yours,

Will Baker

Will Baker

UNIVERSITY OF CALIFORNIA
DEPARTMENT OF ENGLISH
DAVIS CA. 95616-8581

Yolo County Resource Conservation District
221 W. Court St., Ste. 8 Woodland, CA. 95695
(916) 662-2037 (916) 662-4876 FAX

February 16, 1996

Honorable Tom Stallard, Chairman
Yolo County Board of Supervisors
625 Court St.
Woodland, CA. 95695

Dear Supervisor Stallard:

As county advisors on land-use and resource issues, we are very concerned about the mining and regulatory plans, and the environmental review process now being used to evaluate and control aggregate gravel mining for a proposed minimum of three decades.

First, under current gravel mining applications and regulatory plans, the loss of agricultural land in perpetuity is a direct violation of the District's land-use policy. A number of the District's programs focus on maintaining or enhancing the County's water quality. We find unaccceptable the damage to water quality and quantity which is likely to occur under current creek conditions and mining plans. We are particularly disturbed about the depth and number of wet-pit mines and the absence of long-term maintenance funding and oversight. We share this and other concerns with informed residents, both on and off the creek. Threats of aquifer pollution increase in direct proportion to pollutant concentrations in Cache Creek. The recent decision by the Regional Water Quality Control Board that classifies the creek as an "impaired water body" from pollutant constituents should motivate us all to re-evaluate this process when investigating impacts to irreplaceable groundwater supplies. Increased evidence from state sources about long-lived viral contamination through creeks is another threat to both rural and city drinking water supplies.

The Board strongly objects to any wet pit mining. The potential impacts to groundwater supplies does not make up for the amount of agricultural land that would be undisturbed. The Board is adamant that no wet pit should be left as an open body of water as a reclaimed use and regulations must guarantee that all pits are protected from inundation by creek or overland irrigation flows. All pits should be reclaimed to agriculture or habitat in a manner which insures that drinking water is never jeopardized by creek inundation, agricultural runoff, or intentional dumping of pollutants.

Second, we believe that a full economic analysis is central to evaluating the impact of decades of planned, extensive gravel mining. Although such an analysis is not strictly required under CEQA, the county has more than once endorsed a "net gain" policy for mining and we think that's a wise measure for any major development with multiple impacts and implications. We should not agree to export 60% of non-renewable Yolo County resources if a net gain is not established which supports overall county interests and residents. Determination of full net gain requires analysis of

economic, environmental, and social costs and gains from future mining. As an agency familiar with the realities of habitat restoration, we know how expensive even simple restoration projects can be: current efforts to turn old pits into economically viable farmland, habitat areas or recharge basins is anything but simple, requiring planning, money, and coordination of landowners, agencies, and restorationists. Not only are these elements in ever-decreasing supply, there also is no program offered under the future plans to fund pit maintenance and monitoring once the miners leave. Existing pits show what happens to many slopes under wet conditions. Overland winter flows etch in deep gullies that continue to erode back, thus presenting severe future impacts to farmland both above and in the bottom of reclaimed pits. Many pits have no soil on the slopes on which to add stabilizing vegetation. Remediation is costly and success uncertain. In addition, whether mining leaves permanent open bodies of water in wet pits or reduced-filter capacity in dry pits, long-term and expensive water quality measurements will have to be carried out in perpetuity to guarantee quick remediation of any contamination.

Lastly, we are aware of and share the concerns of citizens as to the accelerated speed of the process. Pressure to "get the job done" works against getting good input – from the public, agencies and consultants – and increases the risk of long-term environmental damage. The time crunch undermines the reality and spirit of environmental review: ordinances that exclude stakeholder feedback will suffer from lack of acceptance and co-operation. Responsible land stewardship views resource use and community buy-in together, especially critical in obtaining genuine public response to thousands of pages of documents. We do not think the apparent decrease in citizen comment should be taken as lack of the public's concern. Thus, we request an extension of the process time, adjustments in the Off-Channel Mining plan and draft ordinance to protect water supplies, and a full economic analysis of the impacts of mining. We welcome discussion between our Directors and all Supervisors on these issues.

Sincerely,

Fritz Durst, co-chair
Board of Directors

Kathryn L. Pye
7 First St.
Woodland CA 95695
(916) 661-1728

February 14, 1996

Honorable Tom Stallard, Chairman
Yolo County Board of Supervisors
625 Court St.
Woodland CA. 95695

Dear Chairman Stallard:

Although I gave extensive comments directly to David Morrison on the first draft of the Off-Channel Mining Plan, time constraints have limited my further analyses and comment on the subsequently released gravel mining documents and process. However, today I obtained information from the California Regional Water Quality Control Board (CRWQCB) that compels me to action. Cache Creek has been recently listed as an **impaired water body** under Section 303 (d) of the federal Clean Water Act. This designation is based on the Creek having elevated levels of mercury and other contaminants, the range of which is currently unknown. Of great concern to the State are high levels of mercury in the Delta, much of which it attributes to Cache Creek concentrations. Monitoring indicates above Maximum Contaminant Limits (MCL) have already been reached.

This finding verifies the deteriorated water quality conditions in the Creek. With or without gravel mining, the impacts of these conditions pose major environmental concerns, especially as they jeopardize groundwater purity. As the Speirs and others point out about open pit mining, our groundwater supplies are at risk from any unfiltered inundation of water from the Creek. Heavy storms, flooding and and increased groundwater recharge activities amplify the threats and must be carefully analyzed.

It is my view that the EIRs at all levels of gravel mining and the Cache Creek Management Plan must address this general issue and the Creek's new state water quality status. I urge the Board of Supervisors to make water quality a primary concern and demand full investigation by all consultants. After-the-fact annual groundwater tests will not effectively protect our sole source of drinking water if damage has occurred. Tom To has done the county a great service by submitting a 205(j) planning application to the CRWQCB that will provide both initial monitoring and an effective implementation plan. This proposal has been highly ranked and the State board staff is fully supportive. However, funding rests with

Congress and is thus largely uncertain. Strong encouragement from the Board of Supervisors to our congressional leaders to grant high funding levels for this critical community need is in order.

Overall, I must say that I am very disappointed and distresed at the accelerated speed of the EIR process. Citizens– as well as officials and staffs – can hardly give meaningful comment on the volumes of paper in the Mining and Management Plan drafts, individual applications, and upcoming EIRs. I understand your desire to get this all behind you, but break-neck speed turns a formal, information-gathering process, that favors quality of response over instant reactions, into a kind of fool's game. Neither consultants, county staff, nor elected decision-makers perform at their best when under such pressure and much is at stake.

Finally, the Off-Channel Mining Plan and the Draft Ordinance is disturbingly open-ended and offers few real controls: it neither fully reflects the research and the efforts, nor the high quality community input and direction that I and many other stakeholders gave during our years of participation. At best, we will only be slightly better protected against the negative impacts of mining than we are now. I am deeply saddened that so much previous effort now counts for so little.

Sincerely,

Katy Pye

Katy Pye

cc: Roy Pederson, CAO
David Morrison
Heidi Tschudin
Steve Appleton, EDAW
Dennis O'Bryant, Dept. of Conservation: Mines and Reclamation
Carl Langley, Chairman,CRWQCB

Charlie Rominger

In the goals section of the Supervisors Subcommittee Report on gravel mining in 1994, it was stated that "a net gain from Yolo Counting mining shall be provided." We understood that to mean that unless there was a net benefit to the county, the mining would come to an end.

There are many of us who believe that gravel mining, especially off channel wet pit mining, may not be a net benefit and that indeed the problems, costs and risks involved may significantly out weigh the industries modest economic benefits to the county.

We believe that this is a very important question and that it should addressed as part of the current process.

The only studies to date that even come close to addressing this issue are the EPS study and the Smiley-Bittlingmayer study both done in 1994. Unfortunately they only address the impact of county monitoring and possible increased fees on the mining industry. They do mention mining's benefits to the county, but EPS just quotes Smiley, and Smiley was commissioned by YCAPA.

The Benefits mentioned in the Smiley report boil down to 55 jobs, $400,000 in sales tax, and $1.5 million in goods and services purchased in the county. These are not overwhelming numbers. Just for comparison, a 1500 acre tomato operation employes about that many people, and does about 3 times that much business. The sales taxes are about the same as four McDonalds.

Now lets look at some of the minuses. In 1974 Woodward Clyde estimated a loss of ground water storage of 17,000 to 38,000 acre ft of water due to a lowering of the thalweg of from 6-16 feet. Now we have a thalweg that is down 30 ft in places. This could indicate a loss of over 50,000 feet of ground water storage. How much is that worth to Yolo County in a dry year?

Maybe the most significant effect of mining is the increased flood danger to Woodland and Yolo due to the increased channel capacity between Capay and Yolo. Before mining the flood waters would spread out and slow down, with large flows leaving the channel and heading southeast, following Cottonwood Slough toward the Sacramento River. But with the increased channel capacity a lot more water can stay in the channel all the way to where the mining ends, near Woodland.

THE LEAGUE OF WOMEN VOTERS OF WOODLAND

P. O. Box 2463, Woodland, CA 95776

RECEIVED
FEB 16 1996
By

1121 West Street
February 14, 1996

To: David Morrison, Community Development Agency
Heidi Tschudin, Contract Planner

From: Woodland League of Women Voters

Comments for the Scoping Session on the Long Term applications

The League of Women Voters of Woodland would again like to go on record stating that these plans should not be under consideration before the OCMP, the CCRMP, and the Long Term Ordinance and Reclamation Plans are in place.

In looking at the NOP and the other documents provided to citizens, the League is concerned that all the short term applications want to amend their short term reclamation plans to put more acres in wet lands and to mine much deeper. It does not appear they really intended to do the original reclamation plans and only wrote them to be more likely to get the short term permits. It shows bad faith.

For each application, the League would like to see a comprehensive analysis of Alternative #2b. We would like to see it for the 15 year but that option is not offered in Alternative #2. While this would be a decreased volume, it would provide for conservation of a non-renewable resource, aggregate. It would also be less of a threat to the groundwater because it offers opportunity for evaluation without going out 30 years.

A financial comparison should be made of reclamation to tree crops versus row crops such as sunflowers, or tomatoes. How many years would it take for the trees to mature versus having a crop every year? What is the value of the tree crop when mature?

The League requests an appraisal by a certified public appraiser experienced in agricultural properties. The appraisal should be on the value of the land before mining, and after reclamation.

Of the gravel companies requesting processing plants - will they also be requesting asphalt plants?

Not all the NOPs stated how far from the Creek the wet pits will be. Will they all be from 200 to 700 feet as recommended in the Streamway Study? One of the Teichert applications stated the pits would be from 60 to 240 feet from the active stream channel. How can pit capture be avoided at 60 feet?

The concept of "net gain" seems subject to wide interpretation. One application said the project would increase biodiversity, provide opportunity for groundwater recharge, potentially reduce flooding severity in Madison and Esparto, and generate production

fees that would be used to fund restoration projects associated with Cache Creek.

The League would suggest that the applications will result in a "net loss" in permanent disfiguring of the landscape, threat of pollution to groundwater, increased air pollution in an area that is already classified as a non-attainment area, danger to the safety of citizens from increased truck trips per day. The application states there will be an average of 1,195 truck trips per day. Will it be possible for citizens to drive those roads? Also, there is the removal of 1,282 out of 1,966 acres mined. These are agricultural acres and will be wet pits, habitat, roads and slopes. Finally, there are the economic impacts of such removal - gravel will provide a one time economic value, versus the agricultural land which could be farmed in perpetuity.

The League requests the amount of evaporation that takes place from each open pit annually be figured. Also, what is the amount and rate of recharge estimated from the pits?

Do the roads have to be fixed up front?

In studying the water environmental checklist for each application, water had eight out of nine impacts checked as potentially significant. In every application, all four of the mandatory findings of significance were again checked as potentially significant impacts.

Certainly, citizens have justification to be very concerned about these applications.

Patricia Murray

Patricia Murray, Co - presidents

Marie E. Bryan

Marie E. Bryan,

Lois V. Linford

Lois V. Linford, Natural Resources Chair

STATE OF CALIFORNIA-BUSINESS, TRANSPORTATION AND HOUSING AGENCY PETE WILSON, Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 3, SACRAMENTO AREA OFFICE - MS 41
P.O. BOX 942874
SACRAMENTO, CA 94274-0001
TDD Telephone (916) 741-4509
FAX (916) 323-7669
Telephone (916) 327-3859

February 16, 1996

HYOL011
03-YOL-505 P.M. 11.67
Solano Concrete Co. Inc.
Long Term Mining Permit EIR
NOP
SCH#96012034

Mr. David Morrison
Yolo County Community Development Agency
292 West Beamer Street
Woodland, CA 95695

Dear Mr. Morrison:

Thank you for the opportunity to review and comment on the above referenced document.

COMMENTS:

- Caltrans commends the County for preparing their off-channel mining plans on the "key assumption that the creek must be viewed as an integrated system, with an emphasis on the management of all of Cache Creek's resources, rather than a singular focus on the issue of mining" (Off Channel Mining Plan) showing that the County recognizes the dynamic relationship between in-channel and off-channel mining.

- The levee stability and accompanying hydraulic analyses (with water surface elevations and velocities) have been reviewed by Caltrans. Assuming the proposed changes to in-channel skimming elevations are included in the final environmental document, the analyses meet our expectations.

- The reclamation plan should outline the ongoing and proposed termination maintenance programs to preserve the physical separation.

- To identify potential pavement structural section impacts to State Route 16 and affected Interstate 505 interchange ramps along haul routes over the long term (ie. 30 years), the program Environmental Impact Report (EIR) should include a circulation element that estimates the total cumulative truck trips from all the Cache Creek area and proximate off channel pit areas based on all the mining permit approvals. The project EIR should indicate its share of the mining sourced truck trip generation and distribution potential, by type of vehicle, for this project proposal.

⇒ The analysis should focus on the sections of State Route 16 and Interstate 505 interchange ramps most heavily used for various haul routes on a cumulative and project sourced basis to determine if measures are required to provide continued structural section integrity.

⇒ The actual project truck routing should be described and the safety and capacity impacts at affected driveways and intersections along State Highways in the area should be estimated.

⇒ The analysis should indicate appropriate measures taken to minimize sand and gravel spillage on State Route 16 and Interstate 505 to minimize safety and maintenance problems.

Please provide our office with copies of the DEIR and staff reports regarding this project as they are made available. If you have any questions regarding these comments, please contact Ken Champion at 916-324-6642.

Sincerely,

JEFFREY PULVERMAN, Chief
Office of Transportation
Planning - Metropolitan

cc: Antero A. Rivasplata, State Clearinghouse
John Joyce, Yolo County Public Works

STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, Governor

DEPARTMENT OF FISH AND GAME
REGION 2
1701 NIMBUS ROAD, SUITE A
RANCHO CORDOVA, CA 95670
(916) 358-2900

February 23, 1996

Mr. David Morrison
Resources Management Coordinator
Yolo County Community Development Agency
Planning Division
292 West Beamer Street
Woodland, California 95695

Dear Mr. Morrison:

The Department of Fish and Game (DFG) has reviewed the Notice of Preparation (NOP) and Notice of Scoping Meeting for the Solano Concrete Company, Inc. Long-Term Office-Channel Mining Permit Environmental Impact Report (EIR) SCH# 96012034.

The project site is located in an area of unincorporated Yolo County immediately south of Cache Creek, north of State Route 16 in the area extending from just west of Interstate I-505 to approximately two-and one-half (2 1/2 miles east of the highway.

This project seeks a 30-year Permit for long-term, off-channel mining for extraction of sand and gravel from the terrace deposits south of Cache Creek. The mining would be open pit mining with pits ranging in depths to 70 feet below the ground water table ("wet pits") resulting in five open lakes. This application includes a Reclamation Plan for this 598-acre mining site, was well as an amended reclamation plan for the Hutson and Farnham West properties. The project also requests rezoning of areas of the project site currently zoned as Agricultural Preserve (A-P) to Agriculture-General (A-1) with a Sand and Gravel (S-G) overlay to allow the proposed commercial mining.

The DFG recommends that the Draft EIR address and mitigate the following concerns:

1. The project's potential adverse impacts upon the burrowing owl (Athene cunicularis), a State species of special concern. The project site should be surveyed for this owl. If found, mitigation measures should be provided.

2. The project's potential adverse impacts upon nesting and foraging habitat for the Swainson's hawk (Buteo swainsoni), a State-listed threatened species.

3. The project's potential adverse impacts upon Elderberry bushes (Sambucus sp.), which are host plants for the federally-listed threatened valley elderberry longhorn beetle (Desmocerus californicus dimorphus).

4. The project's potential for growth inducing and cumulative impacts upon the area's fish and/or wildlife values should be discussed and mitigated.

We recommend that appropriately designed surveys for listed, proposed, or candidate species be undertaken by qualified biologists. Surveys for plants should not be restricted to the identified species; instead, a complete botanical inventory of the project site should be conducted. Botanical surveys should be conducted at times when species are most likely to be encountered, in order to maximize the likelihood of encountering each species during the most appropriate season for accurate identification. Surveys should be based on field inspection, and not on prediction of occurrence based on habitat or physical features of the site. The results of all biological surveys should be published in the EIR. The report should include a brief discussion of survey methods including sampling methods and timing of surveys. Results should include a list of all species encountered as well as maps of vegetation types, populations of plant species, and breeding, nesting or burrowing sites or other habitat components important to animal species. All conclusions should be justified and fully explained.

In order to comply with Public Resources Code Section 21081.6, a detailed monitoring program must be developed for all required mitigation conditions. The monitoring program should include the following:

1. Specific criteria to measure the effectiveness of mitigation.

2. Annual monitoring for a minimum of five years.

3. Annual monitoring reports (submitted to the lead agency and the DFG), each of which include corrective recommendations that shall be implemented in order to ensure that mitigation efforts are successful.

The applicant should be advised that work consisting of but not limited to diversion or obstruction of the natural flow or changes in the channel, bed, or bank of any river, stream, or lake, will require notification to the DFG as required by Fish and Game Code Section 1600 et seq. The notification (with fee), and subsequent agreement, must be completed prior to initiating any

such work. Notification to the DFG should be made after the project is approved by the lead agency. The agreement process should not be used in lieu of specific mitigation measures to be included as conditions of project approval by the lead agency.

Pursuant to Public Resources Code sections 21092 and 21092.2, the DFG requests written notification of proposed actions and pending decisions regarding this project. Written notifications should be directed to this office.

This project will have an impact to fish and/or wildlife habitat. Assessment of fees under Public Resources Code Section 21089 and as defined by Fish and Game Code Section 711.4 is necessary. Fees are payable by the project applicant upon filing of the Notice of Determination by the lead agency.

If we can be of further assistance, please contact Mr. Roger Scoonover, Associate Wildlife Biologist, telephone (916) 666-3407, or Mr. Dave Zezulak, Acting Environmental Services Supervisor, telephone (916) 358-2919.

Sincerely,

L. Ryan Broddrick
for Regional Manager

cc: Mr. Roger Scoonover
Mr. David Zezulak
Department of Fish and Game
Rancho Cordova, California

Mr. Dennis O'Bryant
Department of Conservation
Office of Mine Reclamation
801 K Street MS 9-6
Sacramento, California 95814

2/19/96

DAVID MORRISON,
RESOURCE MANAGEMENT COORDINATOR

Please consider the following issues for each of the Environmental Impact Reports being done for the five locations in Yolo County.

1) Why are long term contracts being considered? There is no economic or environmental benefit to the County. Note: The State does not allow contracts to be issued for more than 5 years unless there is special consideration, and approval, from the Legislature.

2) What is the justification for the road damage that is being approved without compensation? Does not this constitute an illegal gift of public assets ~~to~~ to a private party without compensation. The California Constitution prohibits this transfer. Knowingly approving the increase in truck traffic without fees to repair the damage done by the increased traffic further damages the County's fiscal condition, and only benefits the gravel interests.

3) WHAT IS THE JUSTIFICATION FOR INCREASING THE NOISE, DUST, PUBLIC SAFETY HAZARDS, ETC. WHEN THE COUNTY ONLY RECEIVES ENOUGH TO OFFSET THE COST OF ADMINISTRATION OF MONITORING.

4) WHAT IS THE JUSTIFICATION OF ALMOST A THOUSAND ACRES OF STRIP MINES THAT ARE TO BE LEFT OPEN TO THE AQUIFER?

5) WHO WILL BE RESPONSIBLE WHEN THE OPEN PITS CAUSE THE CONTAMINATION OF THE AQUIFER? THE CURRENT OVERBURDEN PROVIDES FILTRATION THAT IS BEING REMOVED. THE STAGNANT PITS WILL BREED ANAROBIC BACTERIA, CONCENTRATION OF MERCURY, AND ~~AIR BOO~~ ALLOW DIRECT CONTAMINATION FOR AIR BOURN PESTICIDES AND OTHER CONTHMINATES. WHY ARE COUNTY RESIDENTS BEING SUBJECTE TO THIS RISK? SO FAR, YOUR STAFF WILL NOT ACKNOWLEDGE IT IS A RISK, YET THEY DO NOT HAVE ANSWERS TO THESE QUESTIONS.

6) WHAT IS THE JUSTIFICATION FOR ~~NOT~~ ALLOWING DEEP OPEN PITS THAT CAN NOT BE RECLAIMED BACK TO FARM LAND? a) YOU LOSE THE

FARM LAND. b) YOUR REMOVE THE PROTECTION OF THE OVERBURDEN. c) YOU PERMANENTLY DECREASE THE PRODUCTIVE VALUE OF THE LAND. = HOW CAN COUNTY JUSTIFY THIS? d) OPEN PITS VIOLATE THE PUBLICITY PROMOTING HOW RECLAIMATION WOULD ENHANCE THE AREA.

7) WHAT IS THE JUSTIFICATION FOR GOING BEYOND 5 YEARS? WHY ARE THE RIGHTS OF FUTURE BOARDS BEING LIMITED?

THANK YOU!

Ian Ekholm

IAN EKHOLM
2707 QUAIL STREET
DAVIS CA 95616
(HM) 753-7777
(WK) 322-7915

P.S. WHAT CONTRIBUTIONS HAVE THE GRAVEL MINING COMPANIES TO SUPERVISORS, ASSEMBLY AND CONGRESS FOR THE LAST EIGHT YEARS

February 19,1996

To: Yolo County Board Of Supervisors
From: Cache Creek Basin Resource Coalition

At the time that the 1994 EPS financial analysis of gravel mining was released, a conflicting study, prepared by UCD professors Bittelmeyer and Smiley, was also presented which differed from the County-generated study both in some basic assumptions and in the conclusions drawn. We were told at that time that these inconsistencies would be resolved in the long-term EIR, but it seems that the lapse of time between then and now has obscured that promise.

In order for an EIR to be complete and adequate, impacts generated by a proposed project must be addressed within that EIR, so that it is not rendered deficient by the failure to fully scrutinize the outcomes of these impacts. This also gives the public an opportunity to comment and receive an informed response to issues that the EIR raises. For example, in an EIR for a proposed housing development, the resulting financial impacts on local schools must be quantified. Your own Board, in the EIR for the siting of a gravel plant, looked at the costs of upgrading narrow roads to and from the plant as a result of an identified safety hazard.

The County's consultant, in the Feb. 20 staff report, states that the EIRs underway are intended to analyze environmental impacts only, and seems to recommend that economic analysis occur outside of these EIRs. This issue cannot be split into a separate study. If a potential environmental impact is identified in an EIR, it may well have fiscal consequences, which must be analyzed within the scope of the EIR, as an outcome of that finding. This cannot be accomplished by an economic study that is itself limited in scope and does not concurrently address economic impacts that result from environmental impacts that the EIR preparers identify.

In conformance with CEQA requirements, an EIR must discuss plausible, potential failure scenarios that could occur associated with a proposed action. If the OCMP EIR finds that digging a series of deep holes across our underground water system will severely reduce the available quantity or quality of water, this will result in a tremendous cost to both local landowners and citizens residing in nearby towns. Therefore, the EIR must clearly pinpoint how those who become adversely impacted by this action will be compensated and what magnitude of funds will be required to address such a loss. As the Off-Channel Mining Plan EIR is projecting for at least 30 years worth of impacts, the EIR must also clearly state the source of funds at any time in the future when they might be needed, to address failures of the project to conform to the stated/expected peformance. For instance, if sub-surface pollution causes a city's wells to become contaminated, thus necessitating a water treatment plant for that city, the costs must be clearly delineated and it must be stated who shall bear these costs. A failure to include such projections in the EIR underway will not only render the study inadequate, but fail to protect the citizens' fiscal interests.

Your Board has seen fit to require the mining applicants to indemnify the Board against any lawsuits that may arise from permits that are granted. In that same vein, it would seem that the Board should require the miners to indemnify the citizens of this County against permits that are granted which result in worst-case impacts causing direct economic outlay. If the Board is not willing to protect the citizens in that way, then full disclosure of projected economic impacts from 30+ years of mining is imperative. That way, we will know what is coming; we can't say you didn't tell us. And at the end, you can get around the information that doesn't suit you by a Statement of Overriding Consideration.

Janet Levers

February 20, 1996

ECONOMIC CONSIDERATIONS
FIFTY YEAR MINING PROGRAM

MY MESSAGE TODAY IS TO URGE YOU TO CONDUCT A COMPREHENSIVE ECONOMIC EVALUATION OF FUTURE GRAVEL MINING ON AGRICULTURE AND GROUND WATER OVER THE NEXT FIFTY YEARS. MY RECOMMENDATION INCLUDES GROUND WATER CONTRARY TO THE STATEMENT IN THE FEBRUARY 20, 1996 REPORT PREPARED BY HEIDI TSCHUDIN.

MY POINT IS THAT YOU CANNOT ISOLATE AGRICULTURE FROM GROUND WATER. MY FOLLOWING COMMENTS WILL HELP TO EXPLAIN MY RATIONALE FOR A COMPREHENSIVE ECONOMIC STUDY.

HAVE YOU EVER STOPPED TO ASK YOURSELF HOW WE MANAGED TO GET INTO OUR PRESENT SITUATION? WELL, WE INHERITED IT FROM THE PAST SELF SERVING ACTIONS OF THOSE INVOLVED IN GRAVEL MINING.

MY HOPE IS THAT WE COLLECTIVELY WON'T IMPOSE A MAJOR PROBLEM ON THOSE ON THE SCENE IN FIFTY YEARS BY ACTIONS WE TAKE ON THE CURRENTLY PROPOSED OFF CHANNEL MINING PROGRAM.

IN ASSESSING WHERE WE'VE ENDED UP IN 1996, WE CAN AGREE THAT THE CACHE CREEK CHANNEL HAS BEEN DEVASTATED FROM THE CAPAY BRIDGE ON DOWN TO NEAR ROAD 98. THERE IS A FURTHER MAJOR COMPLICATION ADJACENT TO THE TOWN OF YOLO.

THERE WE FIND A RESTRICTED CHANNEL THAT EFFECTIVELY ACTS AS A DAM WITH ITS "SPILLWAY" BEING THE CREEK BANKS. WE ARE NOW FACED WITH VERY LARGE EXPENSES TO PROTECT AGAINST FLOODING OF THE ADJACENT FARMS, THE TOWN OF YOLO, AND EVEN PORTIONS OF WOODLAND.

AT THIS POINT ONE CAN ASK: DID THE ECONOMIC GAINS TO THE GRAVEL MINING INDUSTRY JUSTIFY WHAT WE NOW FACE AS A MAJOR FLOOD CONTROL PROBLEM?

THUS IT SEEMS TO ME THAT THE ECONOMICS OF THE PROPOSED FIFTY YEAR PROGRAM IS A PERTINENT COMPONENT OF A COMPREHENSIVE ENVIRONMENTAL IMPACT STUDY. ECONOMICS CERTAINLY AFFECTS OUR LIVES AS MUCH AS CLEAN AIR AND WATER.

WE ARE HERE TODAY REVIEWING THE POTENTIAL ECONOMIC ASPECTS OF A PROPOSED FIFTY YEAR GRAVEL MINING PROGRAM. CONCURRENTLY THE FEDERAL GOVERNMENT WITH ALL OF ITS VAST RESOURCES IS STRUGGLING MIGHTILY TO AGREE ON THE APPROPRIATE ECONOMIC PARAMETERS TO USE ON A MERE SEVEN YEAR PROGRAM TO BALANCE THE NATIONAL BUDGET.

HERE WE ARE ATTEMPTING TO DEVELOP AND EVALUATE A FIFTY YEAR MINING PROGRAM WITH SIGNIFICANT ECONOMIC CONSIDERATIONS INVOLVED--- THIS IS A MONUMENTAL TASK FOR YOU TO HAVE ON YOUR HANDS. YOU MUST TAKE STEPS TO SEE THAT THE ECONOMIC ASPECTS ARE ADEQUATELY AND EFFECTIVELY ANALYZED.

I HAVE MORE THOUGHTS ON THE TASK YOU AND THE PUBLIC FACE, AND I TRUST THAT MY REMARKS TODAY WILL LEAD YOU TO CONCLUDE THAT A COMPREHENSIVE ECONOMIC STUDY IS AN ESSENTIAL PART OF SUCH AN IMPORTANT ENVIRONMENTAL IMPACT STUDY.

THANK YOU,

WILLIAM H. LEVERS
1210 RANCHO WAY
WOODLAND, CALIFORNIA 95695

FILED:D:WHLMONT.RCH/B:\0220SUPE.COM

DEPARTMENT OF CONSERVATION
DIVISION OF ADMINISTRATION
DIVISION OF MINES AND GEOLOGY
DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES
DIVISION OF RECYCLING

801 K Street
SACRAMENTO, CA 95814-3528
Phone (916) 445-8733
FAX (916) 324-0948

February 20, 1996

Mr. David Morrison
Yolo Community Development Agency
292 West Beamer Street
Woodland, California 95695

RE: Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for Solano Concrete Off-Channel Mining Permit SCH #96012034

Dear Mr. Morrison:

The Department of Conservation (Department) has reviewed the Notice of Preparation (NOP) of the Draft Environmental Report for the Solano Concrete Off-Channel Mining Permit and offers the following comments. The Department administers the Surface Mining and Reclamation Act (SMARA), the California Land Conservation (Williamson) Act, and monitors farmland conservation on a statewide basis.

Mine Reclamation

The Department's Office of Mine Reclamation has reviewed the NOP of an Environmental Impact Report (EIR). The proposed project entails mining an additional 598 acres of land south of Cache Creek and east of Interstate 505. The existing, contiguous site, comprising 100 acres (Hutson Parcel) (CA Mine ID #91-57-0007) and 35 acres of the proposed 598 acre site being mined under a short-term application (CA Mine ID #91-57-0008), is also addressed in the application, so that a total of 698 acres will be reclaimed. The following documents regarding this project were reviewed:

- Volumes I, II, III and IV, Application of Solano Concrete for Long Term Off-Channel Mining Permit, December 1, 1995.
- Technical Studies and Recommendation for the Lower Cache Creek Resource Management Plan prepared by Northwest Hydraulic Consultants, October, 1995.
- First Draft Off Channel Mining Plan for Lower Cache Creek (OCMP), October 30, 1995.

The EIR tiers off the program EIRs being prepared for the Off-Channel Mining Plan (OCMP) and Cache Creek Resources Management Plan (CCRMP). We commented on the draft CCRMP in a letter to you dated January 17, 1996. The following comments, prepared by James Pompy, Mary Ann Showers, and Michael Sandecki, are arranged in two sections.
The first set of comments are on the NOP while the second section relates to the reclamation plan specifically.

Comments on the NOP

1. The EIR should address the long-term stability of the slopes to remain after reclamation. The recommendations in the geotechnical report include observation of water levels in the remaining ponds in respect to stable slopes. The EIR should propose mitigation for slopes that show signs of instability. It is unclear what mitigation is possible for destabilization of slopes due to lower than "average-low" water levels on stability of the proposed 1.5:1 slopes.

2. The CCRMP and OCMP indicate that 200 to 700 feet buffers would be useful to separate mining sites from the active channel processes (erosion) of Cache Creek. The geotechnical report also includes such a discussion. The geotechnical report recommends that a substantial rip rap armor be placed to protect 1600 feet of bank located at the outside of a bend in the channel. The EIR should discuss the possibility of a shift in the location of the bend into an unprotected (no rip rap) reach of channel. The EIR should also discuss use of large quantities of rip rap to arrest normal erosion processes. In a natural setting, the progressive change (due to erosion and deposition) sets the stage for an ecologically healthy river environment. The EIR should discuss whether the loss of the recommended 700 feet buffer and reduction (in some areas) to a 185 feet buffer would have an impact to normal river processes and, consequently, habitats.

3. The EIR should address the implications of ground water flux on the reclaimed end uses, which are elevation sensitive and designed for site-specific hydrology. For example, terraced vegetation and habitat may not be feasible with the fluctuations present, especially if conditions reach extreme levels over a short time frame. As another example, "dry" sites for agricultural use based on an "average" high water elevations may be saturated during non-average periods.

Comments on the Reclamation Plan

The Surface Mining and Reclamation Act of 1975 (SMARA) (Public Resources Code Section 2710 et seq.) and the State Mining and Geology Board regulations for surface mining and reclamation practice (California Code of Regulations (CCR) Title 14, Chapter 8, Article 1, Section 3500 et seq.; Article 9, Section 3700 et seq.) require that specific items be addressed or included in reclamation plans. The following items were either not included or not sufficiently addressed in the reclamation plan. We recommend that the reclamation plan be supplemented to adequately address these items.

1. A firm commitment to water storage is not apparent in the reclamation plan. Discussions with the Yolo County Water Agency are referenced, but no details regarding the substance of these discussions is given. The reclamation plan should include more details regarding the source of the water to be recharged, the potential timing of recharge activities, the method of delivery of water to the basins and long term maintenance.

Slope Stability and Hydrology

2. The geotechnical and hydrological aspects of this site are adequately addressed. The recommendations for regular inspections of slopes, fills and water elevations should be incorporated in the project reclamation plan.

Biological Resources

3. Based on a November 1995 field survey, the Biological Assessment provides an overview of the biological resources of the project area. As stated in the Biological Assessment, a single-season survey cannot usually confirm the presence or absence of special status species. For this reason, we recommend that a spring survey be conducted. This survey will be needed to document the use of the site by migratory species. Should sensitive species be found on site, appropriate mitigation measures can be determined and incorporated into the reclamation plan.

4. The Habitat Restoration Plan stipulates that wildlife restoration of open water habitat includes introduction of native fish, amphibians such as the red-legged frog, and associated reptiles such as the western pond turtle. The Habitat Restoration Plan then states that the marsh open water habitats will provide habitat for a number of species including the bullfrog. If the red-legged frog will be introduced, introduction should be done with the concurrence of the U.S. Fish and Wildlife Service, and specific measures should be undertaken to prevent the colonization of the pond by bullfrogs, which prey on the red-legged frog. Introduction of rare native fish should also be reconsidered if the pond will ultimately be planted with sport fish that could out-compete native species.

Revegetation and Habitat Restoration

5. We recommend that Figure 3 of the Habitat Restoration Plan show all proposed haul roads and provide detail similar to Figure 8 for the entire length of road. Regarding Figure 8, we recommend that setbacks from native vegetation and areas of proposed restoration be shown in relation to haul road so that the root zones of the native vegetation are not impacted by road traffic.

6. We recommend that the reclamation plan include a revegetation map for the habitat restoration proposal. The revegetation plan should also specify the type of plant propagule that will be used for each species (for example, pole cuttings for willow and cottonwood, rhizomes for rushes, etc.) and the amounts of fertilizer that
will be applied. The species to be used for temporary erosion control of slopes and overburden stockpiles should also be listed.

7. Revegetation and crop yield performance standards are discussed in the Habitat Restoration Plan, the Reclamation Plan, and in the Soils Assessment. For ease in review, we recommend that all revegetation proposals and performance standards be combined and include the following items:

   - The anticipated yields for the hybrid poplar tree crops are not provided. Since hybrid poplars are not currently grown on site, we recommend that tree crop productivity be based on a nearby reference site. If this information is not available, we recommend that specific harvest yields be used. Tree harvest yields per acre can be expressed as board-feet of lumber or tons of material for wood chips and paper pulp. Without this information it will not be possible to assess the success of this reclamation measure.

   - The type of plant propagule, seed, plug, pole cutting, etc., for each species, "crown" diameters to be used in conjunction with height classes for vigor measurements.
   - The amounts of sediment produced used as a standard for erosion control. The terms "seriously eroded," "as needed," and "where necessary" do not provide the level of specificited to onitor compliance with the reclamation plan. We also recommend that a specific cover of weed plants be used for initiation of weed control.
   - Construction performance standards based on the success in establishing habitat on the site. As currently written, construction performance standards relate solely to the effective use of equipment.

8. Under the discussion of Open Water, the Habitat Restoration Plan proposes to plant *Hibiscus* and *Sagittaria* as one-gallon size plantings. We recommend that the plants be installed at a smaller size. Plants installed as tree liners or tubes will be more cost effective than one gallon plants and will be less likely to be rootbound or stressed.

9. We recommend that consideration be given to planting shrubs and trees at the northeast and northwest sides of the pond to intercept windborne dust from adjacent areas during agricultural grading. Species suitable for this purpose include manzanita (*Arctostaphylos* ssp.), *Ceanothus* spp., toyon (*Heteromeles arbutifolia*), western redbud (*Cercis occidentalis*), buckeye (*Aesculus californicus*), and mountain mahogany (*Cercocarpus betuloides*). These species occur in Capay Valley and Rumsey Canyon. All are drought-tolerant when established and will provide additional habitat at the project site.

10. Some oaks will be removed during mining. To offset this impact, 55 five-gallon size oaks will be planted at the north edge of Site C. We recommend against the use of five-gallon size plants, especially oaks. Due to rapid root growth of oaks, five-gallon plants are often severely rootbound. The use of younger plants, grown in tall pots such as those for citrus, have a greater likelihood of successful establishment and also be considerably less expensive than older plants in five-gallon containers. Oaks used for screening vegetation can also be interplanted with faster growing shrubs such as those listed above. The shrubs can provide screening while the oaks become established and will increase the habitat value of the site.

Please send a copy of the approved reclamation plan, response to our comments, and permit issued by you as lead agency under SMARA to the Office of Mine Reclamation at 801 K Street, M.S. 09-06, Sacramento, CA 95814-3529. The approved documents will be placed in the OMR files pursuant to the Surface Mining and Reclamation Act.

Land Conservation

The Department of Conservation, which monitors farmland conversion on a statewide basis and administers the California Land Conservation (Williamson) Act, has reviewed the Notice of Preparation (NOP) for long-term off-channel mining of 33,629,000 tons of sand and gravel from 598 acres of a 1,828-acre site. The mining would be phased over a 30-year period. Seven contiguous parcels with pits will be reclaimed to permanent lakes with wildlife habitat zones and tree and row crop areas. This project also involves amendment of the approved reclamation plan for the Hutson and Farnham West mining areas. A 13-acre portion of these areas of areas will be reclaimed to permanent lakes instead of crop production. Another portion of the project site will be reclaimed to oak woodland habitat. The project also involves rezoning of project areas designated Agricultural Preserve to Agricultural-General with a Sand and Gravel overlay.

The NOP notes that the DEIR will examine compatibility of the proposed mining with existing and planned land uses, identify project-specific agricultural information and potential impacts to agricultural uses. Agricultural reclamation will also be analyzed in the DEIR. The Department recommends that the following information be provided in the Draft

Environmental Report (DEIR) to ensure a comprehensive discussion of the project's impacts on agricultural resources:

Prime Agricultural Land

The California Code of Regulations (Section 15000 et seq., Appendix G [y]) states that a project will normally have a significant effect on the environment if it converts prime agricultural land to non-agricultural use or impairs the agricultural productivity of prime agricultural land. In order to quantify impacts on prime agricultural land, the DEIR should identify the location of prime agricultural land within the project site and the number of acres of prime land that will be converted by the project and the number of acres that would be reclaimed to prime land.

Agriculturally Significant Soils in the Project Area

Existing and potential agricultural activity is determined by significant soil types, as defined by the Department's Important Farmland series map designations. The Department's preliminary 1994 Yolo County Important Farmland Map indicates Prime Farmland (1,288 acres), Unique Farmland (253 acres), Farmland of Local Importance (29 acres), and Other Land (359) within the approximated project boundary (see enclosed map). We recommend that the DEIR include a similar map identifying the agriculturally-significant soil types in the project area.

Agriculture Production Data and Economic Multiplier

The following data on the agricultural character of the project area should also be provided in the DEIR:

- Current and past agricultural use of the project area, or similar area, and data on types of crops grown, yields, and crop values.
- The economic value of agricultural production. Economic multipliers can be used to assess the total agricultural value to the economy. The University of California Cooperative Extension's study "Economic Impacts of Agricultural Production and Processing in Stanislaus County" can be used as a model. An example of an agricultural crop value table and crop values used with an economic multiplier is enclosed for your information.

Farmland Conversion Impacts

The California Code of Regulations (Section 15310) requires that a project's cumulative and growth-inducing impacts be identified. The Department suggests the DEIR discuss the project's impacts as follows:

- The type, amount, and location of farmland conversion resulting from project development.
- The amount of land to be reclaimed to the same or better quality of farmland.
- Impacts on current and future agricultural operations including any impacts on agricultural water availability and quality.

Williamson Act Issues

A project is deemed to be of statewide, regional, or areawide significance, if it will result in cancellation of a Williamson Act contract for a parcel of 100 or more acres. (Public Resources Code Section 15206(b)(3)). The entire project site of 1,828 acres is under Williamson Act contract. Therefore, the Department recommends that the following information be provided in the DEIR:

- A map detailing the location of agricultural preserves, the number of acres, and type of land in each preserve (i.e., prime/non-prime).
- A map showing the location of Williamson Act contracts within the site and on adjacent lands.

If off-channel terrace mining and any reclaimed land uses are to be considered activities compatible with onsite or adjacent agricultural activities, the County should reference **Government Code Section 51238.1** which provides standards for determining compatible uses for lands under Williamson Act contracts. Summaries of the compatible use provisions of the Williamson Act are enclosed.

Mitigation Measures and Alternatives

The DEIR should also discuss any feasible mitigation measures or alternatives that would lessen permanent loss of prime farmland and agricultural land conversion.

The Department appreciates the opportunity to comment. If I can be of further assistance, please phone me at (916) 445-8733.

Sincerely,

Thomas A. Campbell
Environmental Analyst

Enclosures

cc: James Pompy, Office of Mine Reclamation
Kenneth E. Trott, Office of Land Conservation
Tom Uller and Fritz Durst, Co-Presidents Yolo County RCD

DEPARTMENT OF CONSERVATION

FARMLAND MAPPING AND MONITORING PROGRAM

DEFINITION FOR

FARMLAND OF LOCAL IMPORTANCE

YOLO COUNTY

"Farmland of Local Importance" for Yolo County has been defined as:

Local Importance (L):

Cultivated farmland having soils which meet the criteria for "Prime Farmland" or "Farmland of Statewide Importance", except that the land is not presently irrigated, and other nonirrigated farmland.

Local Potential (LP):

"Prime Farmland" or "Farmland of Statewide Importance" soils which are presently not irrigated or cultivated.

DEPARTMENT OF CONSERVATION
FARMLAND MAPPING AND MONITORING PROGRAM

DEFINITIONS FOR IMPORTANT FARMLAND MAP CATEGORIES

Note: The minimum mapping unit for all categories, unless specified, is 10 acres. Further details on map categories are available in A Guide to the Farmland Mapping and Monitoring Program, 1992, Department of Conservation, Office of Land Conservation, Publication Number FM-92-01.

*Prime Farmland** - *P*

Prime Farmland is land which has the best combination of physical and chemical characteristics for the production of crops. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming methods. *Prime Farmland* must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date. *Prime Farmland* does not include publicly owned lands for which there is an adopted policy preventing agricultural use.

*Farmland of Statewide Importance** - *S*

Farmland of Statewide Importance is similar to *Prime Farmland* but with minor shortcomings, such as greater slopes or less ability to hold and store moisture. *Farmland of Statewide Importance* must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date. *Farmland of Statewide Importance* does not include publicly owned lands for which there is an adopted policy preventing agricultural use.

Unique Farmland - *U*

Unique Farmland is land of lesser quality soils used for the production of specific high economic value crops (as listed in California Agriculture produced by the California Department of Food and Agriculture) at some time during the two update cycles prior to the mapping date. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality or high yields of a specific crop when treated and managed according to current farming methods. *Unique Farmland* is usually irrigated, but may include nonirrigated orchards or vineyards as found in some climatic zones in California. Examples of crops on *Unique Farmland* include oranges, olives, avocados, rice, grapes, and cut flowers. *Unique Farmland* does not include publicly owned lands for which there is an adopted policy preventing agricultural use.

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* Soil units qualifying for these two categories are provided by the USDA Soil Conservation Service.

Other Land - X

Other Land is that which is not included in any of the other mapping categories. The following types of land are generally included:

a. Rural development which has a building density of less than 1 structure per 1.5 acres, but with at least 1 structure per 10 acres;

b. Brush, timber, and other lands not suitable for livestock grazing;

c. Government lands not available for agricultural use;

d. Road systems for freeway interchanges outside of *Urban and Built-up Land* areas;

e. Vacant and nonagricultural land larger than 40 acres in size and surrounded on all sides by urban development;

f. Confined livestock facilities of 10 or more acres unless accounted for by the county's *Farmland of Local Importance* definition;

g. Strip mines, borrow pits, gravel pits, and ranch headquarters larger than 10 acres.

h. A variety of other rural land uses.

Water - W

Water areas with an extent of at least 40 acres.

Land Committed to Nonagricultural Use - C
(not shown on blueprint maps and overlays unless specified; see following page for qualifying criteria)

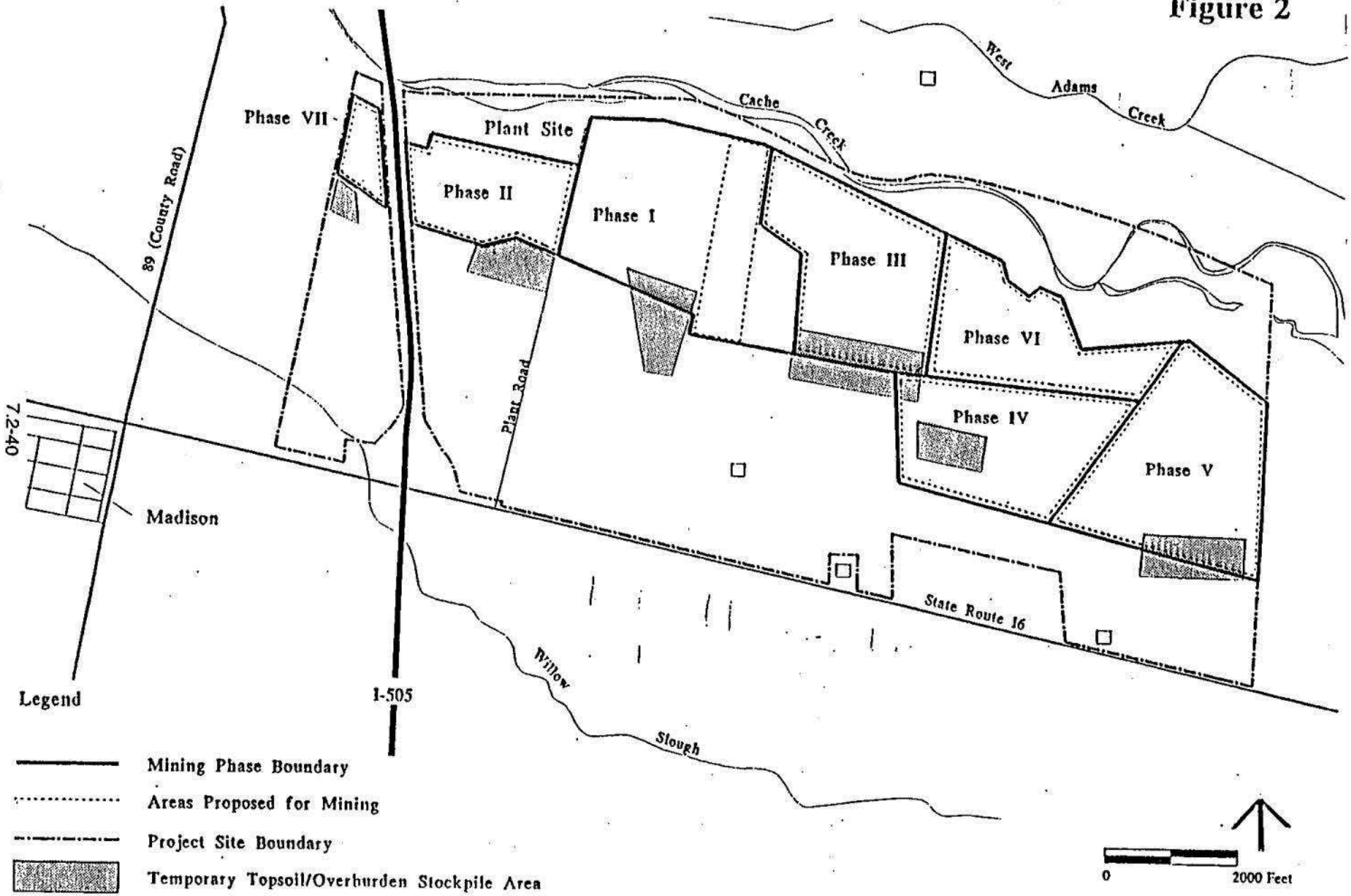
The *Land Committed to Nonagricultural Use* category was developed in cooperation with local government planning departments and county boards of supervisors during the public workshop phase of the Farmland Mapping and Monitoring Program's development in 1982. Information on *Land Committed to Nonagricultural Use* is available as an optional overlay to the Important Farmland Series maps (and Interim Farmland Maps).

Land Committed to Nonagricultural Use is land that is permanently committed by local elected officials to nonagricultural development by virtue of decisions which cannot be reversed simply by a majority vote of a city council or county board of supervisors. County boards of supervisors and city councils will have the final authority to designate lands in this category pursuant to the requirements of this section. The Department will work with city and county planning staffs to obtain this information.

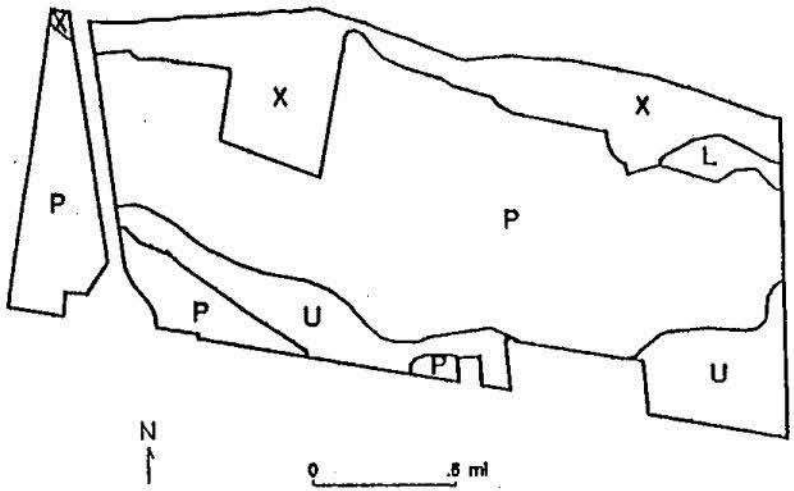
File 2

GENERALIZED MINING PLAN

Figure 2



GENERALIZED MINING PLAN



Prime Farmland (P)	1288 ac
Farmland of Statewide Importance (S)	0
Unique Farmland (U)	253
Farmland of Local Importance (L)	29
Other Land (X)	359
Grazing Land (G)	0
Water (W)	0

ASSEMBLY BILL 2663

Assembly Bill 2663 amends the Government Code relative to Williamson Act compatible uses and cancellation fees. Specific changes are explained below.

COMPATIBLE USES

Government Code Section 51201(e) define's "compatible use" and provides that uses compatible with the agricultural, recreational, or open-space use of contracted land may be determined by a board or council. AB 2663 amends section 51201(e) to include in this definition a reference to the new compatibility standards added by Government Code Sections 51238.1 and 51238.2.

Government Code Section 51231 requires a board or council to adopt rules governing the administration of agricultural preserves. Changes to Section 51231 state that rules relating to compatible uses shall be consistent with the new compatibility standards added by Government Code Sections 51238.1 and 51238.2.

Government Code Section 51238 identifies a number of statutorily sanctioned compatible uses. Section 51238 also authorizes boards of supervisors to impose conditions on compatible uses, consistent with the new compatibility standards added by Section 51238.1.

Government Code Section 51238.1 was added to the Williamson Act to provide standards for determining compatible uses of lands under Williamson Act contracts. Included are three principles of compatibility which are mandatory for prime lands and, with limited exceptions, for non-prime lands.

The three principles of compatibility are:

1) The use will not significantly compromise the long-term productive agricultural capability of the subject contracted parcel, or parcels, or of other contracted lands in agricultural preserves.

The Department interprets this principle to address the impacts of proposed uses on the soil, water, and other physical features of the parcel important for agricultural production.

2) The use will not significantly displace or impair current or reasonably foreseeable agricultural operations on the subject contracted parcel or parcels, or on other contracted lands in agricultural preserves. Uses that significantly displace agricultural operations on the subject contracted parcel or parcels may be deemed compatible if they relate directly to the production of commercial agricultural products on the subject contracted parcel, or parcels, or on neighboring lands, including activities such as harvesting, processing, or shipping.

The Department interprets this principle to address the impacts of proposed uses on agricultural activities on-site, as well as on neighboring contracted lands. Also note pre-existing Government Code Section 51220.5 which addresses non-agricultural congestion in agricultural preserves.

3) The use will not result in the significant removal of adjacent contracted land from agricultural or open-space use.

The Department interprets this principle to address the growth-inducing impacts of proposed uses on neighboring contracted lands.

For nonprime lands only, there is a limited exception to principles 1 and 2 if the following findings are made based on substantial evidence:

1) Conditions are required or incorporated into the use that mitigate or avoid onsite and offsite impacts whereby the use is consistent (to the extent possible) with principles 1 and 2, while maintaining the purpose for the use.

2) The productive capability of the subject land has been considered as well as the extent to which the use may displace or impair agricultural operations.

3) The use is consistent with the intent of the Williamson Act to preserve agricultural and open space land or supports the continuation of agricultural uses or the use or conservation of natural resources on the subject parcel or on other parcels within the agricultural preserve.

4) The use does not include a residential subdivision.

Also, for both prime and non-prime lands, the impacts of proposed uses on *noncontracted* lands in agricultural preserves must be considered.

Finally, compliance with the principles and/or findings may be ensured through the conditioning of uses which otherwise would not comply.

MINERAL EXTRACTION AS A WILLIAMSON ACT COMPATIBLE USE

Government Code Section 51238.2 is added to address proposed mineral extraction on contracted land and provides as follows:

> "A mineral extraction use that is unable to meet the three principles of compatibility defined in Section 51238.1 may still be approved as a compatible use if a board or council can document that the underlying contractual commitment to preserve prime land and nonprime land for open space use will not be significantly impaired."

The Department interprets this section as allowing local government some flexibility to consider mining operations if the preservation of prime and non-prime lands is not materially impaired during the term of the contract.

Additional conditions imposed on mineral extraction are to include compliance with Mining and Geology Board Reclamation Standards (Public Resources Code Section 2773) which include reclamation performance standards for prime and other agricultural land. (See Title 14 California Code of Regulations, Article 9, Reclamation Standards, Sections 3707-3708).

> [Note: In a letter to the legislative file for this bill the author, Assemblyman Byron Sher, acknowledged that the first paragraph of Section 51238.2 next to the last line makes an erroneous reference regarding the definition of open space use. He noted that the correct citation should be to subsection 51201(o), not to subsection 51201(c).]

GRANDFATHER CLAUSE

Government Code Section 51238.3 states that the new compatible use provisions (Sections 51238.1 and 51238.2) shall not apply to: 1) applications submitted prior to June 7, 1994, provided that the use constituted a "compatible use" as defined by the Williamson Act either at the time the application was submitted, or at the time the Williamson Act contract was signed on the subject lands, whichever is later; or, 2) uses expressly

specified in the contracts prior to June 7, 1994, which constituted a "compatible use" as defined by the Williamson Act at the time the contract was signed, or at the time the contract was amended to include the compatible use, whichever is later; or 3) uses in place prior to June 7, 1994, which constituted a "compatible use" as defined by the Williamson Act at the time.

CANCELLATION FEES

Government Code Section 16144 provides for an annual subvention payment from the State of California to cities and counties participating in the Williamson Act program. Current law also allows a participating local government to approve contract cancellation under certain conditions and upon the payment of a cancellation fee by the landowner. The cancellation fee must be forwarded to the State Controller's Office by a county treasurer within thirty (30) days of the execution of a certificate of final contract cancellation by a board of supervisors or city council. AB 2663 amends section 16144 to authorize the Secretary of the Resources Agency to withhold from a city or county's annual subvention payment an amount equal to any Williamson Act contract cancellation fee that has not been collected and transmitted to the Controller's Office within the statutory 30 days.

STATE OF CALIFORNIA—THE RESOURCES AGENCY

PETE WILSON, *Governor*

DEPARTMENT OF CONSERVATION
OFFICE OF LAND CONSERVATION
801 K STREET, MS 13-71
SACRAMENTO, CA 95814-3528
(916) 324-0859
FAX (916) 327-3430

May 26, 1995

TO: INTERESTED PARTIES

RE: WILLIAMSON ACT LEGISLATION--Amendments to Compatible Use and Public Acquisition provisions of the Government Code

The Department of Conservation is responsible for administering the California Land Conservation (Williamson) Act. On January 1, 1995, **AB 2663, Statutes 1994, Chapter 1251, and SB 1534, Statutes 1994, Chapter 1158)** became effective. These two items of legislation amended and added sections to Government Code provisions which specifically affect the administration of the California Land Conservation (Williamson) Act at the city and county level. These changes are detailed in the enclosed review of each bill. Additionally, a copy of each chaptered bill is provided for your information.

AB 2663--Summary

Assembly Bill 2663 clarified Government Code provisions relative to compatible uses allowed on lands within agricultural preserves and enrolled in Williamson Act contracts. Language was added to delineate three principles of compatibility, and to define requirements for issuing conditional use permits for non-prime land. The bill also provides for "grandfathering" of uses in place, in the application pipeline, or explicitly set forth in Williamson Act contracts, prior to June 4, 1994.

Finally, language was added to the Open Space Subvention Act to allow the state to withhold from county or city subvention entitlements any unpaid contract cancellation fees. The amendment allows the state to withhold an amount equal to the cancellation fees not received by the State Controller's Office within 30 days of the execution of a certificate of cancellation of a contract by a city or county.

SB 1534--Summary

Senate Bill 1534 provides changes to the Government Code relative to public acquisition of land within an agricultural preserve and enrolled in a Williamson Act contract.

In summary, the changes: 1) clarify that contract termination through public acquisition is appropriate only for land intended for publicly owned facilities and interests; 2) require documented findings that (a) the public acquisition of agricultural preserve lands over other lands is justified, and (b) the acquisition is not based on cost alone; 3) require that Williamson Act agricultural preserve lands acquired, and then resold by public entities, first be re-enrolled in the Act or an equivalent land restriction; and, 4) provide additional notice to the Director of the Department when uses or ownership of acquired lands change.

Please contact the Office of Land Conservation at (916) 324-0850 if you have questions or need additional information.

Sincerely,

Patricia Gatz
Associate Analyst

Enclosures

ASSEMBLY BILL 2663

Assembly Bill 2663 amends the Government Code relative to Williamson Act compatible uses and cancellation fees. Specific changes are explained below.

COMPATIBLE USES

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Government Code Section 51231 requires a board or council to adopt rules governing the administration of agricultural preserves. Changes to Section 51231 state that rules relating to compatible uses shall be consistent with the new compatibility standards added by Government Code Sections 51238.1 and 51238.2.

Government Code Section 51238 identifies a number of statutorily sanctioned compatible uses. Section 51238 also authorizes boards of supervisors to impose conditions on compatible uses, consistent with the new compatibility standards added by Section 51238.1.

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2) The productive capability of the subject land has been considered as well as the extent to which the use may displace or impair agricultural operations.

3) The use is consistent with the intent of the Williamson Act to preserve agricultural and open space land or supports the continuation of agricultural uses or the use or conservation of natural resources on the subject parcel or on other parcels within the agricultural preserve.

4) The use does not include a residential subdivision.

Also, for both prime and non-prime lands, the impacts of proposed uses on *noncontracted* lands in agricultural preserves must be considered.

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Additional conditions imposed on mineral extraction are to include compliance with Mining and Geology Board Reclamation Standards (Public Resources Code Section 2773) which include reclamation performance standards for prime and other agricultural land. (See Title 14 California Code of Regulations, Article 9, Reclamation Standards, Sections 3707-3708).

> [**Note:** In a letter to the legislative file for this bill the author, Assemblyman Byron Sher, acknowledged that the first paragraph of Section 51238.2 next to the last line makes an erroneous reference regarding the definition of open space use. He noted that the correct citation should be to subsection 51201(o), not to subsection 51201(c).]

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specified in the contracts prior to June 7, 1994, which constituted a "compatible use" as defined by the Williamson Act at the time the contract was signed, or at the time the contract was amended to include the compatible use, whichever is later; or 3) uses in place prior to June 7, 1994, which constituted a "compatible use" as defined by the Williamson Act at the time.

CANCELLATION FEES

Government Code Section 16144 provides for an annual subvention payment from the State of California to cities and counties participating in the Williamson Act program. Current law also allows a participating local government to approve contract cancellation under certain conditions and upon the payment of a cancellation fee by the landowner. The cancellation fee must be forwarded to the State Controller's Office by a county treasurer within thirty (30) days of the execution of a certificate of final contract cancellation by a board of supervisors or city council. AB 2663 amends section 16144 to authorize the Secretary of the Resources Agency to withhold from a city or county's annual subvention payment an amount equal to any Williamson Act contract cancellation fee that has not been collected and transmitted to the Controller's Office within the statutory 30 days.

CHAPTER 1251

An act to amend Sections 16144, 51201, 51231, and 51238 of, and to add Sections 51238.1, 51238.2, and 51238.3 to, the Government Code, relating to land use.

[Approved by Governor September 30, 1994. Filed with Secretary of State September 30, 1994.]

LEGISLATIVE COUNSEL'S DIGEST

AB 2663, Sher. Land use.

Existing law provides for the payment of open-space subventions to local governments. Existing law requires the governing body of each county, city, or city and county to submit a report annually to the Secretary of the Resources Agency itemizing the number of acres of land it believes to be qualified for state payments. The Controller is required to pay amounts certified by the secretary and may withhold and deduct any certified overpayment.

This bill would require the governing body of each county, city, or city and county to report annually to the secretary the number of acres which qualify for state payments. The bill would additionally permit the Controller to withhold and deduct any cancellation fees for contracts for land conservation under the Williamson Act not collected and transmitted to the Controller.

The California Land Conservation Act of 1965, otherwise known as the Williamson Act, permits a county or city to establish agricultural preserves in which, pursuant to contract with landowners, a county or city may limit the use of agricultural land for the purpose of preserving that land. Existing law permits a county board of supervisors to impose conditions on lands to be placed within the preserves.

This bill would additionally permit the board of supervisors to impose conditions on land uses subject to specified principles of compatibility and would make conforming changes.

The people of the State of California do enact as follows:

SECTION 1. Section 16144 of the Government Code is amended to read:

16144. On or before October 31 each year, the governing body of each county, city, or city and county shall report to the Secretary of the Resources Agency the number of acres of land under its regulatory jurisdiction which qualify for state payments pursuant to the various categories enumerated in Section 16142, together with supporting documentation as the secretary by regulation may require. The secretary, after [illegible]

the eligibility of the local government to receive payment and the actual amount to which it is entitled, shall certify that amount to the Controller for payment, and the Controller shall make the payment on or before June 30 of each year.

The secretary may make supplemental reports to the Controller as he or she deems necessary throughout the year to give effect to new or additional information received from local governing bodies, correct errors, and dispose of contested or conditional situations. Upon receiving the reports, the Controller shall pay any amount certified therein, and may withhold and deduct any certified overpayment from the amount that would otherwise be paid to the local government in the next succeeding year, including any cancellation fees that have not been collected and transmitted pursuant to Section 51283.

SEC. 2. Section 51201 of the Government Code is amended to read:

51201. As used in this chapter, unless otherwise apparent from the context:

(a) "Agricultural commodity" means any and all plant and animal products produced in this state for commercial purposes.

(b) "Agricultural use" means use of land for the purpose of producing an agricultural commodity for commercial purposes.

(c) "Prime agricultural land" means any of the following:

(1) All land which qualifies for rating as class I or class II in the Soil Conservation Service land use capability classifications.

(2) Land which qualifies for rating 80 through 100 in the Storie Index Rating.

(3) Land which supports livestock used for the production of food and fiber and which has an annual carrying capacity equivalent to at least one animal unit per acre as defined by the United States Department of Agriculture.

(4) Land planted with fruit- or nut-bearing trees, vines, bushes or crops which have a nonbearing period of less than five years and which will normally return during the commercial bearing period on an annual basis from the production of unprocessed agricultural plant production not less than two hundred dollars ($200) per acre.

(5) Land which has returned from the production of unprocessed agricultural plant products an annual gross value of not less than two hundred dollars ($200) per acre for three of the previous five years.

(d) "Agricultural preserve" means an area devoted to either agricultural use, as defined in subdivision (b), recreational use as defined in subdivision (n), or open-space use as defined in subdivision (o), or any combination of those uses and which is established in accordance with the provisions of this chapter.

(e) "Compatible use" is any use determined by the county or city administering the preserve pursuant to Section 51231, 51238, or 51238.1 or by this act to be compatible with the agricultural, recreational, or open-space use of land within the preserve and

subject to contract. "Compatible use" includes agricultural use, recreational use or open-space use unless the board or council finds after notice and hearing that the use is not compatible with the agricultural, recreational or open-space use to which the land is restricted by contract pursuant to this chapter.

(f) "Board" means the board of supervisors of a county which establishes or proposes to establish an agricultural preserve or which enters or proposes to enter into a contract on land within an agricultural preserve pursuant to this chapter.

(g) "Council" means the city council of a city which establishes or proposes to establish an agricultural preserve or which enters or proposes to enter into a contract on land within an agricultural preserve pursuant to this chapter.

(h) Except where it is otherwise apparent from the context, "county" or "city" means the county or city having jurisdiction over the land.

(i) A "scenic highway corridor" is an area adjacent to, and within view of, the right-of-way of:

(1) An existing or proposed state scenic highway in the state scenic highway system established by the Legislature pursuant to Article 2.5 (commencing with Section 260) of Chapter 2 of Division 1 of the Streets and Highways Code and which has been officially designated by the Department of Transportation as an official state scenic highway; or

(2) A county scenic highway established pursuant to Article 2.5 (commencing with Section 260) of Chapter 2 of Division 1 of the Streets and Highways Code, if each of the following conditions have been met:

(A) The scenic highway is included in an adopted general plan of the county or city; and

(B) The scenic highway corridor is included in an adopted specific plan of the county or city; and

(C) Specific proposals for implementing the plan, including regulation of land use, have been approved by the Advisory Committee on a Master Plan for Scenic Highways, and the county or city highway has been officially designated by the Department of Transportation as an official county scenic highway.

(j) A "wildlife habitat area" is a land or water area designated by a board or council, after consulting with and considering the recommendation of the Department of Fish and Game, as an area of great importance for the protection or enhancement of the wildlife resources of the state.

(k) A "saltpond" is an area which, for at least three consecutive years immediately prior to being placed within an agricultural preserve pursuant to this chapter, has been used for the solar evaporation of sea water in the course of salt production for commercial purposes.

(*l*) A "managed wetland area" is an area, which may be an area

diked off from the ocean or any bay, river or stream to which water is occasionally admitted, and which, for at least three consecutive years immediately prior to being placed within an agricultural preserve pursuant to this chapter, was used and maintained as a waterfowl hunting preserve or game refuge or for agricultural purposes.

(m) A "submerged area" is any land determined by the board or council to be submerged or subject to tidal action and found by the board or council to be of great value to the state as open space.

(n) "Recreational use" is the use of land by the public, with or without charge, for any of the following: walking, hiking, picnicking, camping, swimming, boating, fishing, hunting, or other outdoor games or sports for which facilities are provided for public participation. Any fee charged for the recreational use of land as defined in this subdivision shall be in a reasonable amount and shall not have the effect of unduly limiting its use by the public.

(o) "Open-space use" is the use or maintenance of land in a manner that preserves its natural characteristics, beauty, or openness for the benefit and enjoyment of the public, to provide essential habitat for wildlife, or for the solar evaporation of sea water in the course of salt production for commercial purposes, if the land is within:

(1) A scenic highway corridor, as defined in subdivision (i).

(2) A wildlife habitat area, as defined in subdivision (j).

(3) A saltpond, as defined in subdivision (k).

(4) A managed wetland area, as defined in subdivision (*l*).

(5) A submerged area, as defined in subdivision (m).

SEC. 3. Section 51231 of the Government Code is amended to read:

51231. For the purposes of this chapter, the board or council, by resolution, shall adopt rules governing the administration of agricultural preserves, including procedures for initiating, filing, and processing requests to establish agricultural preserves. Rules related to compatible uses shall be consistent with the principles set forth in Section 51238.1. Those rules shall be applied uniformly throughout the preserve. The board or council may require the payment of a reasonable application fee. The same procedure that is required to establish an agricultural preserve shall be used to disestablish or to enlarge or diminish the size of an agricultural preserve. In adopting rules related to compatible uses, the board or council may enumerate those uses, including agricultural laborer housing which are to be considered to be compatible uses on contracted lands separately from those uses which are to be considered to be compatible uses on lands not under contract within the agricultural preserve.

SEC. 4. Section 51238 of the Government Code is amended to read:

51238. Notwithstanding any determination of compatible uses by the county or city pursuant to this article, unless the board or council after notice and hearing makes a finding to the contrary, the erection, construction, alteration, or maintenance of gas, electric, water, communication, or agricultural laborer housing facilities are hereby determined to be compatible uses within any agricultural preserve. No land occupied by gas, electric, water, communication, or agricultural laborer housing facilities shall be excluded from an agricultural preserve by reason of that use.

The board of supervisors may impose conditions on lands or land uses to be placed within preserves to permit and encourage compatible uses in conformity with Section 51238.1, particularly public outdoor recreational uses.

SEC. 5. Section 51238.1 is added to the Government Code, to read:

51238.1. (a) Uses approved on contracted lands shall be consistent with all of the following principles of compatibility:

(1) The use will not significantly compromise the long-term productive agricultural capability of the subject contracted parcel or parcels or on other contracted lands in agricultural preserves.

(2) The use will not significantly displace or impair current or reasonably foreseeable agricultural operations on the subject contracted parcel or parcels or on other contracted lands in agricultural preserves. Uses that significantly displace agricultural operations on the subject contracted parcel or parcels may be deemed compatible if they relate directly to the production of commercial agricultural products on the subject contracted parcel or parcels or neighboring lands, including activities such as harvesting, processing, or shipping.

(3) The use will not result in the significant removal of adjacent contracted land from agricultural or open-space use.

In evaluating compatibility a board or council shall consider the impacts on noncontracted lands in the agricultural preserve or preserves.

(b) A board or council may include in its compatible use rules or ordinance conditional uses which, without conditions or mitigations, would not be in compliance with this section. These conditional uses shall conform to the principles of compatibility set forth in subdivision (a) or, for nonprime lands only, satisfy the requirements of subdivision (c).

(c) In applying the criteria pursuant to subdivision (a), the board or council may approve a use on nonprime land which, because of onsite or offsite impacts, would not be in compliance with paragraphs (1) and (2) of subdivision (a), provided the use is approved pursuant to a conditional use permit that shall set forth findings, based on substantial evidence in the record, demonstrating the following:

(1) Conditions have been required for, or incorporated into, the use that mitigate or avoid those onsite and offsite impacts so as to make the use consistent with the principles set forth in paragraphs (1) and (2) of subdivision (a) to the greatest extent possible while

maintaining the purpose of the use.

(2) The productive capability of the subject land has been considered as well as the extent to which the use may displace or impair agricultural operations.

(3) The use is consistent with the purposes of this chapter to preserve agricultural and open-space land or supports the continuation of agricultural uses, as defined in Section 51205, or the use or conservation of natural resources, on the subject parcel or on other parcels in the agricultural preserve. The use of mineral resources shall comply with Section 51238.2.

(4) The use does not include a residential subdivision.

For the purposes of this section, a board or council may define nonprime land as land not defined as "prime agricultural land" pursuant to subdivision (c) of Section 51201 or as land not classified as "agricultural land" pursuant to subdivision (a) of Section 21060.1 of the Public Resources Code.

Nothing in this section shall be construed to overrule, rescind, or modify the requirements contained in Sections 51230 and 51238 related to noncontracted lands within agricultural preserves.

SEC. 6. Section 51238.2 is added to the Government Code, to read:

51238.2. Mineral extraction that is unable to meet the principles of Section 51238.1 may nevertheless be approved as compatible use if the board or council is able to document that (a) the underlying contractual commitment to preserve prime land as defined in subdivision (c) of Section 51201, or (b) the underlying contractual commitment to preserve nonprime land for open-space use as defined in subdivision (c) of Section 51201, will not be significantly impaired.

Conditions imposed on mineral extraction as a compatible use of contracted land shall include compliance with the reclamation standards adopted by the Mining and Geology Board pursuant to Section 2773 of the Public Resources Code, including the applicable performance standards for prime agricultural land and other agricultural land, and no exception to these standards may be permitted.

For purposes of this section, "contracted land" means all land under a single contract for which an applicant seeks a compatible use permit.

SEC. 7. Section 51238.3 is added to the Government Code, to read:

51238.3. (a) The requirements of Sections 51238.1 and 51238.2 shall not apply to compatible uses for which an application was submitted to the city or county prior to June 7, 1994, provided that the use constituted a "compatible use" as that term was defined by this chapter either at the time the application was submitted, or at the time the Williamson Act contract was signed with respect to the subject contract lands, whichever is later.

(b) Neither shall the requirements of Sections 51238.1 and 51238.2 apply to land uses of contracted lands in place prior to June 7, 1994, that constituted a "compatible use" as the term "compatible use" was defined by this chapter either at the time the use was initiated, or at the time the Williamson Act contract was signed with respect to the subject contract lands, whichever is later.

(c) Neither shall the requirements of Sections 51238.1 and 51238.2 apply to uses that are expressly specified within the contract itself prior to June 7, 1994, and that constituted a "compatible use" as the term "compatible use" was defined by this chapter at the time that Williamson Act contract was signed with respect to the subject contract lands, or at the time the contract was amended to include the uses, whichever is later. For purposes of this subdivision, the requirements of Sections 51238.1 and 51238.2, effective January 1, 1995, shall apply to contracts for which contract nonrenewal was initiated and was withdrawn after January 1, 1995.

SEC. 8. The Legislature finds and declares that for the purposes of subdivision (c) of Section 51238.1 of the Government Code, the goal of preserving the maximum amount of nonprime agricultural land can be met by allowing other compatible uses, in compliance with subdivision (c) of Section 51238.1 of the Government Code, that sustain the economic viability of those lands while maintaining their open-space quality.

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SENATE BILL 1534

Senate Bill 1534 amended Williamson Act provisions pertaining to acquisition of contracted land for public improvements. Government Code provisions (Article 6) provide that a public entity may acquire land within an agricultural preserve for a public improvement either through eminent domain or in lieu of eminent domain, and that this action terminates the contract. Specific code section changes are detailed below.

PUBLIC IMPROVEMENT/EMINENT DOMAIN

Government Code Section 51290.5 defines a public improvement as a facility or interest in real property owned by a public agency.

Government Code Section 51291 states that when a public agency is considering the location of a public improvement within an agricultural preserve, notice must be sent to the Director of the Department of Conservation, and the local governing body administering the agricultural preserve. Changes to section 51291 provide that the notice shall contain an explanation of the preliminary consideration of section 51292, a general description of the land, either in text or by diagram, and a copy of the contract covering the land.

In addition, subsection (c) is added to section 51291 to clarify that when land in an agricultural preserve is actually acquired by a public entity within **10 working days** the public entity must notify the Director of the Department of Conservation. The notice must include (1) a general explanation of the decision and (2) findings made pursuant to section 51292, as amended. If there is a difference from the information provided in the original notice, the new notice must include a general description, either in text or by diagram, of the agricultural preserve land acquired as well as a copy of the contract enrolling the land.

Once notice is given as required, if the public agency proposes any significant change in the public improvement it must again provide notice of the changes to the Director of the Department of Conservation and the local governing body. If the notices and findings required by SB 1534 are also prepared pursuant to the California Environmental Quality Act, those documents may be used to meet the SB 1534 notification and findings requirments if the documents are provided within the timeframes specified.

Government Code Section 51292 states conditions under which a public improvement may not be located within a preserve. Amendments to section 51292 restate these conditions as *findings* that must be made prior to locating a public improvement in an agricultural preserve.

Government Code Section 51293 exempts certain public improvements from Government Code Section 51292. Amendments to section 51293 render the exemptions inoperative where the acquiring agency is also the agency administering the agricultural preserve. Added to the exemptions are: 1) acquisition of temporary construction easements for public utility improvements; or interest in real property for underground public improvements provided the subject land is reclaimed to its prior condition and use; and the construction of the underground improvement will not significantly impair the agricultural use of the contracted land; and 2) acquisition of a fee interest or conservation easement for a term of at least 10 years which restricts the land to agricultural or open space uses as defined by subdivisions (b) and (o) of Section 51201.

Government Code Section 51295 provides that a Williamson Act contract becomes null and void upon the filing of an action in eminent domain, or when the land is acquired in lieu of eminent domain. Amendments to section 51295 provide that such contract terminations are appropriate only for public improvements as defined in section 51290.5. Also, new requirements are added pertaining to resale of lands which were subject to the Williamson Act when originally acquired by the public entity. These requirements include providing a written notice to the Department of Conservation and the local governing body, and re-enrolling the land either in a Williamson Act contract or encumbering it in an enforceable deed restriction equal to a Williamson Act restriction. The minimum length of time the land must be restricted will be determined by subtracting the length of time the land was held by the acquiring public agency from the number of years remaining on the contract at the time of acquisition.

Senate Bill No. 1534

CHAPTER 1158

An act to amend Sections 51291, 51292, 51293, and 51295 of, and to add Section 51290.5 to, the Government Code, relating to land conservation.

[Approved by Governor September 29, 1994. Filed with Secretary of State September 30, 1994.]

LEGISLATIVE COUNSEL'S DIGEST

SB 1534, Johnston. Land conservation.

Existing provisions of the Williamson Act authorize any city or county to enter into contracts to limit the use of agricultural lands for the purpose of preserving those lands. Existing law requires a public agency that intends to consider the location of a public improvement within an agricultural preserve established by contract under the act to advise the Director of Conservation and the local governing body responsible for administration of the preserve.

This bill would require the public agency to include in its notice of intention to consider the location of a public improvement within the preserve an explanation of the preliminary consideration that the location is not based primarily on a consideration of lower cost of acquiring land in a preserve and that there is no other land on which it is reasonably feasible to locate the public improvement. The bill would add to the instances where the above provision does not apply the acquisition of temporary construction easements within a preserve for public utility improvements and the acquisition of a fee interest or conservation easement for a term of at least 10 years, as specified. The bill would define public improvement. The bill would also require the public agency to notify the Director of Conservation and the local governing body administering the preserve of changes in the intended public improvement, as specified.

Existing law provides that when land under contract in an agricultural preserve is taken by a public agency by condemnation or other proceedings the contract is null and void as to the land actually taken.

This bill would provide that if, after acquisition, the acquiring public agency determines that it will not for any reason actually locate on that land the public improvement for which the land was acquired, the land shall be reenrolled in a contract or encumbered by an enforceable deed restriction with terms at least as restrictive as those provided under the Williamson Act for a period of time equal to the remainder of the original contract before the land can be returned to private ownership.

The people of the State of California do enact as follows:

SECTION 1. Section 51290.5 is added to the Government Code, to read:

51290.5. As used in this chapter "public improvement" means facilities or interests in real property owned by a public agency or person as defined in subdivision (a) of Section 51291.

SEC. 2. Section 51291 of the Government Code is amended to read:

51291. (a) As used in this section, Section 51292, and Section 51295 "public agency" means the state, or any department or agency thereof, and any county, city, school district, or other local public district, agency, or entity; and "person" means any person authorized to acquire property by eminent domain.

(b) Whenever it appears that land within an agricultural preserve may be required by a public agency or person for a public use, the public agency or person shall advise the Director of Conservation and the local governing body responsible for the administration of the preserve of the intention to consider the location of a public improvement within the preserve. In accordance with Section 51290, the notice shall include an explanation of the preliminary consideration of Section 51292, and give a general description, in text or by diagram, of the agricultural preserve land proposed for acquisition, and a copy of any applicable contract created under this chapter. The Director of Conservation shall forward to the Director of Food and Agriculture a copy of any material received from the public agency or person relating to the proposed acquisition.

Within 30 days thereafter the Director of Conservation and the local governing body shall forward to the public agency or person concerned their comments with respect to the effect of the location of the public improvement on the land within the agricultural preserve and those comments shall be considered by the public agency or person. In preparing those comments, the Director of Conservation shall consider issues related to agricultural land use, including, but not limited to, matters related to the effects of the proposal on the conversion of adjacent or nearby agricultural land to nonagricultural uses, and shall consult with, and incorporate the comments of, the Director of Food and Agriculture on any other matters related to agricultural operations. Failure of any public agency or person to comply with the requirements of this section shall not invalidate any action by the agency or person to locate a public improvement within an agricultural preserve. However, the failure by any person or any public agency other than a state agency to comply with the requirements of this section shall be admissible in evidence in any litigation for the acquisition of that land or involving the allocation of funds or the construction of the public improvement. This subdivision does not apply to the erection, construction, alteration, or maintenance of gas, electric, water, or communication utility facilities within an agricultural preserve if that preserve was established after submission of the location of those

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facilities to the city or county for review or approval.

(c) When land in an agricultural preserve is acquired by a public entity, within 10 working days the public entity shall notify the Director of Conservation. The notice shall include a general explanation of the decision, and the findings made pursuant to Section 51292. If different from that previously provided pursuant to subdivision (b), the notice shall also include a general description, in text or by diagram, of the agricultural preserve land acquired, and a copy of any applicable contract created under this chapter.

(d) If, after giving the notice required under subdivisions (b) and (c) and before the project is completed within an agricultural preserve, the public agency or person proposes any significant change in the public improvement, it shall give notice of the changes to the Director of Conservation and the local governing body responsible for the administration of the preserve. Within 30 days thereafter, the Director of Conservation and the local governing body may forward to the public agency or person their comments with respect to the effect of the change to the public improvement on the land within the preserve and the compliance of the changed public improvements with this article. Those comments shall be considered by the public agency or person, if available within the time limits set by this subdivision.

(e) If the notices and findings required by this section and Section 51292 are given and contained within documents prepared pursuant to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) those documents may be used to meet the notification and findings requirements of this section and Section 51292, as long as they are provided no later than the times set forth in this section.

Any action or proceeding regarding notices or findings required by this article filed by the Director of Conservation or the local governing body administering the agricultural preserve shall be governed by Section 51294.

SEC. 3. Section 51292 of the Government Code is amended to read:

51292. No public agency or person shall locate a public improvement within an agricultural preserve unless the following findings are made:

(a) The location is not based primarily on a consideration of the lower cost of acquiring land in an agricultural preserve.

(b) If the land is prime agricultural land covered under a contract pursuant to this chapter for any public improvement, that there is no other land within or outside the preserve on which it is reasonably feasible to locate the public improvement.

SEC. 4. Section 51293 of the Government Code is amended to read:

51293. Section 51292 shall not apply to:

board or council administering the agricultural preserve approves or agrees to the location thereof, except when the acquiring agency and administering agency are the same entity.

(b) The acquisition of easements within a preserve by the board or council administering the preserve.

(c) The location or construction of any public utility improvement which has been approved by the Public Utilities Commission.

(d) The acquisition of either (1) temporary construction easements for public utility improvements, or (2) an interest in real property for underground public utility improvements. This subdivision shall apply only where the surface of the land subject to the acquisition is returned to the condition and use that immediately predated the construction of the public improvement, and when the construction of the public utility improvement will not significantly impair agricultural use of the affected contracted parcel or parcels.

(e) The location or construction of the following types of improvements, which are hereby determined to be compatible with or to enhance land within an agricultural preserve:

(1) Flood control works, including channel rectification and alteration.

(2) Public works required for fish and wildlife enhancement and preservation.

(3) Improvements for the primary benefit of the lands within the preserve.

(f) Improvements for which the site or route has been specified by the Legislature in a manner that makes it impossible to avoid the acquisition of land under contract.

(g) All state highways on routes as described in Sections 301 to 622, inclusive, of the Streets and Highways Code, as those sections read on October 1, 1965.

(h) All facilities which are part of the State Water Facilities as described in subdivision (d) of Section 12934 of the Water Code, except facilities under paragraph (6) of subdivision (d) of that section.

(i) Land upon which condemnation proceedings have been commenced prior to October 1, 1965.

(j) The acquisition of a fee interest or conservation easement for a term of at least 10 years, in order to restrict the land to agricultural or open space uses as defined by subdivisions (b) and (o) of Section 51201.

SEC. 5. Section 51295 of the Government Code is amended to read:

51295. When any action in eminent domain for the condemnation of the fee title of an entire parcel of land subject to a contract is filed or when that land is acquired in lieu of eminent domain for a public improvement by a public agency or person or whenever there is any action or acquisition by the federal

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government or any person, instrumentality or agency acting under authority or power of the federal government, the contract shall be deemed null and void as to the land actually being condemned or so acquired as of the date the action is filed and for the purposes of establishing the value of the land, the contract shall be deemed never to have existed.

Upon the termination of the proceeding, the contract shall be null and void for all land actually taken or acquired.

When an action to condemn or acquire less than all of a parcel of land subject to a contract is commenced, the contract shall be deemed null and void as to the land actually condemned or acquired and shall be disregarded in the valuation process only as to the land actually being taken, unless the remaining land subject to contract will be adversely affected by the condemnation, in which case the value of that damage shall be computed without regard to the contract.

When an action to condemn or acquire an interest which is less than the fee title of an entire parcel or any portion thereof, of land subject to a contract is commenced, the contract shall be deemed null and void as to that interest and for the purpose of establishing the value of that interest only shall be deemed never to have existed, unless the remaining interests in any of the land subject to the contract will be adversely affected, in which case the value of that damage shall be computed without regard to the contract.

The land actually taken shall be removed from the contract. Under no circumstances shall land be removed that is not actually taken for a public improvement, except that when only a portion of the land or less than a fee interest in the land is taken or acquired, the contract may be canceled with respect to the remaining portion or interest upon petition of either party and pursuant to the provisions of Article 5 (commencing with Section 51280).

For the purposes of this section, a finding by the board or council that no authorized use may be made of the land if the contract is continued on the remaining portion or interest in the land may satisfy the requirements of subdivision (a) of Section 51282.

If, after acquisition, the acquiring public agency determines that it will not for any reason actually locate on that land or any part thereof, the public improvement for which the land was acquired, before returning the land to private ownership the public agency shall give written notice to the Director of Conservation and the local governing body responsible for the administration of the preserve and the land shall be reenrolled in a contract, or encumbered by an enforceable deed restriction with terms at least as restrictive as those provided by this chapter. The duration of the restriction shall be determined by subtracting the length of time the land was held by the acquiring public agency or person from the number of years that remained on the original contract at the time of acquisition.

ARTICLE 6. EMINENT DOMAIN OR OTHER ACQUISITION

51290. State or Local Public Improvements with Preserve.

(a) It is the policy of the state to avoid, whenever practicable, the location of any state or local public improvements and any improvements of public utilities, and the acquisition of land therefor, in agricultural preserves.

(b) It is further the policy of the state that whenever it is necessary to locate such improvement within an agricultural preserve, such improvement shall, whenever practicable, be located upon land other than land under a contract pursuant to this chapter.

(c) It is further the policy of the state that any agency or entity proposing to locate such an improvement shall, in considering the relative costs of parcels of land and development of improvements, give consideration to the value to the public, as indicated in Article 2 (commencing with Section 51220), of land (and particularly prime agricultural land) within an agricultural preserve.

51290.5. Public Improvement Defined

As used in this chapter "public improvement" means facilities or interests in real property owned by a public agency or person as defined in subdivision (a) of Section 51291.

51291. "Public Agency."

(a) As used in this section, Section 51292, and Section 51295 "public agency" means the state, or any department or agency thereof, and any county, city, school district, or other local public district, agency, or entity; and "person" means any person authorized to acquire property by eminent domain.

(b) Whenever it appears that land within an agricultural preserve may be required by a public agency or person for a public use, the public agency or person shall advise the Director of Conservation and the local governing body responsible for the administration of the preserve of the intention to consider the location of a public improvement within the preserve. In accordance with Section 51290, the notice shall include an explanation of the preliminary

consideration of Section 51292, and give a general description, in text or by diagram, of the agricultural preserve land proposed for acquisition, and a copy of any applicable contract created under this chapter. The Director of Conservation shall forward to the Director of Food and Agriculture a copy of any material received from the public agency or person relating to the proposed acquisition.

Within 30 days thereafter the Director of Conservation and the local governing body shall forward to the public agency or person concerned their comments with respect to the effect of the location of the public improvement on the land within the agricultural preserve and those comments shall be considered by the public agency or person. In preparing those comments, the Director of Conservation shall consider issues related to agricultural land use, including, but not limited to, matters related to the effects of the proposal on the conversion of adjacent or nearby agricultural land to nonagricultural uses, and shall consult with, and incorporate the comments of, the Director of Food and Agriculture on any other matters related to agricultural operations. Failure of any public agency or person to comply with the requirements of this section shall not invalidate any action by the agency or person to locate a public improvement within an agricultural preserve. However, the failure by any person or any public agency other than a state agency to comply with the requirements of this section shall be admissible in evidence in any litigation for the acquisition of that land or involving the allocation of funds or the construction of the public improvement. This subdivision does not apply to the erection, construction, alteration, or maintenance of gas, electric, water, or communication utility facilities within an agricultural preserve if that preserve was established after submission of the location of those facilities to the city or county for review or approval.

(c) When land in an agricultural preserve is acquired by a public entity, within 10 working days the public entity shall notify the Director of Conservation. The notice shall include a general explanation of the decision, and the findings made pursuant to Section 51292. If different from that previously provided pursuant to subdivision (b), the notice shall also include a general description, in text or by diagram, of the agricultural preserve land acquired, and a copy of any applicable contract created under this chapter.

(d) If, after giving the notice required under subdivisions (b) and (c) and before the project is completed within an agricultural preserve, the public agency or person proposes any significant change in the public improvement, it shall give notice of the changes to the Director of Conservation and the local governing body responsible for the administration of the preserve. Within 30 days thereafter, the Director of Conservation and the local governing body may forward to the public agency or person their comments with respect to the effect of the change to the public improvement on the land within the preserve and the

compliance of the changed public improvements with this article. Those comments shall be considered by the public agency or person, if available within the time limits set by this subdivision.

(e) If the notices and findings required by this section and Section 51292 are given and contained within documents prepared pursuant to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) those documents may be used to meet the notification and findings requirements of this section and Section 51292, as long as they are provided no later than the times set forth in this section.

Any action or proceeding regarding notices or findings required by this article filed by the Director of Conservation or the local governing body administering the agricultural preserve shall be governed by Section 51294.

51292. Conditions Under Which Public Improvement May Not Be Located Within Preserve.

No public agency or person shall locate a public improvement within an agricultural preserve unless the following findings are made:

(a) The location is not based primarily on a consideration of the lower cost of acquiring land in an agricultural preserve.

(b) If the land is prime agricultural land covered under a contract pursuant to this chapter for any public improvement, that there is no other land within or outside the preserve on which it is reasonably feasible to locate the public improvement.

51293. Same; Special Exceptions.

Section 51292 shall not apply to:

(a) The location or construction of improvements where the board or council administering the agricultural preserve approves or agrees to the location thereof, except when the acquiring agency and administering agency are the same entity.

(b) The acquisition of easements within a preserve by the board or council administering the preserve.

(c) The location or construction of any public utility improvement which has been approved by the Public Utilities Commission.

(d) The acquisition of either (1) temporary construction easements for public utility improvements, or (2) an interest in real property for underground public utility improvements. This subdivision shall apply only where the surface of the land subject to the acquisition is returned to the condition and use that immediately predated the construction of the public improvement, and when the construction of the public utility improvement will not significantly impair agricultural use of the affected contracted parcel or parcels.

(e) The location or construction of the following types of improvements, which are hereby determined to be compatible with or to enhance land within an agricultural preserve:
  (1) Flood control works, including channel rectification and alteration.
  (2) Public works required for fish and wildlife enhancement and preservation.
  (3) Improvements for the primary benefit of the lands within the preserve.

(f) Improvements for which the site or route has been specified by the Legislature in a manner that makes it impossible to avoid the acquisition of land under contract.

(g) All state highways on routes as described in Sections 301 to 622, inclusive, of the Streets and Highways Code, as those sections read on October 1, 1965.

(h) All facilities which are part of the State Water Facilities as described in subdivision (d) of Section 12934 of the Water Code, except facilities under paragraph (6) of subdivision (d) of that section.

(i) Land upon which condemnation proceedings have been commenced prior to October 1, 1965.

(j) The acquisition of a fee interest or conservation easement for a term of at least 10 years, in order to restrict the land to agricultural or open space uses as defined by subdivisions (b) and (o) of Section 51201.

51293.1. Establishment of Preserve Prior to Location of Public Utility Improvement.

Any public agency or person requiring land in an agricultural preserve for a use which had been determined by a city or county to be a "compatible use" pursuant to subdivision (e) of Section 51201 in that agricultural preserve shall not be excused from the provisions of subdivision (b) of Section 51291 if the agricultural preserve was established before the location of the improvement of a public utility was submitted to the city, county, or Public Utilities Commission for agreement or approval and that compatible use shall not come within the provisions of Section 51293 unless the location of the improvement is approved or agreed to pursuant to subdivision (a) of Section 51293 or the compatible use is listed in Section 51293.

51294. Enforcement.

Section 51292 shall be enforceable only by mandamus proceedings by the local governing body administering the agricultural preserve or the Director of Conservation. However, as applied to condemners whose determination of necessity is not conclusive by statute, evidence as to the compliance of the condemnor with Section 51292 shall be admissible on motion of any of the parties in any action otherwise authorized to be brought by the landowner or in any action against the landowner.

51294.1. Water Transmission Facilities Within Preserve; Local Agency's Approval.

THE LEAGUE OF WOMEN VOTERS OF WOODLAND

P. O. Box 2463, Woodland, CA 95776

1121 West Street
Woodland, CA 95695
February 20, 1996

To: Tom Stallard, Chairman, and members of the Yolo County Board of Supervisors
From: League of Women Voters of Woodland

Thank you for responding to the concerns of 42 citizens and allowing a discussion of an economic analysis of the effects of long-term gravel plans that will convert agricultural land to open pits, wetlands, and "wildlife habitat".

The League would submit that whether or not such an economic analysis is required under CEQA is open to interpretation. You, the Supervisors, have the power to direct that such a study be done.

The California Constitution makes a very powerful statement about water. Article X, Section 2 reads as follows:

> "It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such water is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare." . . . . . "This section shall be self-executing . . . ."

The League would submit that no analysis is being made of whether waters along Cache Creek are going to be used in the interest of the people and for the public welfare when deep pits into the water table are being dug to extract gravel. Without analysis such action is placing gravel as a more important resource than water. There is no statement in the constitution about the importance of gravel. However, the Constitution makes it clear that any impact on the reasonable and best use of water must be prevented. It seems clear, therefore, than any program or activity that would adversely affect the reasonable and best use of water would be in violation of the Constitution and would be prohibited. Necessarily, the possible adverse effect on water must be considered. The reasonable and best use of water, being constitutionally protected, is preeminent. It cannot be disposed by virtually ignoring it, or by contending that in general an economic analysis is not required in an EIR. The Constitution clearly places the burden of proof on the proponent of the project.

The California Water Code in Article 3, section 12922 entitled,"Primary interest of people of State" reads as follows:

> "It is hereby declared that the people of the state have a primary interest in the correction and prevention of irreparable damage to, or impaired use of, the ground water basins of this state caused by critical conditions of overdraft,

depletion, sea water intrusion or degraded water quality."
Certainly the pits could cause irreparable damage and degraded water quality, with a devastating effect on the economy of this County. Again the legislature has spoken in regard to the importance and preeminence of water, particularly groundwater.

Citizens were told at a Scoping session for the Cache Creek Resources Management Plan that CEQA did not call for an economic analysis that would consider the cost of the lost agricultural land and the wet pits that would remain open to the aquifer when mining is completed. Therefore, there would be no such analysis.

The League would like to quote from a 1993 issue of Cal Jur, Volume 50, Part 1, page 735, Section 505 entitled, "Effects of social and economic factors. It states:

> "Since the Environmental Quality Act concerns itself with physical changes to the physical environment generally, social and economic changes resulting from a project are not treated as significant environmental effects, whether primary or secondary, that require an environmental impact report. Nevertheless, the administrative guidelines explain that a project's social and economic effects may have some relevance in determining the significance of a physical change. For example, an environmental impact report may identify anticipated economic changes that will in turn cause a physical change, or may use economic effects to determine the importance of physical shanges."

The last sentence in that quote is the important one. An economic analysis will determine the importance of the physical changes being made along the Creek during 30 to 50 years of gravel mining. Who will be responsible for monitoring the many pits that will be left when the mining and reclamation phase is over? The citizens have yet to receive an answer to that question. And it has economic effects for generations not yet born. The above quotation indicates, in general, that an economic analysis may be appropriate to measure the extent of an impact. We think that is very important in this case. This, of course, supplements the overriding importance of maintaining the reasonable and best use of water **"in the interest of the people and for the public welfare"** as provided in the Constitution and set forth above.

The real question is to analyze a non-renewable resource, gravel, against that of a renewable resource such as aquifer storage capacity and quality, and an increasing value resource such as soil productivity. Gravel is a short term resource, the soil and water can be productive as long as we take care of them.

The initial decision is up to you. The decision you make will affect not only the 14.5 miles on each side of the Cache Creek, but all the landowners along the Creek, the communities of Capay, Esparto, Madison, Woodland, and Yolo - in fact it will affect the economics of the entire County. Surely, you cannot refuse to make such a decision.

We urge you to require that an economic analysis be carried out, in the EIR document.

Marie E. Bryan

Marie E. Bryan

Patricia Murray, Co-presidents

Lois V. Linford

Lois V. Linford, Natural Resources Chair

RECEIVED
FEB 20 1996
By

2/16/96

To: Dave Morrison & Heidi Tschudin,
Planning Department

Subject: **Public Health Considerations must be the major concern as a danger of water pollution from mining in deep wet pits during the next 50 years.**

From: Bob & Mitzi Speirs,
Co-Chairpersons, Environmental Issues Committee,
Western Yolo Grange #423

The wet pit mining Proposals and Reclamation Plans result in open bodies of water directly connected to the aquifer which constitutes a major source of potable water for most of the municipal and domestic wells in Yolo County. The overriding consideration is to identify any threats to this irreplaceable resource and to clearly state what mitigation measures are planned. Thus far there has been absolutely no testimony from any "experts" on Public Health pertaining to potable water. The only testimony offered to date has been presented by Geologists and Hydrologists, none of whom are qualified under California law to testify on Public Health Issues. This is an entirely separate field with its own code for the licensing of professionals.

The Limnology of Ponds has not been examined from a public health aspect. The concerns now being raised by citizens are long standing and well documented. The essential data used in the following discussion is taken from "The Practice of Water Pollution Biology" published in 1969 by the Federal Water Pollution Control Administration (Eventually incorporated into the EPA). The booklet represents more than 20 years of biological field investigative experience by experts in many disciplines.

Ponds and lakes are microcosms that support a huge community of organisms. Man-made ponds and lakes quickly establish such communities because the essential life sustaining ingredients, rainfall, soil and water are ever present. It is a sad misconception to think that a deep gravel strip mine can long remain a pristine, clear pond. Local examples of serious algae problems are Clear Lake, Lake Berryessa and every household that own an outdoor unchlorinated swimming pool. At the present time Lake Berryessa looks like it is filled with green paint, some of which is pouring out of the bottom of the lake into Putah Creek. This is what the deep pits will predictably look like after the gravel has been mined out.

1. NUTRIENTS PRESENT TO INITIATE ORGANISM GROWTH.

Rainfall contains the key ingredients - phosphorus and nitrates.

#Atmosphere - contains nitrogen and oxygen; these are exchanged through the water surface

Soil- naturally occurring minerals plus fertilizer from past farming will be present in the pond sides along with nutrients from pasture animals. If the ponds are used in the future for watering livestock the problem will be continuous.

It is important to note that the "Technical Studies" avoided any informative discussion on this topic. This is a critical impact and its mitigation, if any is possible, needs to be discussed.

2. SOME OF THE ORGANISMS THAT WILL BECOME ESTABLISHED.

IN THE WET PITS

Algae - this is a unicellular plant that exists singly or in colonies and comprises 1,500 genera and 17,400 species (Fuller & Tippo). Fresh water algae fall into major groups including a) blue green algae: b) green algae; c) yellow-green algae; d) golden-brown algae and diatoms; e) red algae; f) euglenoids and g) dinoflagellates.

The blue-green algae which are especially prevalent in the "Study Area" are considered to be the most offensive. They present a "Pea-soup" appearance, septic "pig-pen" odors; impart a "fishy taste" and cover the shore with slimy gelatinous masses.

A host of protozoan organisms, bacteria, insects, invertebrates and viruses inhabit the bottom and sides as well as within the liquid phase. The essential food elements that sustain this ascending order of biologically complex life forms include the algae that die as well as the vitamins and other compounds synthesized by the algae.

After a relatively short period of time a drop of this pond water when viewed with a microscope will be teeming with an unbelievable diversity of living organisms. This can hardly be considered a beneficial addition to a drinking water aquifer!

Anaerobic conditions (without oxygen) occur on the bottom of ponds at the depths contemplated by deep pit mining. Many species of anaerobic bacteria will inhabit the bottom and deeper sides. These anaerobic bacteria digest the algae that die off and settle out. One of the objectionable by-products of this digestion is the generation of hydrogen sulfide gas which imparts a rotten egg odor and in high concentrations can be hazardous.

3. POND EUTROPHICATION

Eutrophication is a term meaning enrichment of water by nutrients. It is caused by fertilizing elements that are available from the soil, water and atmosphere such as nitrogen, phosphorus and trace elements. Once established, the algae self-sustain this phenomenon by dying off, settling to the bottom, being digested by bacteria with the released by-products of digestion providing more ingredients for successive algae growth. Unless the algae is harvested and removed the cycle perpetuates itself. This cycle would occur in wet pits, man-made lakes, or natural bodies of water. The results can be clearly seen in Clear Lake in late summer. The difference is that the natural lakes have an ultrafine filtration mechanism imposed between the body of water and the underlying groundwater which not only removes contaminants and toxic materials , but causes their breakdown and detoxification . In contrast there is little or no filtration along the sides and bottoms of the wet gravel pits and no capacity for detoxification.

An increase in nutrient concentration increases the number of algae cells creating nuisance conditions such as surface scums, algae-littered beaches and foul smells. Filamentous algae, especially Cladaphora, grow profusely on any suitable surface when they break loose and wash ashore to form windrows of stinking vegetation. This is considered an abnormal acceleration of a process that is not in the best interests of people living or visiting the area.

The above described conditions occur in Clear Lake, lower Cache Creek and Bear Creek. Several ox-bow lakes along the Sacramento River in the Knights Landing area are also subject to such algae growths.

Ox-bow lakes are old, abandoned bends in the river that have been cut off as the river straightens it course and become lakes not connected to the river. The water level surface of these isolated lakes is the same as the surface of the groundwater. A similar situation would occur in the mined out deep wet pits. The consultant preparing the EIR documents must observe and describe these lakes in summer to gain an appreciation of what the proposed deep wet pits will look like. A failure to carefully consider these conditions would be an inexcusable breach of CEQA requirements and would destroy the integrity of the whole process!

4. POND WATER TEMPERATURE

Temperature is a prime regulator of natural processes within the water environment and covers physiological functions in organisms. Temperature influences chemical reaction rates, enzymatic functions, molecular movements, molecular exchanges between membranes and within and between the physiological systems and organs of aquatic organisms.

Thermal stratification occurs in the summer with warm surface water and cool bottom waters which become stagnant, trapping undesirable and objectionable constituents from the surface. In Autumn, the lake radiates stored heat, surface water temperatures decrease, surface water density increases, and the water viscosity increases. Soon the wind, aided by reduced density differences between water layers, mixes the surface and the bottom waters, releasing the objectionable material that has been stored on the bottom. This results in rafts of scum which can become quite odorous appearing on the surface. Lake Berryessa is a nearby example of this annual turnover. It is less evident in Clear Lake which averages only 30' in depth. The proposed wet pits are destined to be as deep as 150' and would be expected to have a striking turnover.

Decomposing organisms on the bottom are known to remove oxygen from the water and the gaseous by products of decomposition are trapped. Undesirable soluble phosphorus, carbon dioxide, iron, and manganese concentrations increase in this stagnant bottom water.

For every 18° increase in temperature, the chemical reaction rate in an organism is approximately doubled. Life processes in the water are accelerated with temperature increases. High surface temperatures in the summer cause a great proliferation in the algae population and the resulting die off causes a large amount of organic material to settle to the bottom. This great store of organic debris is then digested and numerous by-products released.

5. LIGHT PENETRATION

The volume of algae produced is also dependent on the depth of sunlight penetration in the pond or gravel wet pit. In a situation where the potable aquifer is being exposed, little turbidity would be expected, thus providing conditions favorable for growth in relatively deep regions. The layer that encompasses 99% of incident light (meaning that the light intensity is adequate for photosynthesis) is referred to as the trophogenic zone. The depth of the trophogenic zone may vary from less than 5 feet to more than 90 feet.

6. MORE ON PHOSPHORUS

Phosphorus, a fertilizer constituent, is probably the most important controlling factor of algae growth. The standing crop of algae per acre in a lake would generally exceed 2 tons and contain 1.5 pounds of phosphorus. In addition submerged aquatic plants could produce a crop of 7 tons per acre containing 3.2 pounds of phosphorus per acre.

Agricultural drainage can contribute 0.35 - 0.39 pounds of phosphorus per acre drained. The pit water level would be lower than the groundwater in the sand and gravel voids on adjacent lands since excavating gravel from an aquifer always results in lowering of the water table. Phosphorus will be collected by rainfall and by water percolating through the soil. Wild ducks and coots will each contribute .45 pounds of excrement per year. Shorebirds and other swamp dwellers also contribute. Birds are known to have a high concentration of phosphorus in their excrement.

7. OTHER CONCERNS

The poisoning of wild and domestic animals by toxic algae bloom of Nostoc rivulare from a pond in central Texas has been described (Davidson). Cattle, fish, frogs and fowl that drank the water containing a heavy growth of algae became acutely ill, and many died within a short period of time. This phenomenon has also been reported at other locations.

Scum rafts inhabited by algae are another predictable event that the EIR consultant must consider. Organic material such as dead algae that has settled

to the bottom of the wet pit or a pond is digested by bacteria to create sludge and various gaseous products. This sludge rises to the surface and floats during the temperature turn-over becoming concentrated by the wind into large floating rafts.

These rafts of sludge, if not promptly broken up by mechanical means, will dehydrate on the water surface to form a crust. This crust gives the rafts mechanical strength and prevents breakup by wave action. They then become targets for colonization by midges and various species of algae which can be quite odorous as well as toxic. These conditions can be observed locally in unattended swimming pools filled with disinfected potable water. It is also observed in stagnant areas in rice paddies. Is this what we want in our exposed potable water supply? This should be considered in the EIR documents as an unmitigable adverse impact.

Pond eutrophication results in an increase in algae and weed nuisances and stimulates increases in the midge larvae, whose adult stage has long plagued man in and around Clear Lake. Midges are the swarms of insects that emerge like puffs of smoke when they swarm at twilight. They are attracted to lights and millions of dollars have been spent in a futile attempt at control.

It would be reasonable to expect that environmental conditions at the mined out deep pits alongside Cache Creek would approximate those at Clear Lake. Emergence of midges takes place between late April and early October with peak emergences in late July or early August. A series of tests carried out over 2 years showed that the average total seasonal emergence exceeds 500 gnats per square foot (Walker, J.R.. The Clear Lake Gnat, Bureau of Vector Control, CaDHS). Walker calculated that the total seasonal production on the upper arm of the lake, comprising 44 square miles, was approximately 712 billion gnats or 356 tons of organisms. One night's emergence was estimated at 3.5 billion, and bottom samples contained as many as 1,000 per square foot. This could pose a threat to Madison and Esparto if the proposed wet pits are permitted nearby.

8. IS ADJACENT FARMING COMPATIBLE WITH WET PIT MINING

In the area west of the Plainfield Ridge, the groundwater is much higher than the area to the east. The western area is already the target of several current applications for wet pit mining - some as deep as 150 feet.

If we consider that the eventual eutrophication of the exposed drinking water aquifer is a bad thing it would appear that farming adjacent land would be incompatible.

The source of this incompatibility would be the excess fertilizer moving into the wet pit. The water level in the wet pit will be lower than the groundwater that is some distance from the pit. Subsurface flow to the wet pit will provide a ready conduit through the sand and gravel strata that underlie the crop land and which to the wet pit. Irrigation water will percolate into these conduit granular strata (strata of open pores through which water passes).

Applying fertilizer with the irrigation water is a widely used current practice. This will be a ready source of nitrates available to bring about intensive algae blooms and weed growth in the wet pit (a drinking water aquifer). Dissolved fertilizer is not filtered out by percolation through the soil. This is the cause of nitrate contamination in domestic wells in the Dunnigan area.

Any adjacent reclaimed dry pits will be heavily fertilized in the attempt to restore the former level of crop production, providing a built-in source for eutrophication

It is noted that recent permit applications for gravel mining have included both wet pits and dry pits in close proximity on the same parcel. Has a detailed eutrophication study been made to demonstrate that no adverse impact is generated?

It is also noted in these permit applications that some of the reclaimed dry pits proposed for groundwater recharge are on the same parcel as proposed wet pits. The only water supply available for recharge is Cache Creek. State and Federal studies have long ago established that Cache Creek water is bio-stimulatory (will cause algae blooms). This would also strongly suggest that if eutrophication is to be avoided exposing the drinking water aquifer is not compatible with recharge pits in the vicinity,.

#Such a major public health issue should have been considered in great detail in the "Technical Studies".

9. FUTURE USE OF WET PITS

 # The study documents released to date provide considerable detail on the requirements to excavate a wet pit but little is said about what happens to a wet pit once it has been mined out. No restrictions have been suggested which pretty much leaves the wet pits available for a great number of uses, some of which may not be compatible with preserving the quality of the exposed drinking water in the pit.

 # Wet pits could provide an easy and inexpensive source of irrigation water as no well needs to be drilled and a much cheaper type of pump can be used. This will lower the water table even more on adjacent lands and hasten the subsurface inflow of agricultural fertilizers which is precisely what is not needed.

10. IS RECHARGE PIT A NEW BUZZ WORD?

 # The miners have demonstrated in their recent off-channel mining applications that if you have more pit than you have topsoil to restore it, you call it a recharge pit. This has a fine noble sound and is used indiscriminately regardless of whether any geohydrological investigations have been performed to determine if it is practical or cost effective. To date no cost-benefit studies have been provided to show if in fact the long-term benefits make the original costs and the maintenance and operational cost worth the investment. The Army Corps 1995 study strongly indicates that recharge pits near the creek will short circuit back to the creek instead of recharging.

 # It is entirely inappropriate for Staff to recommend that pits that cannot be reclaimed due to insufficient topsoil be considered as recharge facilities when no evidence exists that it will work. The grandiose expectations being sold to the public need to be validated with credible and convincing information based on real life experiences in communities with similar geography and land uses.

11. CONSULTANTS FAIL TO PROVIDE PROPER ANALYSIS OF INFLUENCE OF MINED OUT WET PITS ON ADJACENT COMMUNITY WATER SUPPLIES.

 # The "study area" under consideration for Staff's recommendation of deep wet pit gravel mining comes perilously close to the communities of Capay, Esparto, Madison, Yolo and Woodland. The consultants have taken the position that because the contour maps for groundwater elevations on initial inspection tend to show that the communities referred to are not downgrade and therefore groundwater will not flow in that direction..

 # These groundwater maps are made from well measurements taken in early spring (highest levels) or in the fall (lowest readings). Most of the wells that are measured are irrigation wells that are generally used from April into August. In addition the wells are generally only operated during daylight hours for convenience.

 # The consultants have failed to present any well measurements on a monthly basis for any of the impacted communities that have a public water system. These wells operate continually day and night year around. The characteristics of the cones of depression in the groundwater is far different from those of irrigation wells that may operate only during daylight hours and then only at intervals during the irrigation seasons. <u>THERE ARE NO GROUNDWATER CONTOUR MAPS FOR THE PERIOD OF MOST INTENSIVE USE.</u> This huge gap in the available data means that <u>THERE IS NO WAY OF PREDICTING DIRECTION OF GROUNDWATER FLOW DURING THE TIME THAT ADVERSE CONDITIONS COULD IMPACT A COMMUNITY WATER SOURCE</u>!

 # A graph of the City of Woodland's well #1 is provided (see enclosed) for the time period of March 1994 through March 1995. Records from this location are continuous since about 1921 and have always exhibited the same predictable pattern in a monotonous repetition. The nearest other large producing well is at least 3/4 mile distant.

 # An inspection of this graph reveals the predictability of this yearly pattern:

1. Highest groundwater occurs in March (Measurements taken on the first day of the month).

2. The steepest decline is in April and May

3. The lowest reading is in July with recovery beginning in August.

4. Recovery continues in spite of the fact that no appreciable rainfall is experienced until about November. It is noted that the water table has risen 44 feet during this dry period.

5. Recovery rate is steeper from August first than it is after November first, the start of the rainy season.

The consultants are developing far reaching proposals while operating in a void of data between the two yearly well measurements from which the groundwater contour maps are drafted.

 # It is obvious from the accompanying graph that underground water must move considerable distances in a short period of time in order to have Well # 1 rise 44 feet from August 1 to November 1. This is at a rate of 5 3/4 inches per day occurring while the well is in service.

 # The municipal well/wells for Madison could draw a sufficiently deep cone of depression in the water table to be downgrade from the nearest deep wet pit mine that the "Study Area" would permit. To the uninformed consultant this would be "making water run uphill". Simple reliance on groundwater contour maps that only show the surmised condition at a single instant in time is a dangerous concept when the future water supply of a community is at stake. An accurate determination of drawdown is essential before determining the direction of water flow near municipal wells.

 # If we were to base our understanding of groundwater flow on only 2 well measurements - Spring and Fall we would obtain an unrealistic picture. It would be concluded that the total decline was only 43 feet as can be seen in the March and November readings in Figure 1, However in reality the decline had gone from a level of 45 feet to a low of 114 feet on August 1st or a total drop of 69 feet. This is 53% more than could be predicted by the twice/season measurement. The chart indicates that multiple measurements must be taken in order to accurately determine the total drawdown and the direction of groundwater flow.

 # In order to accurately predict the groundwater flows it is essential to have multiple measurements during peak periods of drawdown. Under certain conditions it would be entirely possible for a community to draw contaminated water from a deep wet pit into its cone of depression during mid-summer when ground water flow is different than the Spring or Fall measurements would indicate.. It should also be noted that water moving laterally through sand and gravel cannot filter out contaminants. This is why leaking fuel tanks become such vehicles for pollution.

12. SUMMARY & CONCLUSIONS:

This subject has had woefully inadequate coverage and investigation. The little information so far presented is superficial and not of the professional caliber necessary to provide a base for the far reaching decisions under consideration. This was particularly noteable when a consultant for Solano Concrete testifying at a Planning Commission Public Hearing (8/16/95) stated that Madison's water supply could not be influenced by the nearest wet pit allowed under the proposed ordinance. Unless additional information is forthcoming, the testimony must be considered as shallow, misleading and potentially dangerous. Furthermore it points up the urgent need for credible accurate and unbiased input into the upcoming EIR documents.

February 16, 1996

To: Dave Morrison & Heidi Tschudin
Planning Department

Subject: **The danger of groundwater pollution from mining into Yolo County's Aquifer for the next 50 years and the hazards of maintaining the mined-out pits in perpetuity.**

We would like to submit the attached comments and questions for consideration on behalf of three organizations actively involved in the mining permit process. Collectively we represent hundreds of Yolo County citizens who have serious concerns about their future water supply. We firmly believe that through misguided assumptions and insufficient study and references, Yolo County is about to place its major source of potable water (Yolo County Aquifer) in serious jeopardy in order to remove a non-renewable resource (PCC Grade Gravel). Also at stake is further desecration of the lower reaches of Cache Creek, our invaluable infrastructural asset.

We hope the enclosed comments and questions will alert you to the seriousness of the situation.

Bob & Mitzi Speirs
Environmental Issues Committee
Western Yolo Grange #423

Lois Linford
Natural Resources Committee
League of Women Voters

Janet Levers
Cache Creek Resource Coalition

QUESTIONS and CONERNS

OVER OPEN DEEP WET PIT MINING. ALONGSIDE CACHE CREEK

The Notice of Preparation for the Off-Channel Mining Plan Program-Level EIR stated as a key recommendation (page 2):

" Encouragement of off-channel deep-pit (below the groundwater level) mining under carefully controlled and monitored circumstances, as an alternative to continued in-channel mining."

As a result of this "encouragement" the aggregate companies have submitted proposals to mine over 178 million tons from open wet pits alongside Cache Creek and only 1 million tons from pits that didn't penetrate into the groundwater. During the next 30 years these proposals are expected to result in a series of deep wet pits on both sides of Cache creek and a conversion of more than 770 acres of farmland into a series of permanent deep holes, incorrectly classified as "lakes". These deep holes pass into the Aquifer which is a major source of potable water for Yolo County.

It is imperative that before County Officials approve the concept of deep wet pit mining alongside Cache Creek an assessment of health risks as well as an economic analysis must be made. The following concerns must be considered before approving the general concept of mining gravel out of the Yolo County Aquifer, a major source of potable water for the county.

CONCERNS AND QUESTIONS
DEEP WET PIT MINING ALONGSIDE CACHE CREEK

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The Sonoma County Aggregate situation along the Middle Reach of the Russian River is in many ways similar to that prevailing along Cache Creek in Yolo County except that deep pit, terrace mining has been ongoing for many years.. For this reason there is a great deal to be learned from their experience. The ARM, EIR document prepared in 1994 provides detailed information regarding the proposals developed for their future permitting process, based on their past experience. It merits serious consideration during the EIR preparation process for Yolo County. The concerns outlined were raised while reading the Sonoma County Aggregate Resources Management Plan and Environmental Impact Report of February 1994.

0.#	Concerns and Questions - Deep Wet Pit Mining Alongside Cache Creek
1.	**Removal of gravel is a loss of natural resources!** The proposals by the Aggregate Industry involve conversion of more than 2,000 acres of prime agricultural land into huge open deep holes, with steep slopes, temporary haul roads and borrow areas. It puts the groundwater, our major source of drinking water, at risk of pollution and contamination, and it creates a permanent "attractive nuisance" for future generations. In what way does the proposed wet pit mining activity benefit present and future Yolo County residents? How can there be an overall "net gain" to the county if thousands of acres of prime farmland are destroyed or impaired?
2.	The use of the term "Lake" to describe the deep wet pits is a misnomer and should not be used since it gives the reader a false impression of the structure. Lakes are usually lined with silt, sand, clay and organic materials, all of which act to filter out organisms and break down toxic materials before they pass into the underlying aquifer. In contrast a mine pit is just a hole in the ground which can facilitate the entry of contaminants and has little or no capacity to detoxify chemicals.
3.	A recent science correspondent reported in the Sacramento Bee (2/10/96) that chronic water shortages affect about 40% of the worlds population and a billion people do not have access to clean drinking water. In view of this global shortage of water does the staff believe that Yolo County should risk permanently subjecting its precious potable water supply to open air exposure in a series of deep gravel pits along Cache Creek? A miscalculation or a false assumption can lead to irreversible adverse consequences for a critical water system.
4.	The citizens of Yolo County are entitled to be informed of any threat to their drinking water source no matter how minimal it might be considered. It is a gross betrayal of public trust for a public servant or a hired consultant not to be forthright on such a matter.

5.	**The intent of an off-channel mining plan is not solely to enrich the Aggregate Industry, but to provide the aggregate needs for present and future generations of Yolo County residents. Satisfying these needs should be accomplished by permitting only those mining activities which impose minimal effects on the environment and minimal risk to the health and welfare of Yolo County citizens. How can deep wet pit mining in a very sensitive area along Cache Creek be justified, when alternate locations and shallow pit mining have not been seriously considered?**
6.	**The completed EIR must give practical information on likely sources of water pollution in the excavated deep wet pits, how to detect sources of pollution and how remedial measures may be applied. The extreme adverse conditions induced in these permanent holes in our water supply can have a major impact on public health and must be reviewed by licensed experts qualified to speak on the technical aspects of public water supplies as they relate to public health.**
7.	**Shallow pit mining (above the groundwater) with agricultural reclamation has been identified as an environmentally superior option, with the lowest overall level of significant environmental impacts and land use conflicts. Under these circumstances why has the Planning Staff recommended Deep wet pit mining of some of the best agricultural land in the world? In the context of CEQA and EIR requirements, shallow dry pits would be the preferred option? Why were they not encouraged by the Planning Staff who prepared the NOP?**
8.	**There are serious differences between the Department of Mines and Geology report #156 and the proposals by the gravel miners. Report 156 indicates that the maximum depth of mineable aggregate is 80'. How did staff determine that mineable aggregate exists at depths as great as 150' and what current studies establish this to be a fact?**
9.	**It is entirely inappropriate for staff to recommend that deep wet pits which can not be reclaimed because of the lack of topsoil be considered as recharge facilities when no evidence has been provided to show that they will work. -The public has been drastically oversold with grandiose expectations based on little or no research information.**
10.	**The consultant should determine the liquefaction potential during earthquakes or other strong ground motions and clearly describe the consequences of such occurrences in relation to pit capture by Cache Creek, ground erosion around the pit and agriculture drainage pathways..**

11.	**Permanent loss of prime agricultural land, potential for groundwater pollution and substantial erosion around the margins of the pits are significant impacts according to CEQA. What is the suggested mitigation for these impacts?**
12.	**Is there any way that the County can control purchasing practices and establish policies to require that PCC grade aggregate be reserved only for "highest and best uses" as stated in the Yolo County General Plan?**
13.	**Permanent loss of agricultural land resulting from deep pit mining is a significant and unavoidable adverse impact. How can this be considered beneficial to a county that depends on agriculture as its major activity?**
14.	**The 15 mile stretch of Cache Creek between Capay and Yolo will be permanently impacted as far as recreational use is concerned with the construction of deep open wet pits and levees on both sides of the channel. What kind of reclamation could be applied to this stretch of the creek to make it safe, and esthetically pleasing?**
15.	**Refinement of mining and reclamation standards require feedback, learning and reevaluation of the objectives and policies of the County's management program. How can refinement be accomplished when permits are issued for 30 years, and renewable for 20 additional years? Do County Officials believe that they completely understand and have provided mitigation for any and all environmental impacts? If a serious misjudgment should be made, how could it be rectified without endless lawsuits?**
16.	**Deep mine pits create "attractive nuisance" hazards to children wild animals and to other visitors. These pits could be "death traps". What assurances will the public have that the pits will be properly monitored and maintained for safety? Which entity will assume responsibility for maintaining safety after the mining is completed?**
17.	**There have to be some assurances for adequate survival and economic feasibility of reclaimed land. It would seem prudent for the agricultural commissioner to certify that the reclaimed land would support a wide range of plant crops and would not create conditions conducive to root rot?**
18.	**The consultant should determine the liquefaction potential during earthquakes or other strong ground motions and clearly describe the consequences of such occurrences in relation to pit capture by Cache Creek, ground erosion around the pit and agriculture drainage pathways..**

19.	**Permits are being considered for Deep Wet Pit Mining on both sides of Cache Creek. What consideration has been given to the danger that the groundwater flow in the underlying aquifer might become blocked or reoriented seriously impacting downstream wells?How can Yolo County residents be assured that the margins of the deep pits are not too steep and that they have sufficient soil support to facilitate stabilization and growth of vegetation necessary for safety and low erosion potential?**
20.	**The EIR must document the precise requirements of the RWQCB, DHS and DMG for any penetration of the drinking water aquifer and the exposing of this water supply in perpetuity. In addition specifications of the California Department of Water Resources, Division of Safety of Dams (DSOD) must be applied to the levees to be constructed in the creek side of these deep pits.**
21.	**Mosquito abatement procedures must be described in the EIR documents. What are the rules of the Sacramento-Yolo Mosquito abatement District regarding the creation of wetlands, open wet pits and recharge pits? Have these requirements been considered in the proposed pit designs?**
22.	**Deep wet pit mining leaves an open body of water which exposes the drinking water aquifer in perpetuity. A major requirement of the EIR must be a clear presentation of the threats to the potability of this precious resource. Expert testimony of licensed experts on public health must be included.**
23.	**Testimony of licensed geologists and hydrologists must be included in the EIR regarding the potential effect of seismic activity on the structure and safety of large open deep holes into the aquifer.**
24.	**Describe the type of engineered levees necessary to avoid pit capture during flood events of 100 and 500 years at each of the pit sites which are excavated within 700' of the creek channel. What assurance does the public have that these levees will be sufficient to prevent pit capture?**
25.	**Once an aquifer has been polluted or contaminated, it is extremely costly and often impossible to remove the contaminant. Rather than assuming pollution will not occur would it not be prudent to propose imposition of strict protective measures?**
26.	**A sad misconception seems to exist that an excavated gravel pit will contain pristine clear potable water reflecting the situation in the surrounding groundwater.. Abundant growth of plants and small animals will occur in these open excavated water holes over time due to the presence of naturally occurring minerals plus fertilizers from past farming, from wild animals and from nearby**

	pasture animals. What assurances, if any, will there be that growth and overgrowth of plants will not occur in these wet gravel pits and that there is no danger of severe damage to the groundwater in the area?
27.	The permeability of the mined out pits will gradually decrease due to accumulation of sediment, organic material and other substances which accumulate in the pit water. If the pit is used for groundwater recharge it will have to be drained on a regular basis and heavy equipment used to remove the accumulated silt. This has been the experience with water recharge pits in Orange county. Who will be responsible and who will pay the extensive costs involved?
28.	Deep wet pits allow the direct entry of organisms and/or the toxic and odoriferous chemicals associated with them into the groundwater which is the source of water for municipal and domestic wells. Municipal wells can exclude the undesirable organisms if they can finance expensive filtration and treatment processes. Domestic wells on the other hand are not afforded this protection. How can a household depending upon well water taken near a deep mined out wet pit determine that the water will be safe to drink? What remedial measures are available?
29.	The proposed area for deep wet pit gravel mining is perilously close to the communities of Capay, Esparto, Madison, Yolo and Woodland. The consultant has taken the position that the communities are not downgrade based on contour maps for groundwater elevation. However the consultants have not presented well measurements on a monthly basis for any of the communities that have a public water system operating continually day and night year round. There are no groundwater contour maps for the period of most intensive use and no way of predicting direction of groundwater flow during the time of most intense pumping activity. Data of drawdown and recovery in Woodland wells taken at monthly intervals is available and must be considered.
30.	Under certain conditions it would be entirely possible for Madison to draw contaminated water from a deep wet pit into its cone of depression during mid-summer. It should be noted that water moving laterally through sand and gravel cannot effectively filter out pollutants. This has been repeatedly demonstrated when dealing with leaking fuel tanks. How could the well water in Madison be protected from polluted pit water from the nearby deep wet pit? Studies in Woodland have indicated that the drawdown from municipal wells can extend for great distances.

31.	**The exposed groundwater in open water holes will be subject to extensive evaporation, thereby increasing the concentration of Boron and other mineral salts. What can be done to reduce the risks involved?**
32.	**Anaerobic conditions (without oxygen) will occur at the bottom of most of the mined out wet gravel pits. Many species of anaerobic bacteria which inhabit the bottom and sides will digest the algae that die off and settle out. One of the objectionable by-products of this digestion is the generation of hydrogen sulfide gas which can impart a rotten egg odor to the water. The EIR must determine if this can be avoided or mitigated.**
33.	**Restrictions should be imposed on the use of wet pits during and after mining activities.. For example wet pits would be an easy and inexpensive source of irrigation water since no well needs to be drilled and a much cheaper type of pump can be used. Such use would result in a lowering of the watertable on adjacent lands, hastening the subsurface flow of water containing agriculture chemicals into the deep wet pit..**
34.	**How can a requirement that no pollution or groundwater contamination be permitted as a result of mining or reclamation be enforced? If pollution did occur in or near a deep wet pit, how can enforcement officials identify the source and correct the condition?**
35.	**Wet pits provide conditions suitable for mosquito breeding. Mosquitoes are known to be disease vectors and one species can transmit encephalitis. What guarantees do Yolo County residents have that these pits will not become a breeding ground for such mosquitoes without running the risk of polluting the pit water and the underlying aquifer with mosquito control procedures?**
36.	**Abandoned gravel pits that simply run out of gravel are not good prospects for recharge basins since they have bottomed out in a formation with low permeability. The consultant should describe the procedure to be used to determine if a gravel pit is suitable for recharge and what problems may be encountered.**
37.	**The aquifer under the proposed mine pits is a major source of drinking water for Yolo County residents? It would seem prudent to monitor the pit water using Federal and State drinking water standards. Why is this not required**
38.	**Soil and finer particles overlying the gravel deposits serve as a filtering mechanism for removal of suspended particles, small organisms and pollutants before they enter groundwater. What effect does removal of this filtration**

	material, combined with the absence of a vadose zone, have on the potential for groundwater pollution? What can be done to mitigate this adverse effect?
39.	Upon termination of the deep wet pit mining, a host of protozoan organisms, bacteria, insects, invertebrates and viruses will quickly inhabit the bottom and sides and also the liquid phase of the pit. When these organisms die the bodies will settle on the bottom, forming gelatinous masses and imparting offensive odors and taste to the water. Who will be held responsible for cleanup and purification of the pit water?
40.	It would appear that farming on land adjacent to excavated gravel wet pits would be incompatible since excess fertilizer would inevitably contribute to the eutrophication of the exposed groundwater. Subsurface flows of groundwater will readily transport agriculture chemicals directly into the mine pit. These chemicals, especially the fertilizers added directly to the irrigation water, will percolate into the groundwater and then pass into the pits with little or no filtration.. The presence of these chemicals will increase pit water pollution, especially by nitrates and phosphorus, thereby greatly augmenting algae blooms.. These factors must be considered as a major adverse effect in the EIRs.
41.	The EIR should provide a thorough discussion of the algae which could develop in these ponds. There are at least 17,400 species of Algae, some of which, like the blue green algae prevalent in the area, are most offensive, producing a "pea soup" appearance, giving off "pig-pen" odor and imparting a "fishy taste" to the water. The various types of algae which could develop in these excavated gravel areas should be identified, their characteristics described and any methods of control defined.
42.	Algae and water plants, upon death and decomposition, contribute to the complex of essential food elements that sustain a host of protozoan organisms, bacteria, viruses, insects and other invertebrates, which inhabit the bottom and sides of the excavated gravel pits. There will be marked variation in the type of organisms at different water depths, depending upon temperature, oxygen content, season of the year and a multitude of other factors. A drop of this pond water will be teeming with an unbelievable diversity of microscopic living organisms. This phenomenon must be considered in the EIR and those organisms that may have a detrimental effect on water quality identified in detail with methods of correcting or offsetting such adverse conditions described.

43.	**The hope that abandoned deep wet pits will have a redeeming recreational appeal is not a realistic expectation given the climate, water chemistry and nutrient availability of the locale. A self-perpetuating cycle of growth and die-off of aquatic weeds will result in the water losing it clarity and its aesthetic appeal. The most offensive conditions develop during periods of very mild breezes that tend to skim the floating algae and push them toward the shore.**
44.	**Eutrophication, thermal stratification and pond stagnation would be minimal during active mining in the deep wet pits. However, when a pit is mined out, eutrophication, stagnation, thermal stratification and anaerobic conditions prevail, producing cycles of growth and death in algae contained in the pit water.. This results in accumulation of debris and organic matter in the pit bottom and growth of anaerobic bacteria capable of producing hazardous gasses, plus a wide variety of odoriferous and strong-tasting chemicals. The EIR should consider these predictable conditions and outline mitigating factors, if any, which could offset the adverse effects.**
45.	**The EIR should describe eutrophication, how it is produced in ponds and pit waters, the conditions which it generates and procedures for avoiding the inevitable adverse effects. Clear Lake is a prototype since it is subject to the same environmental conditions.**
46.	**Anaerobic conditions occur at the bottom of stagnant mined out deep pits and many species of anaerobic bacteria will inhabit the lower regions of the pit, generating hydrogen sulfide gas as digestion of organic material takes place. The EIR should describe any measures which can be taken to prevent this from occurring.**
47.	**Eutrophication of pit water would be augmented by fertilizing elements present in the soil, water and atmosphere in and around the pits. Cycling of growth and death of these organisms will sustain this phenomenon and perpetuate the process. This phenomenon should be described and any preventive measures available should be identified.**
48.	**Decomposing organisms on the bottom of deep pits remove oxygen from the water and the gaseous byproducts of decomposition are trapped, along with the accumulation of debris. Small particulate and soluble by products will pass into the groundwater and be transported towards wells and other discharge points. It is important that the consultant indicate how this could be prevented and what mitigation, if any, can be applied.**

49.	**Submerged aquatic plants within the trophogenic zone can also produce tons of organic material per acre. What would be the anticipated tonnage in the deep wet pits during the mining and post mining periods? How can the adverse effects of overgrowth of these plants be prevented?**
50.	**Explain how development of the rafts of scum produced in deep ponds as a result of thermal turnover, can be avoided in the deep mine pits.**
51.	**Clear Lake has had severe nuisance problems with midges (gnats) Chaoborus astrictopus. A series of tests showed an average seasonal emergence to exceed 500 gnats per square foot (Walker, J.R. Bureau of Vector Control, DHS). Approximately 712 billion gnats, totaling 356 tons by weight, were produced in one season. Similar conditions of temperature and water chemistry would apply to the excavated gravel pits along Cache Creek. Is this expected to be an unavoidable, unmitigable adverse impact? How can it be avoided in Yolo County?**
52.	**Scum rafts are composed of organic material plus various gaseous products. They become targets for colonization of various algae types which may be odorous as well as toxic. In Clear Lake these rafts frequently become the breeding ground of midges which have historically plagued man and animals in the vicinity. How can these conditions be avoided in mined out deep wet pits?**
53.	**Bloodworms (Chironomus sp.) are larvae of midges associated with flourishing growths of algae and have been reported in a drinking water reservoir in Stockton, Ca. A study concluded that the only practical way to prevent such an infestation was to completely roof the reservoir. Attempts to kill bloodworms with high doses of chlorine (10ppm) and copper sulfate were not successful. The EIR should discuss the induction potential in excavated wet pits and describe any preventive measures available to mitigate this very serious problem.**
54.	**Wild and domestic animals have been become acutely ill and many deaths are recorded as a result of drinking water containing a heavy growth of Nostoc rivulare, an algae type which can grow in stagnant water.Would the toxins released by these organisms pass into the groundwater and into nearby wells? . What can be done to prevent such algae blooms in the mined out deep pits?**

55.	**Filamentous algae such as Bladaphona grow profusely causing nuisance conditions such as surface scums, algae-littered shores and eventually masses of stinking vegetation. These conditions occur in Clear Lake, lower Cache Creek and Bear Creek. Explain how these conditions can be avoided in the mined out deep holes which pass into Yolo County's aquifer? .**
56.	**The EIR should describe thermal stratification, seasonal cycling of water layers, and the effects on organisms in the pit water. A comparison should be made of mined out water holes of different sizes and depths with details provided on the decomposition products produced.**
57.	**The EIR should describe the trophogenic zone and explain how it applies to excavated gravel wet pits. Explain how it would vary from one pit to another depending upon the overall depth of the pit and the activity in and around the pit.**
58.	**The permit applications for gravel mining have included wet pits and dry pits on the same parcel and in close proximity. The shallow dry pits are expected to be heavily fertilized in the attempt to restore the former level of crop production. This practice could increase groundwater pollution by agricultural chemicals, generating an increase of eutrophication nutrients and greatly augmented algae blooms in the adjacent mined out deep wet pits. A detailed eutrophication study must be provided to demonstrate that no adverse impact is generated by the close association of the shallow and deep wet pits.**
59.	**The EIR should acknowledge the standard experience that recharge containments must be drained, dried out and the biological seal removed to maintain the usefulness of the percolation function. Excavated wet pits will sooner or later develop this "biological seal" and once established it must be removed and scraped at frequent intervals at considerable expense.**
60.	**Mercury ore is prevalent in Yolo and Lake Counties. The US Army Corps has indicated that tests for mercury content must be made prior to the removal of sand bars in Cache Creek. It would appear that core samples should be required in the areas to be excavated for deep wet pits, since conditions will occur in these pits which can lead to solubilization of mercury so that it could pollute both the pit water and adjoining groundwater. Solubilized mercury, which is cumulative, is readily absorbed, taken up in the nervous system and very slowly excreted.**

61.	**The Army Corps (1995 report page 23) stated that dredging or other work could release buried mercury from areas of deposit.. They recommended that whenever project work included disturbances to stream deposits, sediment cores from the disturbance area should be analyzed to fully assess mercury contamination. This assessment should be completed prior to initiating work. This is especially important in the deep wet gravel pits which are within the potable aquifer.**
62.	**Lower Cache Creek is within the Pacific Flyway used by 10 to 12 million ducks each year. Approximately 300,000 ducks winter over in the Yolo Bypass and surrounding areas. These ducks often carry diseases, some of which can be passed to other species including man. How can Yolo County citizens be assured that ducks alighting on pit water will not be depositing viruses that will eventually become a component of the groundwater and the potable water supply?**
63.	**Cryptosporidium is a protozoan parasite that can live in the intestines of human beings. It is prevalent in surface waters throughout the United States and on occasion it gets into municipal water supply systems, often with disastrous results. Sooner or later Cryptosporidium would certainly become a component of the open pit water. The EIR should describe the health problems associated with these organisms and indicate what should be done to prevent their spread into groundwater and nearby well water..**
64.	**Wild ducks, coots, shore birds and swamp dwellers will contribute nutrients as well as potential pathogenic organisms to the open wet pit water by their excretions. Ducks are known to act as reservoirs for specific pathogens that can spread to other animals, including humans. Extremely high numbers of bacteria and viruses can be detected in feces. What can be done to safeguard pit water from this serious source of contamination and pollution? If contamination is detected, what can be done to clean up the "mess" before it spreads into the groundwater being pumped by nearby wells?.**
65.	**Viruses have been reported to survive in surface water for days and weeks, and for much longer periods in the deeper portions of groundwater. During this period they can be transported long distances through the gravel and soils. What steps can be taken to reduce any groundwater contamination and minimize the spread of viruses into our drinking water from deep open pits?**

66.	Influenza is a virus-induced disease which in the past has caused massive deaths and more recently inflicted yearly bouts of misery in millions of people. New varieties of influenza are formed every few years through natural cross-mingling of those prevailing in birds and other animals. (Nobel Laureate Joshua Lederberg Sac. Bee 1/3/96). What precautions can be taken to prevent deposition of avian flu viruses into pit water and hence into groundwater and well water?
67.	Recharge pit has a fine noble sound and is used indiscriminately regardless of whether any geohydrological investigation has taken place to see if it is practical or cost effective. No cost-benefit studies are provided to date to show if the long-term benefits justify the original costs, maintenance costs and operational costs. This information should be presented for each gravel pit proposed for recharge.
68.	Excavation of a mine pit would most often terminate in a clay lens and the fill used in the lower levels of the pit would usually be fines washed from the aggregate during processing. This would result in a broad area of low permeability and transmissivity. Under these circumstances, how can deep wet pits be classified as beneficial to ground water recharge?. Would they not instead be an impediment to groundwater flow? Each pit should should be subjected to a specific study to evaluate its potential effect on Groundwater.
69.	The Army Corps of Engineers in their 1995 report strongly indicated that so-called recharge pits located near the creek will short circuit back to the creek instead of recharging the aquifer. This should be considered in the individual EIRs for each proposed gravel pit.
70.	Serious consideration of the Army Corps (AEC) report (Dec. 1995) must be incorporated into the preparation of the DEIR for each project. The report specifically states (p. 14) "Groundwater recharge at abandoned pits must be subjected to further studies which are more specific than those available to date". The EIR must describe the studies necessary to determine the suitability of eaeh pit for recharging the Woodland aquifer.
71.	Should a fee based on production be imposed on to the Aggregate Industry for their fair share of mitigating cumulative traffic impacts on the county road system?
72.	Asphalt concrete is a major product of the aggregate industry in Yolo County. Hundreds of thousands of tons per year are produced in a series of batch plants located near the areas being mined along Cache Creek. By itself

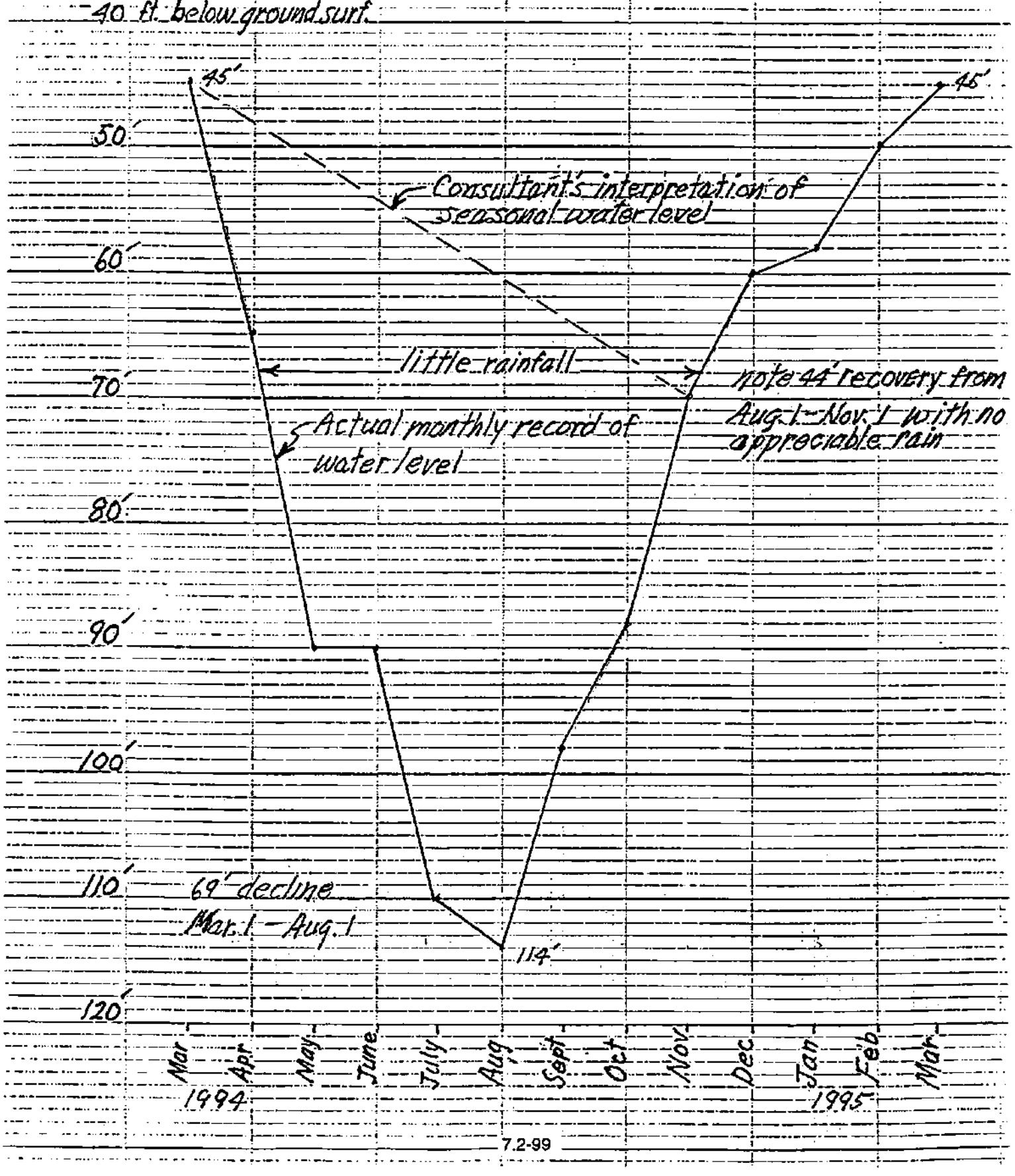
	asphalt is viscous and considered of low toxicity, but when mixed with solvents or heated and stored at high temperatures of 350° it can release fumes and toxic gasses. The storage capacity of the batch plants totals more than 150,000 gallons and some of the tanks may be refilled several times a day. The EIR should evauate the risks involved in permitting such plants to operate near recharge areas vital to our water supply.
73.	The EIR must consider the accumulated impact of asphalt batch plants. Cache Creek is an ephemeral stream. During the period of 8 months or more, when the creekbed is dry, asphalt cement production is at its peak. Asphalt fumes and other particulate matter accumulates along the dry creek bed during the summer and is collected in the flushing flows in the Fall, becoming a component of the water which recharges the local aquifer. The open water in the proposed deep wet pits could also collect gassses, fumes and particulates released by nearby activities and pass them unfiltered in to the groundwater. It is expected that asphalt production will continue during the whole 30 or 50 years for which the permit is issued, meaning that many tons of hazardous material would be released.
74.	Consideration must be given to the advisability of the presence of asphalt cement processing plants along Cache Creek. The plants handle hundreds of thousands of tons of product and are currently not being monitored at the plant site for release of hazardous chemicals
75.	It would seem that the time is past due for comprehensive monitoring of the asphalt production plants in Yolo County. The prudence of permitting such plants to operate in areas adjacent to our precious water supply should be seriously questioned. Sonoma County already prohibits asphalt batch plants in the terrace areas alongside the Russian River.
76.	The air around the hot batch plants is monitored for dust and air opacity. However there appears to currently be no monitoring for the organic solvents and no determination of the nature and the amount of each organic solvent used. It is important to have this information and to know what precautions should be taken to identify and contain these materials and to restrict their spread in case of spills.
77.	Some of the chemicals associated with asphalt cement production are highly toxic and carcinogenic. Air and groundwater monitoring for organic solvents in and around the storage and production facilities is necessary in order to detect pollution at an early stage before it accumulates and spreads. The EIR should evaluate the risks to public health and should provide assurances that it

	is absolutely safe to continue producing asphalt cement and the associated road construction and maintenance materials in areas alongside Cache Creek and over the Yolo County aquifer!
78.	Asphalt is stored at relatively high temperatures and mixed with heated rocks, a situation with a strong potential for fire. Burning asphalt generates high production of poisonous fumes and gasses. Water used to quench fires would carry toxic products which could penetrate down into the aquifer. Once toxic petroleum products pass into the aquifer it can take months or even years to adequately remove them from the aquifer and would cost millions of dollars. The risks involved should be clearly presented and a discussion of the consequences of an accidental spill described in the EIR.
79.	It is in the public interest to take precautions to prevent pollution rather than wait until it happens and hope it can be cleaned up before it affects the quality of our potable groundwater. The EIR should document the requirements for reporting accidental petroleum and asphalt spills and/or fires. It should identify the entity with authority to determine the amount and type of cleanup necessary to protect public health and resources. Such important decisions should not be left entirely to local production managers since Yolo County citizens have a tremendous stake in the outcome.
80.	The Sonoma County Aggregate situation along the Middle Reach of the Russian River is in many ways similar to that prevailing along Cache Creek in Yolo County except that deep pit, terrace mining has been ongoing for many years.. For this reason there is a great deal to be learned from their experience. The ARM, EIR document prepared in 1994 provides detailed information regarding the proposals developed for their future permitting process, based on their past experience. It merits serious consideration by the EIR preparation team for Yolo County. The following concerns were raised while reading the Sonoma County Aggregate Resources Management Plan and Environmental Impact Report of February 1994.
81.	After 20 years of off-channel or terrace mining, Sonoma County has found these operations increasingly controversial, unworkable and subject to problematic reclamation. A moratorium has been recommended with plans to phase out the terrace operations over a 10 year period. Please explain why Yolo County should proceed with permits for deep wet pit mining without considering and evaluating the elements which have been found unacceptable along the Russian River?.

82.	**Off-channel mining has been the primary supply source for construction aggregate in Sonoma County. This has resulted in severe environmental impacts and land use conflicts and quarry mining is currently being recommended as a replacement. Why has Yolo County failed to consider other sources of gravel as a viable alternate?**
83.	**In Sonoma County, which has had extensive experience with Deep pit mining, restrictions such as a 450' buffer between pits and a similar setback from the Russian River are required. Please explain why such restrictions are not being considered for the pits proposed along Cache Creek!**
84.	**Sonoma County has declared that deep pit operations have the potential to impact groundwater by obstructing groundwater flows, especially when filled by sediments, organic material and aggregate wash material. Modflow modeling has been applied to establish the impact of deep pits on groundwater. What criteria or methodology does Yolo County plan to adopt to identify any obstruction of groundwater flows by the deep pits?.**
85.	**Sonoma County has stated that the steepness of slopes normally left after mining have a potential to increase soil erosion. They have established standards for reclamation which include gentle slopes, benches every 5 vertical feet, marshes and shoals along the edges of the pit with portions of the pit margin to be graded flat. What are the Yolo County Standards and how can we be assured that they adequately prevent soil erosion around the pits?**
86.	**Sonoma County has historically exported about 20% of its gravel out of the county. They propose steps to encourage retention of locally produced aggregate. Yolo County historically exports about 60% of its aggregate. Should Yolo County also restrict export of aggregate in order to conserve its non-renewable supplies and to preserve some of its best farmlands? What long term economic advantage is it for Yolo County to ship out most of its resources and then at some future date have to go out of county to obtain the needed aggregate? If Yolo County restricted the export of aggregate how many acres of farmland would be saved?**
87.	**In Sonoma County assessed fees on mined aggregate are based on cumulative impacts of gravel mining on agriculture, fisheries, riparian habitat, water supply system, recreational opportunities, flood control, channel degradation and bank erosion. Additional fees may also be used to purchase open space easements along the Russian River. These fees amount to more than $0.40 per ton of mined aggregate. This is in addition to fees for administrative costs and road maintenance. What fee does Yolo County propose for mitigating**

	similar impacts?
88.	Sonoma County monitors the gravel operations by twice a year aerial photography, by engineered cross section studies every 400 feet including underwater streambed determinations, and site visits every 60 days. Why does Yolo County propose lower safety standards than Sonoma County? What unforeseen impacts on the environment could occur due to a lack of adequate monitoring and how could they be mitigated?
89.	Sonoma County EIR proposes limiting the size of deep pits to 20 acres at any one time , with a 450 foot buffer between pits and 450 foot set-back from the creek channel in order to assure minimal effect on groundwater flow. Why is this requirement not considered for Yolo County?
90.	In Sonoma County it was recommended that the pit-slopes be graded to 3:1 and reseeded annually to reduce potential erosion problems. Is such a requirement going to be applied to the proposed pit-mining in Yolo County?
91.	In Sonoma County the 1994 ARM-EIR recommended that the Aggregate Industry be assessed $1.00 per ton for agricultural support programs, recreation enhancement programs, flood protection and stream restoration. Should a similar fee be considered in Yolo County in addition to the volunteer $0.05 asses$ment.
92.	Sonoma County endorses a mitigation measure fee based on estimated annual truck traffic generated by the Aggregate Industry. This fund is to be used specifically for road improvement and maintenance. Should a similar fee be applied in Yolo County?

STATIC WATER LEVEL WELL #1 1994-95
CITY OF WOODLAND
5th St. & Lincoln Ave.



7.2-99

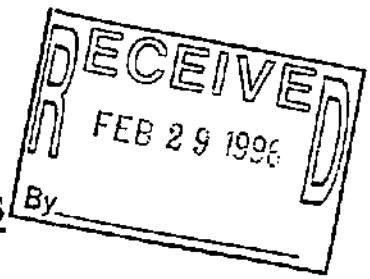
Table 13. Odors, tastes, and tongue sensations associated with algae in water

Algal genus	Odor when algae are— Moderate	Abundant	Taste	Tongue sensation
Actinastrum		Grassy, musty		
Anabaena	Grassy, nasturtium, musty.	Septic		
Anabaenopsis		Grassy		
Anacystis	Grassy	Septic	Sweet	
Aphanizomenon	Grassy, nasturtium, musty.	Septic	Sweet	Dry.
Asterionella	Geranium, spicy	Fishy		
Ceratium	Fishy	Septic	Bitter	
Chara	Skunk, garlic	Spoiled, garlic		
Chlamydomonas	Musty, grassy	Fishy, septic	Sweet	Slick.
Chlorella		Musty		
Chrysosphaerella		Fishy		
Cladophora		Septic		
(Clathrocystis)				
Closterium		Grassy		
(Coelosphaerium)				
Cosmarium		Grassy		
Cryptomonas	Violet	Violet	Sweet	
Cyclotella	Geranium	Fishy		
Cylindrospermum	Grassy	Septic		
Diatoma		Aromatic		
Dictyosphaerium	Grassy, nasturtium	Fishy		
Dinobryon	Violet	Fishy		Slick.
Eudorina		Fishy		
Euglena		Fishy	Sweet	
Fragilaria	Geranium	Musty		
Glenodinium		Fishy		Slick.
(Gloeocapsa)				
Gloeocystis		Septic		
Gloetrichia		Grassy		
Gomphosphaeria	Grassy	Grassy	Sweet	
Gonium		Fishy		
Hydrodictyon		Septic		
Mallomonas	Violet	Fishy		
Melosira	Geranium	Musty		Slick.
Meridion		Spicy		
(Microcystis)				
Nitella	Grassy	Grassy, septic	Bitter	
Nostoc	Musty	Septic		
Oscillatoria	Grassy	Musty, spicy		
Pandorina		Fishy		
Pediastrum		Grassy		
Peridinium	Cucumber	Fishy		
Pleurosigma		Fishy		
Rivularia	Grassy	Musty		
Scenedesmus		Grassy		
Spirogyra		Grassy		
Staurastrum		Grassy		
Stephanodiscus	Geranium	Fishy		Slick.
Synedra	Grassy	Musty		Slick.
Synura	Cucumber, muskmelon, spicy.	Fishy	Bitter	Dry, metallic, slick.
Tabellaria	Geranium	Fishy		
Tribonema		Fishy		
(Uroglena)				
Uroglenopsis	Cucumber	Fishy		Slick.
Ulothrix		Grassy		
Volvox	Fishy	Fishy		

Copied from: "The Practice of Water Pollution Biology" published by Federal Water Pollution control Administration (EPA) 1969

February 20, 1996

To: Chairman. Tom Stallard and
Members of the Board of Supervisors



Subject: **Misguided Assumptions, Insufficient Study .and References**

From: Mitzi Speirs, Co-Chairperson,
Environmental Issues Committee
Western Yolo Grange #423

The County is contemplating the unprecedented step of opening up a major Yolo County potable aquifer at several locations in order to accommodate deep wet pit mining. Before such a decision is made, it is imperative that the most meticulous study be provided and the wisdom of such a move seriously considered.

An economic analysis should consider the cost of monitoring this vital water supply in perpetuity to ensure that these holes, which can never be completely sealed, do not become portals of entry for pollutants. with a capacity to damage the aquifer. The analysis should explore the level of County Insurance required to indemnify residents in the event that the unthinkable happens.

In today's Staff Report under the title "Impacts to Groundwater Quality and Aesthetics":, I would like to direct our attention to sentence #2 line 2- "Based on preliminary discussion with the EIR team we do not anticipate the analysis will differ greatly from the studies already released on the issue of groundwater quality which indicates that with proper controls the risk of impact is low". The earlier studies of Todd Engineering, Inc. that were released to the public failed to consider almost all of the issues that concerned citizens. Comments to this effect were submitted in early November 1995 but to date, 4 months later, no response has been forthcoming.

In addition Appendix D of the Army Corps of Engineers Northern California Streams Reconnaissance Report (December 1995) stated their understanding that a more comprehensive study of the site specific areas was underway by David Keith Todd Consulting Engineers. Since this has not been forthcoming, the report reveals the shallowness and inadequacy of the submitted study and demonstrates that Keith Todd Engineers was not qualified for the task assigned.

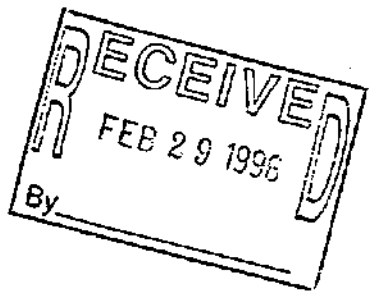
The statement in the Staff Report that little new information is expected from further study suggests that the unnamed contractor currently providing information to Heidi Tschudin on this subject is also not qualified and should be replaced. A consultant is needed who is more knowledgeable regarding Yolo County and more in tune with the needs and concerns of Yolo County Citizens now and into the foreseeable future.

We have already endured the spectacle of the $600,000 Dames and Moore debacle with the company allowed to progress to the DEIR and public comment stage before being assigned by unanimous vote of your board to oblivion. This action represented a waste of four to five years on the road to permanent ordinances and we would urge you to take corrective action now rather than go through the same scenario again.

We live in an age where alarm is being expressed on a global level regarding the adequacy of the safe water supply for our planet into the next century. No effort should be spared to protect the supply we have been blessed with in Yolo County.

2/20/96

To: **Chairman Tom Stallard and**
Members of the Board of Supervisors



Subject: **Potential Impact of Deep Wet Pits..**

From: **Robert Speirs, Ph. D**
Co-chairperson, Environmental Issues Committee
Western Yolo Grange

It is beyond my comprehension that any knowledgeable person would state that the potential of these deep wet pits to damage the aquifer is low.

Removal of gravel is a permanentnt loss of at least 3 natural resources- gravel, farmland and water!

The proposals by the Aggregate Industry involve conversion of more than 2,000 acres of prime agricultural land into huge open deep holes, with steep slopes, surrounded by temporary haul roads and borrow areas. It puts the groundwater, our major source of drinking water, at risk of pollution and contamination, and it creates a permanent "attractive nuisance" for future generations.

The off-channel mining plan should not be a device solely to enrich the Aggregate Industry, but should be a plan to provide the aggregate needs for present and future generations of Yolo County residents. Satisfying these needs should be accomplished by permitting only those mining activities which impose minimal effects on the environment and minimal risk to the health and welfare of Yolo County citizens.

Deep wet pit mining leaves an open body of water which exposes the drinking water aquifer to potential pathogens and toxic materials in perpetuity.

A sad misconception seems to exist that an excavated gravel pit will contain pristine clear potable water reflecting the situation in the surrounding groundwater.. Abundant growth of plants and small animals will occur in these open excavated water holes over time due to the presence of naturally occurring minerals plus fertilizers from past farming, from wild animals and from nearby pasture animals. The growth and overgrowth of plants which occur in these wet gravel pits and their byproducts will severely damage groundwater in the area

Deep wet pits allow the direct entry of organisms and/or the toxic and odoriferous chemicals associated with them into the groundwater which is the source of water for municipal and domestic wells. Municipal wells can exclude the undesirable organisms if they can finance expensive filtration and treatment processes. Domestic wells on the other hand are not afforded this protection.

Algae and other water plant growth would be minimal during active mining in the deep wet pits. However, when a pit is mined out, eutrophication, stagnation, thermal stratification and anaerobic conditions prevail, producing cycles of growth and death in algae contained in the pit water.. This results in accumulation of debris and organic matter in the pit bottom and growth of anaerobic bacteria capable of producing hazardous gasses, plus a wide variety of odoriferous and strong-tasting chemicals.

Anaerobic conditions (without oxygen) will occur at the bottom of most of the mined out wet gravel pits. Many species of anaerobic bacteria which inhabit the bottom and sides will digest the algae that die off and settle out. One of the objectionable by-products of this digestion is the generation of hydrogen sulfide gas which can impart a rotten egg odor to the water.

In addition small particulate and soluble by products will pass into the groundwater and be transported towards wells and other discharge points.

Filamentous algae grow profusely causing nuisance conditions such as surface scums, algae-littered shores and eventually masses of stinking vegetation. These conditions occur in Clear Lake, lower Cache Creek and Bear Creek. They occur in every outdoor swimming pool whose water is not chlorinated or continuously cleaned and sterilized. Enclosed is a short list of

some of the odors, taste and tongue sensations associated with algae in water. In addition there are strains of algae that release toxins into the water which can have serious consequences, even death to domestic animals.

Mercury ore is prevalent in Yolo and Lake Counties. In its soluble form of methyl mercury it is one of the most poisonous compounds ever known. It can be taken as a certainty that formation of methyl mercury will occur in these impounded deep wet pits. The US Army Corps has indicated that tests for mercury content must be made prior to the removal of sand bars in Cache Creek.

The Army Corps (1995 report page 23) stated that dredging or other work could release buried mercury from areas of deposit.. They recommended that whenever project work included disturbances to stream deposits, sediment cores from the disturbance area should be analyzed to fully assess mercury contamination. This assessment should be completed prior to initiating work. This is especially important in the deep wet gravel pits which are within the potable aquifer.

Wild ducks, coots, shore birds and swamp dwellers will contribute nutrients as well as potential pathogenic organisms to the open wet pit water by their excretions. Ducks are known to act as reservoirs for specific pathogens that can spread to other animals, including humans. Extremely high numbers of bacteria and viruses can be detected in feces. This waste material will find its way to the pit bottom and release its components into the pit water and into the surrounding groundwater.

Influenza is a virus-induced disease which in the past has caused massive deaths and more recently inflicted yearly bouts of misery in millions of people. New varieties of influenza are formed every few years through natural cross-mingling of those prevailing in birds and other animals. (Nobel Laureate Joshua Lederberg Sac. Bee 1/3/96).

I would like to complete this presentation with the same statement that I started out with: It is beyond my comprehension that any knowledgeable person would state that the potential impact of these deep wet pits is low.

MEMORANDUM

To: **Chairman Tom Stallard**
and Members of the Board of Supervisors

Subject: **Does the right hand know what the left hand is doing?**

From: **Mitzi Speirs**

We are pleased that your Board is meeting today to consider an economic analysis for the proposed off-channel mining projects. We feel, however, that the scope of the analysis is far too shallow, given the potential impact of the project on the citizens of Yolo County far into the future. Since the potential for aquifer pollution exists the environmental impact would certainly be of major economic concern to Yolo County and therefore should qualify as an item for inclusion in the DEIR under CEQA rules and does justify a scoping session.

I would like to bring to your attention a document that was prepared for distribution in July 1995 but only recently came to my attention. It is titled "Workplan for Water Quality and Aquatic Toxicity Investigations in the Putah Creek and Cache Creek Watersheds." It is part of a Water Quality Planning Grant program application and was submitted by Tom To, Director Environmental Health Division, Yolo County Department of Public Health. Yolo County Environmental Health Division of Public Health is the Lead Agency selected to manage the Project and Mr. Tom To will be the Administrator.

I apologize for causing your eyes to glaze over again, but I have to mention mercury. Under the "Statement of Objective" (page 2) the report states:

"Yolo County contains portions of both the Putah Creek and the Cache Creek Watersheds. Both Basins include, and are tributary to, water bodies listed on the SWRCB 303d List. In addition, both have been reported to exhibit ambient toxicity, as well as to exceed water quality criteria for metals, including mercury. Recently Cache Creek was identified as a major source of mercury to the Sacramento San Joaquin Delta and Estuary. Taken together this information suggests that beneficial uses associated with the health of aquatic organisms may be impacted in both watersheds."

I find it incredible that this County Sponsored Study should be underway at the same time that the off-channel mining proposals are being railroaded through at the speed of lightning with no acknowledgment that mercury pollution is a problem that must be addressed and no indication that this extensive preliminary study of mercury pollution in Cache Creek even exists.

We earlier requested that the Public Health Department should be included in the planning and preparation of the mining proposals but we see no evidence that this has been considered.

In the interest of public health and safety, it is high time that our elected officials demonstrate a little more zeal in conscientiously considering all aspects of these potentially dangerous proposals and a little less devotion to accommodating the aggregate industry.

COPY

FAX	Heidi Tschudin, Project Manager & Dave Morrison
Fax #	916-444-0227
Phone	916-447-1809
From:	Bob & Mitzi Speirs
	PHONE: 916-796-3355 FAX : 916-796-2256

Heidi:

We were told that you were unable to find information on viruses in groundwater.

The following article was published in 1980 in a recognized scientific journal sponsored by the American Chemical Society. Dr. Gerba has continued research in this field and is now recognized as a world authority on the subject. He testified (June 23, 1995) as an expert witness on the subject before the California Regional Water Quality Board. Mr. Ernie Pfanner, a board member, was very impressed by his presentation.

Please let me know if you need additional references.

Bob

296/291

groups—one which includes the isolation of viruses from groundwater sources and drinking water (Table 1) and one which includes isolations from sites where groundwater recharge, land application, or wastewater experimentation is being practiced (Table 2). The differences are ones of convenience and the prior knowledge of the source and type of pollution. It is obvious that in the first group, the presence of viruses in water is more difficult to demonstrate unless the source has been monitored closely, because the contamination is most often unexpected. Usually, samples are taken only after an outbreak of overt illness or some other event has taken place, so that the contamination is often no longer present. The difficulties in drawing etiologic conclusions from these studies have been discussed in detail by Goldfield (*10*) and Melnick (*11*).

Review of these studies provides valuable information concerning the safety of groundwater sources. Wellings et al. (*12*) reported the isolation of an echovirus 22/23 complex in 100-gal samples from a 12.2-m-deep well during an outbreak of gastrointestinal illness at a migrant labor camp in Florida. The well was located 30.5 m from a solid waste field, and was in the middle of an area bordered by septic tanks. The echovirus was isolated from sewage, from potable well water containing 0.4–0.6 mg/L residual chlorine, and from stools collected from individuals living in the camp. Furthermore, it is interesting to note the occurrence of 15 cases of hepatitis A in the camp some 6 weeks later.

Thus, the virus was probably present because of well water contamination from the septic tanks, and existed in chlorinated water in the absence of evidence of bacterial contamination. It was surmised that the chlorine was ineffective against the virus which was probably associated with solids introduced with the sewage. Even though this level of treatment reduced bacterial counts to undetectable levels, the virus survived. This raises concern about the efficacy of chlorine disinfection of contaminated groundwater, based on currently accepted standards.

Mack et al. (*13*) isolated vaccinelike poliovirus type 2 from a well responsible for a gastroenteritis outbreak at a restaurant in Michigan. Five-gallon samples were taken from the 30.5-m-deep well and were concentrated by a PE60/centrifugation technique. Coliform levels in the well ranged 0–16/100 mL, but no *Salmonella* or *Shigella* were found. The pollution

TABLE 1. Isolation of viruses from drinking water wells

Location	Virus types	Concentration method	Source	Reference
Florida	Echo 22/23	Membrane adsorption	Well	12
Germany	Echo 3, 6, 30; Coxsackie B1, 4, 5; U[a]	$Al(SO_4)_3$	Well	16
India	U	Iron oxide	Well	18
Michigan	Polio 2	PE60/centrifugation	Well	13
Israel	Echo 6, 7; Coxsackie B5; Polio 1; U	Membrane	Well	14
England	Polio 2	$AlCl_3$/membrane	Well	15
Israel	Polio 1; U	Organic flocculation	Well	17
Ghana	Polio 1; Coxsackie B3	Centrifugation	Well	19
Mexico	Rota; Coxsackie B4, 6	Membrane	Well	20

TABLE 2. Isolation of viruses beneath land treatment sites

Site location	Type of site[a]	Virus types	Maximum distance of virus migration (m) Depth	Horizontal	Reference
St. Petersburg, Fla.	S	Polio 1; coxsackie B4; echo 7	8	22	22
Gainesville, Fla.	S	Coxsackie B4; Polio 1, 2	3	7	21
East Meadow, N.Y.	R	Echo 12; U	11.4	3	23,24
Holbrook, N.Y.	R	Echo 6, 21, 24, 25; U	6.1	45.7	23, 24
Sayville, N.Y.	R	U	2.4	3	23, 24
12 Pines, N.Y.	R	Polio 2; U	6.4	7	23, 24
North Massapequa, N.Y.	R	Echo 11, 23; Coxsackie A16	9.1		23
Babylon, N.Y.	R	Coxsackie B3; U	22.8	408	23
Ft. Devens, Mass.	R	U	28	183	26
Vineland, N.J.	R	Polio; coxsackie B3; echo	16	250	27
Lake George, N.Y.	R	Phage	45	400	29
Phoenix, Ariz.	R	Coxsackie B3	18	91	28
Lubbock, Tex.	S	Coxsackie B3	30		38
Kerrville, Tex.	S	U	1.4		140
Dan Region, Israel	R	Polio 1, 2	3	6	60–270 37

[a] R, rapid infiltration; S, slow rate infiltration.
[b] Gerba, unpublished data.

that penetrate the soil more deeply. Thus, viruses which penetrate the soil surface are expected to survive for prolonged periods of time, as compared to those retained near the soil surface. The factors which affect virus survival in soils are complex and should be described kinetically in terms of initial populations and survival rates, as well as duration. These factors have been reviewed in detail (*7–9*).

Migration of viruses in soils and groundwater. The studies by Wellings et al. (*12, 21, 22*) and Mack et al. (*13*) were the first to demonstrate transport of viruses for long distances through soils into groundwater. Prior to their studies, it could be concluded only on epidemiologic evidence that viruses (mainly hepatitis A) move from sources of contamination into well water some distance away (*49*). Now, it is generally accepted that once in groundwater, viruses can migrate great distances under the right condition such as those found in the study by Noonan and McNabb (*28*).

However, the specific factors affecting virus movement in groundwater have not been studied directly. As mentioned above, there are many factors, such as the degree of saturation, subsurface flow, hydrogeologic structure, and the like, involved in this movement which are site-specific and which need to be evaluated for any site where wastes are to be applied.

Groundwater also can be contaminated by both purposeful (recharge) and accidental (septic or sewage leakage) events. The extent of influence of this man-made factor is evidenced by a recent survey (*33*) of groundwater quality, which indicated that 92.5% of the rural samples taken were positive for total coliforms. In many of the 460 samples, contamination was related to depth and distance from septic tanks. In view of the high bacterial counts in the wells sampled, it is very likely that viruses were also present. Well contamination should be preventable to a large degree by proper location, construction, and maintenance, with an additional measure of safety provided by disinfection. However, as was seen, chlorination of viruses, especially when they are associated with solids, can be unreliable. Hence, extra care should be taken in the location of wells and septic tanks.

Methodology. The last 10 years have seen great progress in the development of virus detection methods. Their absence from earlier studies renders any negative findings unreliable, as the levels of virus detectable by older methods were not as sensitive as today's methods. Furthermore, it is still not possible to detect hepatitis A and many agents of viral gastroenteritis routinely, although work in this area is progressing; and only recently has it become possible to detect rotaviruses in water samples (*50*). Moreover, the methods for virus isolation fail to detect the presence of coxsackievirus group A, adenoviruses, and reoviruses unless additional efforts are undertaken. Methods are available for less than half of all the viruses known to be present in human wastes. Given these limitations, it is very doubtful that more than 1% of all the viruses present in domestic wastes are detected by the routine methodology currently in use.

Operation of land application sites. Using soil column models, Gerba and Lance (*51*) found that the degree of viral movement and removal by soils from a land application site could be controlled to some degree by the way in which the basins were flooded with sewage in relation to the rainfall patterns of the site. Others (Table 4) have mentioned operational features that may also have an effect, and it is apparent that these factors need to be taken into account in the management of a refuse site.

Research recommendations

As is apparent from this review, current information on viruses in

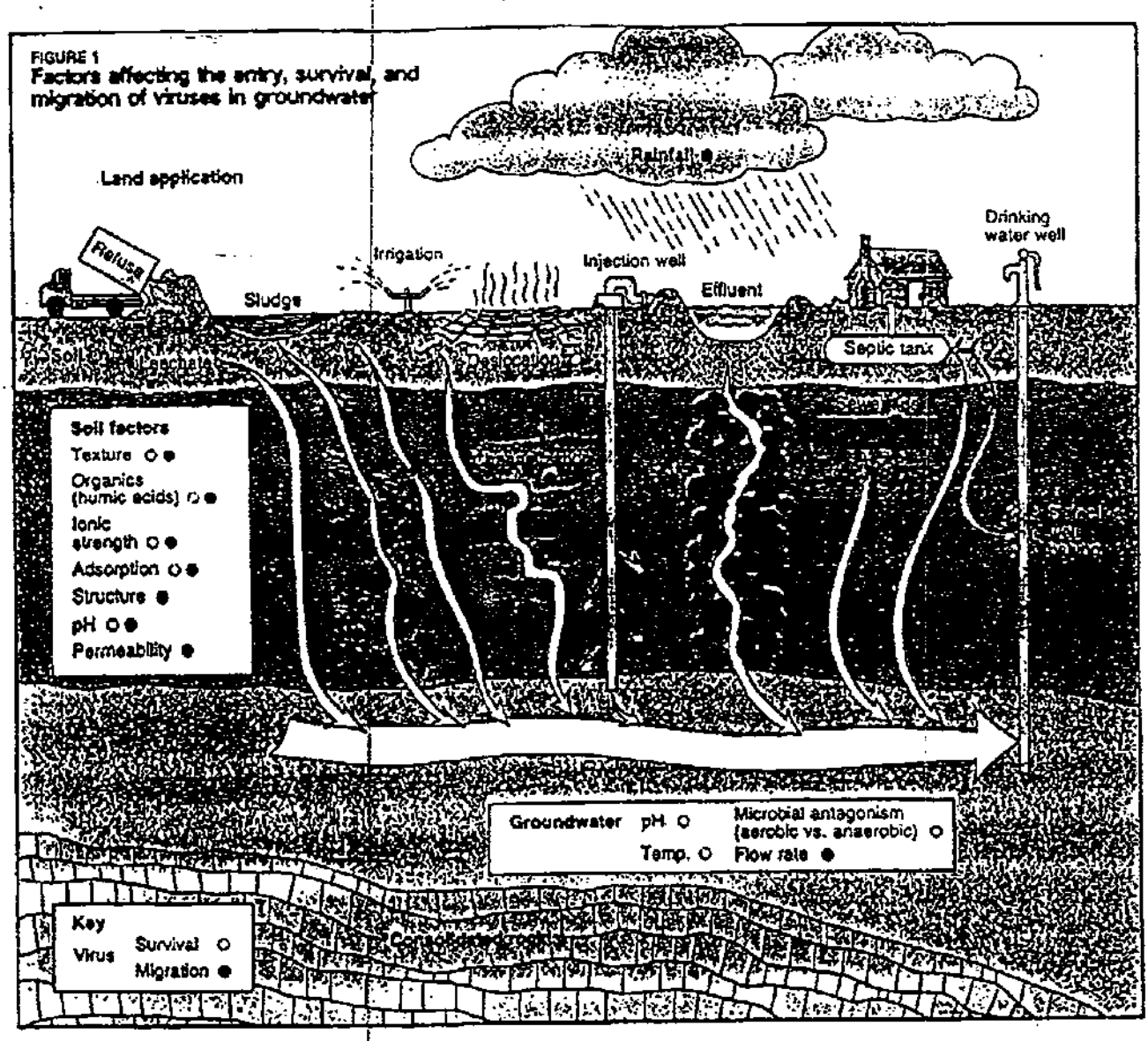


FIGURE 1
Factors affecting the entry, survival, and migration of viruses in groundwater

their overall structure. Laboratory studies have shown the importance of the composition of soils, including the organic content; percent sand, silt, and clay; pH; cation-exchange capacity; permeability; texture; moisture; and iron oxide levels.

As pointed out in earlier reviews, each of these features can effect virus removal by soils, and so the study of this problem becomes quite complex. For example, virus removal by the soil types in the studies reviewed here ranged from very poor to apparently total removal, which indicates the need for site-specific evaluations of soil properties. The variability of adsorption by different soils has been repeatedly demonstrated in the laboratory (*7, 8, 44, 45*). In general, sandy and organic soils are poor adsorbers and clay soils are good adsorbers.

Subsurface structure has also been demonstrated to be an important promoter of groundwater contamination. For example, movement of bacteria through fracture zones was shown by Allen and Morrison (*46*) to be rapid and to follow the fracture lines, leading to rapid and wide dispersal. Thus, under natural conditions, soil columns are not always indicative of the ability of pollutants to enter groundwater. Furthermore, the columns used in many studies were too short, and may have overestimated virus removal rates. There is now evidence (*47*) that removal rates in subsurface layers are lower than at the surface. So estimates based on the faster rates observed in short columns are higher than those found in columns longer than 50 cm.

Virus survival in groundwater. It is difficult to make firm assessments on virus survival in natural waters because viral resistance to factors that influence their survival varies. In addition, these factors have shown great variation temporally, which makes predictions even more difficult. For instance, little is known concerning survival rates of human enteric viruses in soil and groundwater. Field studies by Wellings et al. (*21*) suggested that viruses could survive for at least 28 days in groundwater. Survival of viruses in surface waters for as long as 188 days has been reported (*48*), while in other laboratory experiments viruses survived more than 200 days in drinking water. Since the effects of sunlight are eliminated and the temperature is lower, even longer survival times would be probable in groundwater.

Recent studies in our laboratory indicate that virus survival in soil is probably controlled by the principal factors shown in Figure 1. An evaluation of these factors indicates that because of the detrimental effect of aerobic soil microorganisms, evaporation, and higher temperatures, inactivation of viruses will be much more rapid near the surface than for those viruses

Super Waste? Attempt to Clean Bad Water Yields Scant Results

The Superfund program has little success to show for the $7.5 billion in taxpayers' money it has spent so far. Congress created it in 1980 after the evacuation of the Love Canal district at Niagara, N.Y. Plans called for a $1.6 billion fund, largely supplied by industry, to deal with an estimated 5,700 toxic waste sites across the nation. But by the mid-1980s, thousands more sites emerged as cleanup candidates, and estimates of the program's total costs skyrocketed to $100 billion. Now more than 20,000 sites are expected to require Superfund cleanups, and cost estimates have climbed to an astronomical $600 billion, divided equally between the government and industry.

Few Sites Restored

Only a few dozen Superfund sites have been completely restored to drinking-water purity. In a 1989 EPA report, researchers found that levels of ground water contaminants at 19 spill sites improved initially, but gains leveled off long before the ground water reached drinkable purity. "You can't find a single aquifer that has been restored to drinking-water standards with" the standard pump-and-treat method used at most Superfund sites, asserts Curtis Travis, a researcher at Oak Ridge laboratory and co-author of the recent article questioning Superfund.

EPA officials counter that one or two pumped sites seem to be nearly clean. The agency's Mr. Fields adds that the 19-site study "is a fairly limited data base," and that it's "inappropriate" to conclude from it that Superfund's goals can't be met.

One of the 19 sites was South Brunswick's, regarded by many ground-water experts as a paradigm of the broader problem. The return of toxins there, researchers now believe, was due to certain chemicals widely used as cleaners and solvents.

Reaching the Aquifers

Known as dense non-aqueous phase liquids, these suspected carcinogens infest a majority of Superfund sites, surveys indicate. Such chemicals sink through aquifers, the underground bodies of water that supply about half the nation's drinking water, and spread out underground. Drilling wells to find pockets of the stuff often just entrenches it further by providing new pathways for migration. And flushing it from an aquifer "is like trying to get soap out of a sponge," explains David Miller, president of Geraghty & Miller Inc., a toxic-waste cleanup concern. "You can wash it out 10 or 12 times, but there's still some soap left."

That's what happened at the New Jersey site, where toxic solvents leaked from a former International Business Machines Corp. manufacturing plant. A scattering of deposits—perhaps only a few tens of gallons—took up residence, tainting the ground water. As the aquifer was pumped, clean water filtered in and temporarily gave it a purified look. But the toxic deposits remained, gradually tainting the new water.

Now cleanup experts realize "you'd have to disinter huge amounts of clay" to remove the pollutants, says an IBM spokesman. "It could damage the structure of the aquifer." Instead, the company

Please Turn to Page A6, Column 1

Continued From First Page

is continuing to pump and purify water in order to stop pockets of underground chemicals from spreading to other wells. Near its facility, sprinklers gush day and night, year round, returning pumped and purified water to the ground. The process may well continue for decades.

Mr. Cherry and other researchers began spreading the word about such cases a few years ago, and word has been slow to spread. Even now, many ground-water experts know little about the dense chemicals' intractable behavior and have been flocking to courses offered by Mr. Cherry and likeminded colleagues on it.

The Superfund skeptics argue that in cases like South Brunswick, the goal usually should be to contain rather than wipe out the chemicals. Though that may require ringing the sites with wells and pumping water from them for many decades, it would still save "enormous" amounts of money, argues Mr. Cherry, for it would require only modest, long-term pumping rather than Superfund's endless studies, massive pumping and other costly efforts to achieve total purity.

The skeptics also advocate "triage" of contaminated aquifers—effectively writing off many of them as sources of drinking water. "The government view that ground water in industrial areas needs to meet drinking-water standards is unrealistic," argues Jeffrey Bates, an environmental lawyer in Boston who supports Mr. Cherry's position.

Mr. Cherry asserts that cleanups are eradicating smaller amounts of the dense chemicals than is being spilled in further industrial accidents, and argues that much of the cleanup money should be redirected to preventing spills. The EPA ground-water protection program's annual budget of about $11 million is less than the typical cost of a single cleanup.

Experts disagree about how much drinking water is really threatened, or what the health risks of drinking it are. Existing technology often can purify it relatively cheaply when it is pumped out for consumption. South Brunswick residents have been drinking from their contaminated aquifer for years, thanks to a million-dollar water purifier IBM built. It uses huge filtering vats with activated charcoal to strip pollutants from water before it is piped to people.

Largely because of cases like South Brunswick's, the EPA conceded in a 1989 memo that "in many cases, it may not be practicable to attain" drinking-water purity at Superfund sites. But the agency is still pursuing total cleanup at a lot of sites where this is a waste of time, say critics. They don't blame the agency much, though, because a 1986 amendment of the Superfund law requires it to favor "permanent" cleanups and encourages the use of stringent drinking-water standards to determine how clean is clean enough.

Some states are quietly moving toward strategies recommended by Mr. Cherry and his allies. "We're starting to use pump-and-treat more for control" of contaminant spread than for total cleanup, says Arnold Schiffman, assistant director of water quality management for the New Jersey Department of Environmental Protection.

But instigating ground-water triage "will be tough," he adds. Land owners are likely to resist classification of aquifers under their property as permanently tainted. And environmentalists argue that easing cleanup standards could endanger public health and let polluters off too easy.

"It appears there are some situations beyond cleanup," says Linda Greer, a scientist at the Natural Resources Defense Council in Washington, D.C. "But the rub is deciding when to write off" an aquifer and pursue containment. Industry may want that to happen "much sooner than society will allow."

In any case, Superfund's enormous costs may be having an unintended positive effect. Most large companies are so worried by the dismayingly large costs that they have started spill prevention programs "far more stringent than what is required by law," Mr. Cherry says. "That's Superfund's real gift to the world."

Submitted by
Ernie Pfanner
at Citizens Forum
Mtg 2-28-96

Germs online

USA WEEKEND brings health experts to America Online

This week, we have lined up a panel of national experts to answer more of your questions about bacteria and viruses on America Online. You can find us on AOL at keyword USA WEEKEND.

Wayne Biddle, a Pulitzer Prize-winning writer, will answer your questions about germs in an auditorium event, 9-9:45 p.m. ET this Sunday. Biddle is the author of *A Field Guide to Germs* and a former *New York Times* reporter.

Can't make it to the auditorium? Just post your questions on our message boards. Three experts will review questions posted by this Wednesday: Charles Gerba, a University of Arizona microbiology professor, will reply to messages that ask: "Can I get sick from ___ [you fill in the blank]?" George Chang, an associate professor of food microbiology at the University of California at Berkeley, will field questions about the microbes that live in food. And Biddle will answer other questions.

Charles Gerba

After you've read all about bacteria and viruses, watch them at work: Our multimedia library has still and moving images of swimming *E. coli*, medicine battling germs, and more you can download.

Then exercise your right to vote online: Take our QuickPoll to choose which disease you'd cure first.

Also: Surf the World Wide Web for topic-related home pages. We will link you to those with the latest information on bacteria and viruses.

Tell us what you think about this special report by sending e-mail to letters@usaweekend.com.

Tainted water

Steps you can take to make your tap water safer

Last month, health officials warned some residents of Washington, D.C., to boil their water when *E. coli* — bacteria present in human feces — showed up in household tap water. In 1993, more than 400,000 people in Milwaukee became ill, and at least 100 died, because their water was tainted by a microscopic bug.

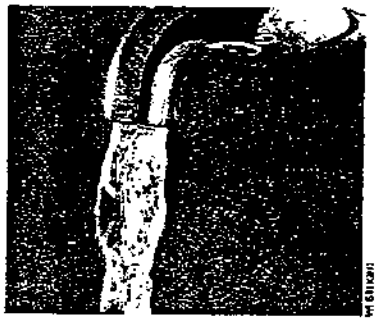
"Don't drink the water" won't soon be the official U.S. greeting, but health experts are newly concerned about the nation's drinking supply. What's gone wrong with the nation's plumbing?

"Our water treatment plants are old, outdated and badly in need of repair," says Erik Olsen, a researcher with the National Resources Defense Council, an environmental watchdog group. Indeed, much of today's water treatment technology was invented three generations ago and has not kept pace with today's contaminants. For instance, water treatment plants have long used chlorine to kill bacteria and viruses. But chlorine is useless against *Cryptosporidium* and *Giardia*, two protozoan cysts present in water supplies nationally. Even in minute amounts, these critters can cause diarrhea in healthy people (as *Cryptosporidium* did in Milwaukee), and can prove fatal to people whose immune systems are compromised by AIDS or chemotherapy.

Each year, nearly 1 million people become sick from diseases lurking in water.

How to improve the odds that your tap water is healthful?

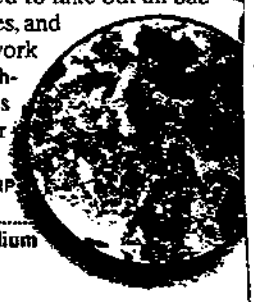
Get your water laboratory-tested. Taste alone tells you almost nothing about purity. If you're on a public water system, the water supplier is legally required to test the source water regularly and provide the results on demand. If you're on a private well, you'll have to pay for the test yourself. Have your water tested by a state- or U.S.-certified lab (call the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791).



If your immune system is compromised, you should treat your water even if it passes the laboratory test. The reason: *Cryptosporidium* is notoriously difficult to detect in the lab. Spread by animal feces, it shows up mainly in water drawn from lakes and other "surface" sources. You have three options for removing microbiological contaminants, other than buying bottled water (even some bottled waters are not completely pure):

- Vigorously boil your tap water for at least a minute. That is the most foolproof way to kill all germs. Of course, it's inconvenient, and if lead or other non-living contaminants are present, boiling actually *increases* their concentrations.
- Use a distiller. These countertop electric devices boil small batches of water and recondense the steam into an adjoining container — minus the microscopic organisms. The catch: Distillers are energy hogs; you will pay anywhere from 15 to 88 cents per gallon in electricity — not to mention at least $200 to purchase the machine.
- Carbon filters, thermos-sized straining devices mounted on the cold-water line that leads to your kitchen sink, use no electricity and work automatically. The catch: They can't be trusted to take out all bacteria and viruses, and some brands work better than others. Good ones cost $300 or more.

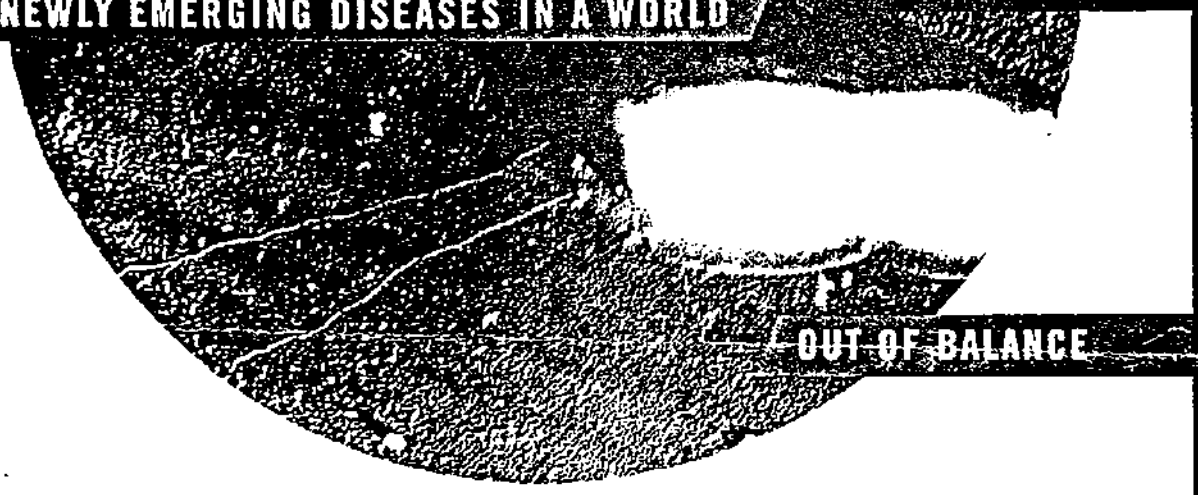
— DAVID SHARP



Cryptosporidium

The Coming Plague

NEWLY EMERGING DISEASES IN A WORLD OUT OF BALANCE



Laurie Garrett

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Times in which he predicted that a major pandemic was coming soon, based on the theory of ten-to-eleven-year influenza cycles. He warned that "those concerned with public health had best plan without further delay for an imminent natural disaster."[16]

Although Kilbourne spoke for the dominant tendency in influenza scientific thinking of the day, there were dissidents who felt that influenza cycles were longer, shorter, varied in length by subtype, or were entirely random and unpredictable. Several scientists argued that swine strains, in particular, appeared in 90-100-year cycles and forecast a repeat of the 1918–19 disaster for sometime in the 1990s.[17] Blood tests of Americans during the 1968 Hong Kong flu pandemic showed that elderly people who had lived through the 1889 flu epidemic were immune to the 1968 strain. That seemed to indicate a cycle, at least for that A strain, of about eighty years.[18] Finally, Australia's leading influenza expert, W. I. B. Beveridge, argued that influenza was a "capricious virus that is not possible to predict," noting that a long-term view of the historical record showed pandemics of one kind or another had surfaced after intervals of ten to forty-nine years, a range too great to represent a basis for forecasting future outbreaks.[19]

While influenza was spreading around Fort Dix, most of the world's flu experts were gathered in Rougemont, Switzerland, for an international influenza meeting.[20] Completely unaware of events then unfolding in New Jersey, the scientists devoted their collective energy from January 26 to 28 to the task of deciding how humanity should best respond to a 1918-like flu pandemic.

In 1947 the World Health Organization, shortly after its inception, had created a network of laboratories throughout the world that agreed to collaborate in efforts to monitor changes in influenza patterns. By the time scientists gathered in Rougemont twenty-nine years later, there were nearly a hundred laboratories in the WHO influenza network, crossing most Cold War and economic boundaries of the day. These laboratories regularly collected samples of influenza from human flu patients, and sporadically from ailing birds and livestock, hoping to be able to detect dangerous perturbations in global influenza before millions of people were infected.

Based on the work of the CDC's Dr. Walter Dowdle and Robert G. Webster of St. Jude's Children's Hospital, Memphis, the gathered scientists knew that ducks and other wild birds carried influenza around the world along their migratory routes, passing it on to other animals via fecal droppings. The bird droppings were an ideal ecological environment for the viruses. Influenza could survive over three days outdoors or in the milieu of fecal-contaminated water.

"It appears that influenza viruses are constantly circulating among many avian species without causing panzooties [cross-species epidemics]. This suggests that influenza is a natural avian infection and may have been so for thousands of years," Webster told the Rougemont gathering.[21] "The conclusion can be stated simply. All the genes of the influenza viruses of

the world are being maintained in the aquatic bird population, in gulls and ducks, and periodically they are transmitted to other species, including humans, usually after reassorting.

Perhaps more important, in light of subsequent immediate events, was the Rougemont discussion of vaccination policies. Clearly, it was difficult to motivate voluntary compliance with vaccination campaigns. For example, between 1968 and 1974 the best turnout for flu immunization in the United States occurred during the 1968 Hong Kong epidemic, when a mere 10.7 percent of the population got their shots, despite the epidemic's severity. By 1974 U.S. flu vaccination rates had plummeted to 8 percent of the general population and a poor 17.4 percent showing among the elderly, who were considered at special risk for flu. Even in states such as California, where flu shots were offered gratis to citizens over sixty-five, much of the vaccine supplies rotted in warehouses in 1975 for lack of physician and public interest in immunization. And in the U.K., fewer than 12 percent of National Health Service physicians promoted the use of flu vaccine to their elderly or hospitalized patients. Most striking, less than 6 percent of London nurses agreed to have themselves vaccinated against flu in any given year from 1968 to 1975.

Were a major epidemic on the horizon, the Rougemont gathering concluded, special efforts would have to be made to find the virus soon enough to allow large-scale manufacture of vaccine. And extraordinary steps would have to be taken to mobilize massive public compliance—on the order of 80 percent of the elderly and at-risk populations—in vaccination.

"The most important outcome of the next epidemic may well be the lessons it will provide that can help in controlling both pandemic and epidemic influenza," Walter Dowdle told the Rougemont gathering. He had no idea his words would prove immediately prophetic. Two weeks later the health establishment would seriously entertain the possibility that the Fort Dix virus was the same as, or a close cousin of, the 1918–19 killer microbe, and events would snowball down an icy policy slope. The perceived threat would grow larger every week as scientists were forced to yield decision making to politicians, and the highly hypothetical basis of all Swine Flu conjectures would recede further into the background. While early scientific and policy reports carefully alluded to the tentative basis of such dire forecasts, official government prognostications presented only certainties and absolutes. This contrast between a very tentative hypothetical outlook in the immediate wake of Private Lewis's death, and the federal mobilization weeks later was so striking that Dr. Joseph Califano, upon taking office a year later as Secretary of Health, Education, and Welfare in the new Carter administration, would commission an outside investigation. Two Harvard University policy analysts would be given a simple question to answer in the winter of 1977: "What went wrong?" Richard E. Neustadt had served in government during the Democratic administrations of Truman, Kennedy, and Johnson, and was on the faculty of the John F. Kennedy School of

11. R. E. Shope, "Swine Influenza," Harvey Lectures 31 (1936): 183–213.

12. The CDC's *Morbidity and Mortality Weekly Report* chronicles the spread of A/Victoria/75 week after week. The week Private Lewis fell ill at Fort Dix, for example, there were A/Victoria/75 outbreaks in Johannesburg, the United Kingdom, and the American states of Arizona, Washington, Iowa, Minnesota, Massachusetts, New York, and New Jersey. See *MMWR* 25 (January 24, 1976): 23–24.

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15. E. D. Kilbourne, "An Explanation of the Interpandemic Antigenic Mutability of Influenza Viruses," *Journal of Infectious Diseases* 128 (1973): 668–70. For an excellent detailing of widely accepted influenza theories of the day, see Edwin Kilbourne's *Influenza* (New York: Plenum, 1987).

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18. Rose (1971), op. cit.

19. Beveridge (1977), op. cit.

20. The proceedings of the Rougemont gathering were later published by the Sandoz Institute for Health and Socio-Economic Studies, *Influenza: Virus Vaccines and Strategy*, ed. Philip Selby (New York: Academic Press, 1976).

21. In 1980 over 100 wild seals washed ashore around Boston and Cape Cod, victims of influenza. Webster and his colleagues studied the viral RNA, matching it to influenza strains then common among [illegible] gulls. Three years later, influenza, apparently spread by migratory bird droppings, broke out in Pennsylvania in a massive commercial chicken house. Every single chicken died. From "Influenza," in S. S. Morse, ed., *Emerging Viruses* (Oxford, Eng.: Oxford University Press, 1993, R. G. Webster, 37–45.

22. During a 1993 interview, Sencer took a deep breath when the subject of Swine Flu was broached, smiled, and discussed an old *Peanuts* cartoon strip in which the pooch is sitting atop his doghouse typing a manuscript entitled "Swine Flu." The first words of the manuscript read, "It was a dark and stormy night . . ."

23. Centers for Disease Control, "Current Trends: Influenza—United States," *Morbidity and Mortality Weekly Report* 25 (1976): 47–48.

24. Ibid., 55–56.

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27. A. S. Beare and J. W. Craig, "Virulence for Man of a Human Influenza-A Virus Antigenically Similar to 'Classical' Swine Viruses," *Lancet*, July 3, 1976, 4–5.

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29. "Planning for Pandemics," *Lancet*, July 3, 1976: 25–26.

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31. There are several sources for valuable insights into the 1976–77 Legionnaires' Disease investigation. Particularly useful are *Annals of Internal Medicine* 90, No. 4 (1979) (special issue devoted to Legionnaires' Disease); Centers for Disease Control, *Legionnaires': The Disease, the Bacterium and Methodology*, (Atlanta: U.S. Department of Health, Education, and Welfare, 1979); F. W. Chandler, M. D. Hicklin, and J. A. Blackmon, "Demonstration of the Agent of Legionnaires' Disease in Tissue," *New England Journal of Medicine* 297 (1977): 1218–20; D. W. Fraser et al., "Legionnaires' Disease: Description of an Epidemic of Pneumonia," *New England Journal of Medicine* 297 (1977): 1189–97; G. L. Lattimer and R. A. Ormsbee, *Legionnaires' Disease* (New York: Marcel Dekker, 1981); J. E. McDade et al., "Legionnaires' Disease: Isolation of a Bacterium and Demonstration of Its Role in Other Respiratory Disease," *New England Journal of Medicine* 297 (1977): 1197–1203; and Silverstein (1981), op. cit., Chapter 10.

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Informed Consent. The law required that the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research draft "a written informed consent form and procedures for assuring that the risks and benefits from the swine flu vaccine are fully explained to each individual to whom such vaccine is to be administered. Such consultation shall be completed within two weeks after enactment of this Act, or by September 1, 1976, whichever is sooner. Such procedures shall include the information necessary to advise individuals with respect to their rights and remedies arising out of the administration of such vaccine."

The Sacramento Bee

★ ★ Monday, January 8, 1

METRO

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Tests for water parasite may expand

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By Tony Bizjak
Bee Staff Writer

Three years ago, it struck in Milwaukee, killing 100 people. Two years ago, it came and went suddenly in Las Vegas, killing 19.

Cryptosporidium, a parasite in drinking water, has become one of the newest fears of public water agencies around the country.

Tuesday, Sacramento city water engineers will ask the City Council to allocate $75,000 so the city can join what is said to be an advanced nationwide study on how to detect and kill the fearsome microbe.

Sacramento city officials say they have been testing drinking water on their own for signs of cryptosporidium every other month for two years. They have found traces of it going into city treatment plants in raw river water, but none coming out.

Experts nationally say the microbe is often found in untreated surface water – such as lakes and rivers – but rarely in concentrations high enough to harm people.

Nevertheless, recent strikes in Milwaukee, where thousands reported feeling ill, and in Las Vegas, where officials say their treatment system never detected any of the microbe, have water officials looking for more ways to guard against an outbreak.

"If it can happen here (in Las Vegas)," said Doug Selby, an official with the Southern Nevada Water Authority, "where we have such high water quality and treatment, it can happen anywhere."

Cryptosporidium is a parasite from feces that causes cholera-like illnesses. It is especially dangerous for people whose immune systems are not working well, such as people with AIDS.

Cryptosporidium levels in drinking water are not yet regulated nationally. It is sometimes hard to detect, and water officials are uncertain which methods are best for eliminating it from drinking water.

The Southern Nevada agency, which will be the lead water agency on the nationwide study, asked Sacramento officials recently if the city was interested in participating.

About a dozen water agencies will send samples of untreated water – in Sacramento's case, from both the American and Sacramento rivers – to a laboratory to test how well different water treatment meth work on different types of water.

"It's a big plus for us," said Carol McGahan, a senior engineer in Sacramento's Department of Utilities.

The city plans to expand its treatm plants in the near future. "We will k what kind of design criteria to apply to treatment process," McGahan said.

Meanwhile, Department of Utili spokeswoman Liz Brenner said city o cials are talking about meeting with Sac mento AIDS Foundation workers to expl what precautions and research are un way. "It is very critical now that those p ple who have immune deficiencies und stand what we are doing and how their w ter is treated," Brenner said.

Can drinking water make your family sick?

Is drinking water dangerous? It can be for those with weakened immune systems.

The danger lies with a microscopic parasite called Cryptosporidium parvum which can cause an illness that can mimic stomach flu or food poisoning. More than 100 people died — most of them AIDS patients — when Milwaukee's city water was contaminated in 1993 with the parasite.

According to a report by UCSF Magazine, which is produced by University of California, San Francisco School of Medicine, the only certain way to prevent this illness is by boiling tap water before drinking it.

"We are all at risk, especially since the chlorine which many cities use to treat their water supplies, does not kill this organism," says San Francisco-based molecular parasitologist Carolyn Peterson, who was quoted in a fall issue of UCSF Magazine. "More than 90 drugs have been tried against (the illness that results) and none has been shown to be very effective."

Clearlake Pomos blame old mine for poisoning

CLEARLAKE (AP) — When gunfire erupted at the 50-acre Elem Pomo Indian Colony in October, the blame went to a longstanding tribal feud and gambling grudges.

But some say the problem may actually lie in the Sulphur Bank Mine, a barren patch of earth nearby that many consider a dead zone. Fish skeletons litter the mercury-contaminated beach, and a sign has warnings in both English and Spanish.

The Indians and their advocates say mercury is making Elem residents deathly ill, both physically and emotionally.

"You see a lot of terrible diseases at Elem, especially cancer," said Clayton Duncan, a Pomo Indian who lives on the nearby Robinson rancheria. "Nobody feels really well, and people get angry easily."

Nine people were wounded in October's shooting.

The 120-acre mine — an open-pit operation that produced tons of mercury-rich ore from 1927 to 1957 — is Lake County's only Superfund site.

Nearby homes were built on the mine's "tailings," or mercury-tainted rubble left over from the mining process.

"This place used to be a paradise on earth," said Duncan, who played in the area as a child.

Now many Elem Pomos say they are suffering from such symptoms as tremors, blurred vision, slurred speech, staggering and extreme emotional instability that can lead to violence. Ultimately, mercury poisoning can lead to kidney failure, nerve damage and ultimately, death.

Water quality protection

Recent stories in The Bee have detailed the problems of the Central Valley Regional Water Quality Control Board to address violations at the El Dorado Irrigation District's Deer Creek Wastewater Treatment Plant in a timely manner ("Water pollution violators targeted," Dec. 9, and "District fights water citations," Dec. 10). While the $100,000 fine and compliance plan are a big step toward resolving the plant's problems, we will be monitoring the situation closely and will take additional action if necessary. The public's invaluable input played a key role in the resolution of this matter.

Although the board has a number of environmental missions – including permit issuance and review, controlling acid mine drainage, removing leaking underground tanks, protecting the Delta from toxics and pesticides and planning water use for a number of basins – the board's highest priority is protecting water quality by enforcing environmental standards and permits. Through the work we have done to resolve the Deer Creek matter, the board has reminded the staff – and the public – of this priority. As a board, we are committed to make planning, resource, and personnel decisions that strengthen enforcement priority.

Karl E. Longley, Chair
Central Valley Regional
Water Quality Control Board
Sacramento

Sac. Bee 12/24/95

Carrie:

Interesting bit about ducks carrying disease - especially influenza!

Infected ducks could use deep wet gravel pits during their migration. If so feces would accumulate at the bottom of the pit adjacent to the groundwater. The passage of water in and out of the pit would carry feces and viruses into the aquifer. Viruses can persist for long periods when suspended in water

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By

THE MERCURY PROBLEM

In the US Army Corps Reconnaissance Report. Cache Creek Environmental Restoration, December 1995 the statement is made (Pages 23 and 40):

"Dredging, channelizing or other work in the Cache Creek stream channel could release buried mercury from depositional areas and increase its availability to aquatic organisms and their predators. Whenever project work would include disturbances to stream deposits, sediment cores should be taken from disturbance areas, concentrating on depositional areas. These samples should be analyzed to fully assess possible mercury contamination and the potential for remobilization; this assessment should be completed prior to initiating work instream channel."

The following information supports this assertion and indicates that all proposals for deep wet pit gravel mining in the alluvial area over the Yolo County Aquifer should also be preceded by core sampling for mercury.

1.	**There is widespread mercury pollution in Northern California, especially in Lake, Napa and Yolo Counties.** **This mercury pollution is due to:** **1. Existence in the Coastal Mountain Range of mineral deposits which are rich in cinnabar, a mercury ore.** **2. Extensive mercury mining which has taken place in this area over the past 150 years** **3. Discharging of mercury vapor into the atmosphere by earlier use of crude methods for extracting the mercury from the ore.** **4. Formation of mercury vapor which is discharged into the atmosphere after amalgamation with gold and silver.**
2.	**Our concern about mercury pollution in the alluvial deposits on each side of Cache Creek results from:** **1. knowing the extent of mercury mining along the coastal mountain ranges during the past 150 years** **2. The crude manner in which the mercury was extracted from the ore and permitted to escape into the environment eventually finding its way into the streams and waterways**

	3. The use of mercury to amalgamate gold and its subsequent release into the environment 4. The past and current use being made of mine tailings containing potentially hazardous amounts of mercury for such purposes as road building and laying water and sewer pipes, especially upstream in Lake County. 5. The lack of knowledge or indifference of some county and state officials to the potentially hazardous effects of mercury entering our waterways and reservoirs.
3.	Between 70- 88% of the mercury produced in the US has been obtained from deposits in California, mainly in the Coast Mountain Ranges. It is used primarily in the production of explosives and for the amalgamation of gold. Most of the mercury was mined as cinnabar ore which was heated to release the metallic mercury.
4.	Mercury is a component of soil, sand and gravel in Yolo County. Homestake reported an analysis of 12 samples taken from areas around the McLaughlin property prior to development of the mine. The mercury in these samples which was inorganic mercury varied from 1.6 to 140 ppm (parts per million).
5.	Mercury is naturally present in the atmosphere, especially in areas near geysers, geothermal vents or old mine sites. It is also released by autoclaves and heating units used in the processing and amalgamation of gold. Much of this atmospheric mercury settles out on the soil and vegetation during rainstorms.
6.	Prior to 1970 it was assumed that mercury which found its way into nearby streams and lakes just sat on the bottom and didn't cause trouble. Subsequently it was learned that bacteria present in the sediment changes metallic mercury into methylated mercury which is readily incorporated into algae, higher plants and animals. It is passed up the food chain as big fish eat little fish and eventually to birds and fish-eating mammals, including humans.The bioconcentration of mercury during this process can be 1000 fold or more as it is passed up the food chain.
7.	1971-a booklet by the State Interagency Committee to study the mercury problem in Northern California concluded: "*It appears that widespread environmental mercury contamination had occurred without anyone being aware of its occurrence*". Mercury levels may be sufficient to constitute a public health hazard. Fishermen were warned that regular consumption of certain game fish may be hazardous. Pregnant women were advised to avoid eating contaminated sports fish entirely.(See Fish and Game Permit Warnings).
8.	Both Cache Creek and Putah Creek originate in areas which have been home to mercury mines and which contain numerous geothermal springs and vents. The Sulfur Bank mine alongside Clear Lake was the second largest mercury mine

	in California, producing millions of pounds of Mercury. It is now a superfund site! The Reed mine, located along Cache Creek in Yolo County, was most active during World War II producing more than a million pounds of mercury before being closed down just after the war. A fire in 1981 destroyed the remains of the processing plant.
9.	Since World War II most of the mercury mines have been closed and abandoned. In the Central Valley region 12 mines are known to be causing water quality problems from leachate containing heavy metals in nearby streams. Eleven of these mines are in the Putah and Cache Creek water shed areas.
10.	In addition a modern gold processing plant, founded near the site of a mercury mine, has contributed an estimated 50 tons per year of mercury to the atmosphere and to mill tailings in the course of its mining, milling, heating and extraction activities in mercury laden rock.
11.	Cinnabar is an inorganic mercury ore with an extremely low water solubility and very low reactivity. However, it is readily converted by heat to a more reactive liquid metallic mercury. The inorganic forms of mercury can also be converted to methyl mercury by the action of certain strains of bacteria. These particular bacteria grow under low oxygen high nutrient conditions such as those found at the bottom of deep lakes or deep wet pits. The converted methyl mercury is readily taken up by both plant and animal cells and becomes part of the food chain as it passes from one animal to another by predation. In a moving stream the hazardous mercury compounds would be carried downstream and eventually out to sea. Under conditions of stagnant water in deep gravel pits, the organic mercury would gradually increase for a few years then level off as the material percolated away from the pit water into the surrounding groundwater. The rate of movement out of the pit would be determined in large part by the rate of flow and fluctuation of the groundwater in and around each pit.
12.	Methyl mercury has no known beneficial physiological function - its presence in the tissues of living organisms, including man, represents contamination from environmental sources. Exposure to the toxin can induce both acute effects and delayed effects due to chronic or lifetime exposure. Public health officials have recognized the hazards of mercury poisoning since 1950
13.	During active gravel mining in the deep wet pits, there would be minimal growth of algae and other water plants. However, as soon as excavation is terminated, the pitwater would support extensive plant and animal growth. Thermal layering would occur along with seasonal turnover of the various layers. The bottom sediment would soon contain ample nutrients in the form of dead plants and small animals, runoff and percolation from nearby farmlands, and excrement from ducks, cattle and other animals using the mined out gravel pits as

	a source of water and or food. These pit conditions would greatly augment anaerobic bacteria growth and facilitate conversion of inorganic mercury to methyl mercury which would either cycle and recycle in the living organisms within the pit or could percolate into the surrounding groundwater. Eventually it could find its way into well water and domestic or municipal water systems.
14.	Impoundment of water results in high levels of methyl mercury found in fish flesh. This is due to a conversion of the inorganic mercury naturally present in the soil as well as that released by mining and gold processing activities. In areas where there is a stream flow, the increase in mercury levels will gradually decrease over a period of about 5 years depending upon local conditions. However in stagnant water bodies the mercury levels appear to remain high for very long periods (more than 30 years) with gradual percolation into the surrounding groundwater..
15.	. In areas along Cache Creek and its tributaries mercury depositions are high and rapid production of methyl mercury could occur whenever conditions are right. An example of this is the Davis Creek reservoir in which monitoring over a period of 10 years revealed a rapid rise in methyl mercury levels in the fish. The mercury levels in the reservoir fish are among the highest in the State.
16.	The Toxic Substances monitoring Program which was begun in 1976 has consistently reported high levels of mercury in Cache Creek. Although the SWRCB has repeatedly proposed a detailed study of Cache Creek to determine sources of the mercury pollution, the proposals remain unfunded. Meanwhile, high mercury levels are being reported downstream in the Delta and Bay area, and the evidence clearly identifies Cache Creek as one of the primary sources of this mercury pollution.
17.	. Methyl mercury can enter the body by inhalation, skin contact or ingestion. It is fat soluble and readily passes into the body where it can be found circulating in the blood for many months. It can cross the placenta and concentrate in the mother's milk to be passed to her infant. The earliest symptoms of mercury poisoning in an adult are generally very mild - a mere tingling or burning sensation in the hands, feet or mouth area. Later the mercury passes into the brain causing local cell death and in high doses produces hearing defects, blindness and eventually death.
18.	The Clear Lake Mercury Task Force 1985 report, released by the RWQCB , documents mercury levels of 200 ppm in sediment. The level of pollution considered hazardous by the Department of Health Services is 20 ppm.
19.	The Davis Creek Reservoir which is on a tributary of Cache Creek was first filled to capacity in 1986 - within two years it was found to constitute a hazard. This occurred in spite of the fact that we had repeated assurances from engineers

	of the RWQCB and consultants from Homestake Mining Company that the level of mercury would be low and would present no hazard. These assurances have proven to be wrong!
20.	1976- a mysterious disease killed more that 500 grebes in Lake Berryessa. This disease occurred again in 1986. Chemical analysis of tissues indicated that the cause of deathswas mercury toxicosis. Analysis of grebes in Clear Lake also indicated high levels of mercury. High mercury levels have been reported in fish taken from Lake Berryessa, Lake Herman and Clear Lake. The level in some of these fish was sufficiently high to warrant Health Department warnings..
21.	The time to prevent further methyl mercury contamination in Yolo County is now before the conditions for its formation are produced in the deep wet pits.
22.	If the deep pits are found in the future to produce hazardous levels of methyl mercury, who is responsible? What can be done to overcome the problem? - Will the gravel Industry be absolved of responsibility for any problems and if so will the county officials be prepared to accept responsibility? It should be noted that elected officials who had no part in the decision making might well be saddled with the responsibility of dealing with such a disaster. It would seem that there should be some sort of disaster insurance provided to households drawing water from areas near deep wet pits.
23.	Dr. Tom Suchanecki UCD Limnologist interested in mercury. He appears to be very knowledgeable and could be contacted for further information. He currently works on mercury problems in Clear lake He suggested that Darrel Slotten might do some tests for mercury in the Solano deep gravel pit. Spoke highly of his insect tests for mercury.

In order to appreciate the significance of the above statements we have selected quotes from various scientific journals, newspaper articles and other documents released by California Agencies. (Enclosed)

PARTIAL LIST OF REFERENCES

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By

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iicksilver was king

Mercury mining once a major industry

LAKE COUNTY — The south and mid-Lake County area were once a quicksilver mining area known nationwide.

The Sulphur Bank Mine, which is currently being investigated by the state for raising mercury levels in the Clearlake Oaks' arm of Clearlake, was the second most productive mercury mine in the state. Only the New Idria mine produced more quicksilver/mercury than Sulphur Bank.

Sulphur Bank produced more than 92,400 flasks of mercury or 7,022,400 pounds of mercury. A flask weighs 76 pounds and is a commercial standard for mercury.

The mine is in the Clear Lake Mining district, which includes the Sulphur Bank and Butler mines.

Middletown was also once the center of a thriving mercury mining district. The Great Western Mine was the most famous. It was a major producer and in later years was owned by Worthern Bradley, who also owned the Sulphur Bank and the Reed mines.

In the Middletown district, there was the Mirabel, New Chicago and many other mercury mines.

Mercury minng saw its peak during the gold mining boom years before the turn of the century and during the hostilities of World Wars I and II. With the exception of explosives, poisons and scientific instruments, mercury is no longer used in this country because of environmental and health reasons. It is toxic and accumulates in body tissues.

Mercury was in great demand for gold and silver recovery. It was used for amallamation, the process by which mercury is alloyed with gold and silver from crushed ores.

Another mining district that was important to the south county was the Knoxville Mining District. Although not in Lake County, primary access was through Lower Lake on the Morgan Valley Road.

The Knoxville Mining District is where Homestake Mining Co. discovered the largest gold find of the 20th Century at the site of a former mercury mine. That district is the site of many famous quicksilver/mercury mines and processing plants which were abandoned at the end of World II when the bottom fell out of the mercury market.

In the vicinity of Knoxville, where Homestake discovered gold, there were several mercury mines. The major ones were the Manhattan, Knoxville (formerly Boston and Redington) and Reed mines. Others were the Red Elephant, Harrison, Royal and Andalusia.

The Knoxville District is mainly in the northeast corner of Napa County and includes portions of Lake and Yolo counties. At one time, several hundred people lived near Knoxville.

The Knoxville mine was one of the largest producers in the state. In 1867 it was reorganized as the Redington Quicksilver Co. and during the 1870s the company had a contract with the Comstock Mine in Virginia City, Nev., to supply 400 flasks of mercury a month.

A flask is an iron container used for shipping mercury.

Close to the Knoxville Mine was the Manhattan Mine, where Homestake discovered gold in 1980. It was also known as the Lake Mine and was founded about the same time cinnabar was discoved at Knoxville, and was operated in conjunction with the Knoxville Mine for many years, reducing its ore in the Knoxville recovery plant. A Knox-Osborne reducing furnace dating from the glory days of mercury mining stood at the Manhattan Mine until heavy rains toppled it. Homestake had plannd to remove and preserve the historical furnance.

The property was owned by Bill and Kay Wilder. They sold it to Homestake. When Wilder shut down his mercury furnance, it was the last operating one in California.

Near the Homestake Davis Creek Reservoir in Yolo County is the Reid Mine. It was a major mercury producer during World War II and many workers lived there in simple cottages.

Many of the old buildings and cottages used to stand near the Reiff/Rayhouse Road. This road branched east from the Morgan Valley Road, about 12 miles east of Lower Lake, meanders through Davis Creek Valley, across the Little Blue Ridge Mountains and across a ford at Cache Creek to Highway 16 in Yolo County.

The Reed Mine's processing plant was destroyed in the huge Lange's peak fire of 1981. All that is left are the condensing pipes used to collect mercury. Ore was heated and mercury evaporated into the pipes where it was collected and bottled in iron flasks for shipping.

Mercury Problems Are Plaguing Clear Lake

Walt Wiley
Staff Writer

Mercury keeps cropping up in samples of fish
en from Clear Lake, and worried officials
e targeted one suspected source for possible
ic waste cleanup.
The Sulphur Bank mercury mine, hundreds of
less acres on the east shore of the Oaks Arm
Clear Lake, was opened more than a century
. These days, red, acid water leaks from the
into the lake.
Circumstantial evidence makes the mine a
ne suspect as the source of the lake's mercury
'ems but, even if the cleanup is accom-
d, officials are not certain how great the
ct will be on the accumulation of mercury in
lake's food chain.
also unknown is the extent of mercury contam-
ion in the flesh of fish or the effects that the
al might be having on people who make fish
n the lake a significant part of their diets.
To answer some of the questions, the mine has
n nominated for ranking on the state's toxic
te Superfund cleanup list.
"We're hoping that by going for this ranking
ll be able to get federal money for a study that
show us just how bad the problem is," says
liam J. Marshall of the Central Valley Region-
Water Quality Control Board. He says the
pany that owns the mine has indicated it has
/ limited funds to do cleanup work.
Dan Phillippe of the toxins division of the state
partment of Health, the office that handles
uests for Superfund rankings, says it will have
e determined that the mine is the source of
mercury which is showing up in fish, before
inup work would be done on the property.
lear Lake is surrounded by a vast region dot-
with mercury mines and deposits of mercury
. Samples of sediment from the lake bed show
: mercury has been accumulating there for
s, and that it has been accumulating more
idly in the past century or so.
Marshall says a federal geologist who studied
ar Lake bottom sediments in 1978 found the
hest concentrations in the top four inches,
erial that has been deposited during the 50 to
years when mining activity has been heavy
und the lake.
And at Sulphur Bank, the tailings from mining
rvity dating to 1865 were dumped into the lake,
ming a sort of beach that extends perhaps an
ith of a mile from the natural shoreline.
The mine is owned by Bradley Mining Co. of
Francisco. Telephone calls to the company
intercepted by an answering service. No
pany officials returned calls from a reporter

Bee Photo by Walt Wiley

Circumstantial evidence makes the Sulphur Bank Mine, seen in background here, a prime suspect as source of mercury in lake. Private homes and boat docks dot the foreground.

for The Bee who sought information on the mine.

For years, the Regional Water Quality Control Board, formerly called the Water Pollution Control Board, has had a file on Sulphur Bank Mine.

In a 1951 memo, a board staff member expressed concern that the proposed reopening of the mine would lead to the discharge of "large volumes of highly colored and chemically impure water into Clear Lake."

Also in the file is an exchange of letters between board staff and Bradley management, in which a Bradley official discounts the board's concerns about pollution by pointing out that employees at the mine had for years been drinking lake water, and "the camp has always been fairly healthy."

Says Greg Vaughn, the engineer on Marshall's staff who oversees water quality in Lake County, "in those days, they didn't think about mercury — it was thought that mercury just sat there on the bottom and didn't cause any trouble."

Subsequently, he says, it was learned that certain bacteria found in underwater sediment change metallic mercury into methylated mercury, which can be digested by tiny animals.

"From there, it moves up the food chain as the big fish eat the little fish," Vaughn explains.

Larry Week, a fisheries biologist with the state Department of Fish and Game, says he is concerned that mercury is concentrating in the bodies of people who eat large amounts of Clear Lake's game fish.

"There is a large community of retired people living around Clear Lake, and many of those people fish almost every day. Fish is a main source of protein for them," says Week.

And adjacent to Sulphur Bank mine on the shore of Oaks Arm is the Elem Indian Colony, home for perhaps 100 persons who likewise depend heavily on fish as a diet staple.

Week says the few studies that have been made of fish taken from the lake show concentrations as high as 1.91 parts per million of mercury in the flesh. The federal Food and Drug Administration has set one part per million as the safe standard for human consumption.

Most of the mercury-contaminated fish from the lake contain amounts similar to fish found in almost all fresh water in Northern California, substantially below the one part per million level, says Week.

The high concentrations, he says, are largely in fish taken from the Oaks Arm, where likewise the highest concentration of mercury was found in bottom sediments and where runoff water from Sulphur Bank mine enters the lake.

It is from Oaks Arm that the Elem residents catch most of their fish. Elem resident Cris Porter has called on the water quality board to conduct a study of mercury concentration in the tissues of colony members.

"There are all these hints that mercury might be a problem, yet no one will go ahead and conduct a study that will give us a definite answer," says Porter.

He says, "People who live here (at Elem Colony) have a short life expectancy. We know there is the mercury getting into the lake from Sulphur Bank mine, so why can't we have a study and find out for certain?"

Phillippe of the Department of Health Services says such a study might be done. "But first we have to do a more complete study of the lake's fish. If we know that fish generally contain high concentrations, then is the time to conduct studies on people."

Porter charges that Lake County officials and the business community are opposed to any such study for fear that a finding that mercury is accumulating in humans could ruin the lake's tourist business, which is based in large part on sport fishing.

Officials deny that charge, and Noel Knight of the county chamber of commerce says such a study would be welcome.

"The sooner we find out just what the problem is, the sooner it can be straightened out," says Knight. "I'd like to see the county get a little stiff with the company that owns that mine — get them to fix it up — if that turns out to be the problem."

(3)

State of California

NAP:LTR:sf
Lake Berryessa

Memorandum

To : R. Hansen
Laboratory Director

Date: Sept. 14, 1983

From : Department of Fish and Game WPCL - Special Studies Unit

Subject: Lake Berryessa Mercury Study

Mercury contamination of fish and wildlife has been an environmental concern in California for many years. A recent initial study of mercury contamination in Lake Berryessa in Napa County suggests there are elevated levels of mercury in sportfish taken from the lake. Mercury is naturally present throughout Napa, Lake and Sonoma counties in geological formations of cinnabar. These deposits have been actively mined over the years.

Eleven western grebe carcasses were collected from the Putah Creek arm of Lake Berryessa in April of 1982. A diagnosis of mercury toxicosis was reached based on kidney tissue levels of 20 ppm. In 1976, over 500 western grebes died in Lake Berryessa; no diagnosis was made, and the DFG pesticides lab ruled out organochlorides. Mercury levels in kidney tissue in this case ranged from 0.64 to 1.78 ppm (>8.0 ppm is significant).

Western grebes are migratory so the source of mercury contamination is unclear. However, because western grebes are primarily piscivorous, there may be a prey item in the aquatic food chain contaminated with mercury. Consequently, in a letter to the Assistant Deputy Director-Operations dated May 24, 1982, Region 3 requested that a sample of fish, including adult largemouth and smallmouth bass, be collected from the Putah Creek arm of Lake Berryessa and analyzed for tissue mercury levels. A review of the literature and WPCL records indicates that this investigation is the first time fish from Lake Berryessa have been analyzed for mercury.

On August 30 and 31, 1982, biologists from Region 3 and the Water Pollution Control Laboratory collected a sample of fish from both the Putah Creek Arm and Capel Creek Arm of Lake Berryessa. Both areas of the lake were sampled to determine whether or not the mercury contamination was localized in the Putah Creek Arm where the dead western grebes were recovered. Additional samples of bass and catfish were collected in June and July of 1983.

Mercury analysis was performed on a flesh sample of each fish using the acid/permanganate digestion and cold vapor atomic absorption method. Sufficient blanks and replicate samples were also analyzed to insure the accuracy of the data. (4)

Examination of mercury analyses data revealed that the mercury contamination of the aquatic food chain in Lake Berryessa appears to occur throughout the lake. There was no significant difference in the mercury levels found in fish taken from both arms of the lake. Threadfin shad collected in both arms of the lake had identical mercury concentrations of 0.04 ppm. There is a positive correlation between lengths and levels of mercury for both largemouth and smallmouth bass (Figure 1). However, the plot of length and mercury concentration found in flesh of channel catfish shown in figure 2 is very different than that of the bass. It appears the smaller catfish have higher concentrations than the larger catfish. One of the smallest catfish analyzed had a value of 1.9 ppm mercury in flesh while one of the largest individuals had a value of 0.21 ppm.

Eighty three percent of the legal-size bass analyzed were above the 0.5 ppm guideline established by the National Academy of Sciences (NAS) for the protection of fish and wildlife, and 13 percent were above the Food and Drug Administration (FDA) guideline of 1.0 ppm for fish. Sixty four percent of all channel catfish analyzed (no legal size limit) were above the 0.5 ppm NAS guideline and 2 percent were above the 1.0 ppm FDA guideline.

Some ten years ago, DFG provided the Department of Health Services (DOHS) with mercury concentration values in the edible flesh of Bay-Delta striped bass. This prompted DOHS to issue an advisory on the consumption of striped bass that appears in the current California Sport Fishing Regulations. The warning states "the State Department of Health Services has determined that, because of possible toxicity, no one should eat more than one meal per week of any striped bass from the San Francisco Bay-Delta region that weighs more than 4 pounds. No child or pregnant woman should eat <u>any</u> Bay-Delta striped bass weighing more than 4 pounds." This warning was based on DOHS using the old FDA guideline of 0.5 ppm for fish. Since then, FDA has changed their guideline to 1.0 ppm mercury in fish flesh, but DOHS has maintained the striped bass warning using the initial 0.5 ppm guideline. Additionally, DOHS has recently stated that the 0.5 ppm guideline will be used to evaluate the extent of mercury contamination of fish in Clear Lake. In light of this situation, it appears that DOHS and/or the Napa County Health Department should be advised of the levels of mercury found in fish from Lake Berryessa. (1)

(2) Furthermore, I propose that a more complete mercury contamination investigation of the aquatic food chain in Lake Berryessa be undertaken by DFG. The Special Studies Unit of the Water Pollution Control Laboratory would be responsible for the study and would request sample collection assistance from Region 3 (5)

The study would involve sampling additional fish in Lake Berryessa to clarify the picture of the mercury contamination found in different species of fish. Current levels of funding for WPCL support personnel for FY 83-84 are sufficient to begin an expanded study. Attachment 1 contains a schedule of estimated FY 83-84 expenditures for 134A. Upon departmental approval to begin the expanded study, additional funding could be solicited from other interested state agencies for the continuation of the study.

Roger E. Johnson
Asst. Water Quality Biologist

Attachments

(6)

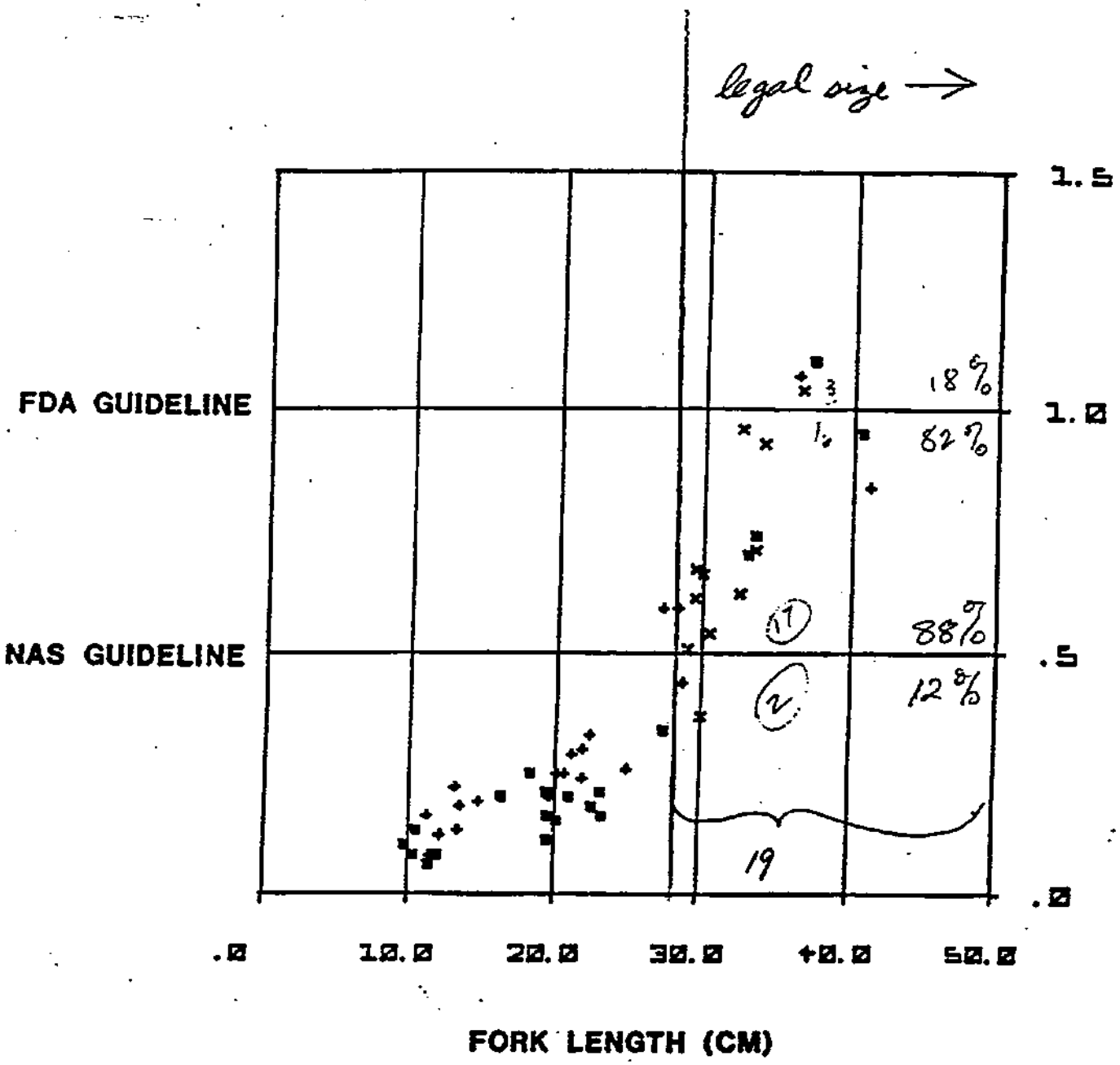

FIGURE 1. Mercury levels in tissue from largemouth bass (Micropterus salmoides) and smallmouth bass (M. dolomieui) collected from Lake Berryessa, Napa County.

(7)

Location Key

+ = Putah Creek Arm
⊡ = Capel Creek Arm
× = Pope Creek Arm

1983
Legal size - 88% >0.5 ppm
18% >1.0 ppm

Mercury deposits reportedly found in gold mine reservoir

The Daily Democrat/Sun./Nov. 16, 1986,

By John Bachman
Staff writer

High mercury levels were found in a Homestake gold mine reservoir that overflows into Cache Creek.

Monitoring of fish and wildlife using the reservoir is inadequate, plus the mine lacks plans to deal with the mercury problem if it persists, a technical review panel found.

The construction of the 6,000-acre-foot Davis Creek reservoir by Homestake Mining Co. "apparently resulted in the significant mobilization of locally present mercury into the food chain," the report read.

The mine did not follow the prescribed wildlife monitoring programs for waste ponds and the reservoir, and it lacks plans for dealing with reservoir environmental problems, the study said.

The reservoir, used by the mine for gold processing, sits near the abandoned Reid Mercury Mine. Davis Creek runs by the mine before entering the reservoir.

The creek, after leaving the reservoir, runs into Cache Creek.

Mercury, once in the sediment, can find its way into living organisms and is converted into the poisoness organic compound, methylmercury, which can destroy brain matter and neurons.

As it is consumed up the food chain, methylmercury increases in concentration, with its largest amounts usually found in older, larger consumers.

Future samples will include older generations of bass that have reproduced. The bass were planted to evaluate the reservoir's heavy metal content.

The first report by Yolo County's Homestake Technical Review Panel comes before the Planning Commission Wednesday morning.

The 11-member review panel, overseeing Homestake's extensive $280 million gold mine in upper Yolo County, called the high mercury levels unexpected.

The samples, however, were taken in August 1985 when the new reservoir was low and the fish were concentrated on the bottom. Now that the reservoir is full, the merury levels may drop.

By the time the report reaches the planning commission, the data will be 11-17 months old. The review panel suggested steps to decrease the lag time.

Water quality in the reservoir "has not substantially been affected by the mining operations," the report read. "Construction of the Davis Creek Reservoir has altered the ecology of the area."

See MERCURY, back page

Mercury

Continued from Page 1

The monitoring needs to analyze more fish and if the high mercury levels persist, warning signs should be posted on the reservoir, the panel said.

"We really need better information than that currently available," the panel's report read. "And we need a larger number of samples to get this information. Ten samples is probably a minimum number needed for this purpose."

While the review panel may not have expected high mercury levels, the problem was exactly what a handful of local residents had feared might happen.

The panel made a number of recommendations, including:

- Expanding the number of samples in the monitoring program and developing studies to look at trends over the life of the project.
- Starting mitigation measures on the mercury pollution in fish flesh.
- Analyzing storm runoff from the first rains to examine the level of mercury running from the hills into the reservoir.
- Studying the mercury in Davis Creek reservoir sediments.
- Looking for ways to contain the mercury seeping from the abandoned Reid Mercury Mine.
- Monitoring programs covering the potential hazards the reservoir mercury level poses to wildlife.
- Documenting wildlife using waste ponds and the reservoir.

Many of the mine's current programs are inadequate and do not follow the monitoring manual specifications, the panel said.

Monthly walks around the reservoir and waste ponds can document birds and other animals using them, they said.

Workers should report the number of animals hit by vehicles, rather than relying on monthly road inspections, the panel report read.

It also recommends expanding the air pollution checks for mercury and asbestos.

"An asbestos sampling program was to have been undertaken for the purpose of relieving public anxiety about the possiblity of contamination of the ambient air. An inadequate number of samples was drawn for that purpose.

"One sample, drawn from one site once a month, does not provide sufficient data for an analysis of environmental impacts."

The panel includes experts from many disciplines: water quality, air quality, aquatic ecology, toxicology and wildlife. Many panel members are UC Davis professors.

There are also two public members, John Ceteras and Avery Tindall, both Rumsey farmers. The other members: Daniel Chang, Marvin Goldman, Philip Signor, Richard Burau, Turid Reid, Susan Sanders, John Fielden, Kenneth Rickerson and Kent Strong.

About 20 percent of the mine is in Yolo County. It is expected to yield some 200,000 ounces of gold per year over the next 25 years. Some 134 million tons of rock must be mined to get 100 tons of gold.

The two public members on the panel also thought more than one water well between the mine pit and the reservoir should be monitored.

The mine pit will deepen and they are concerned more than one water well should be checked to ensure contaminated water wasn't flowing into the reservoir and being carried down Cache Creek.

They were also concerned the mining operation could throw mercury, asbestos and arsenic into the air, eventually washing into Cache Creek. Cache Creek, of course, recharges ground water for much of the county.

The mine area is naturally high in mercury and is surrounded by a number of old mercury mines. Capay Valley residents, earlier, were worried the monitoring system was not adequate.

The mined rocks, first washed with sulfuric acid, are baked in a pressure cooker, neutralized and leached. The gold is separated using activated carbon and a cyanide solution is used to take the gold from the carbon.

The waste from the process will be stored in a reservoir in Lake County, while Yolo County holds part of the mine and the reservoir to feed the mine.

R. SEARS

The American Journal of Forensic Medicine and Pathology
Volume 3 Number 4
December 1982

Luke G. Tedeschi, M.D.

The Minamata disease

ABSTRACT Minamata disease is a relatively new disease entity secondary to an environmental pollution, methyl mercury poisoning. The pathogenesis and pathology are described. The disease is a preventable one and precautionary steps through more stringent environmental policies are currently under way.

As a case in point of a disease secondary to an environmental pollution, I cannot think of a more cogent example than methyl mercury poisoning, commonly known as Minamata disease.

This condition, as so typically occurs in disease related to toxic and chemical hazards, has an insidious subtle onset, and is not easily recognized. The extraction of true scientific data from public outcry and emotional litagation is cumbersome and ineffectual. Witness the frustration experienced by the residents of the Love Canal in New York State for years, or the Vietnam veterans with their continuing plight over the Dioxin-agent orange herbicidal folly.

The city of Minamata with a population of approximately 40,000 inhabitants is located on the west coast of Kyushu, one of the four major islands of Japan. Since 1941, mercury had been used at a particular Minamata factory as a catalyst for the manufacture of vinyl chloride, and since 1951, for the production of acetaldehyde. With the increase in productivity, the toxic effluent which initially was a slow trickle became a steady stream as the foreign chemical surged into the waters of the nearby bay. It was eventually estimated that the amount of mercury deposited into the bay exceeded 100 tons.[1] Forewarning of the impending disaster was the strange erratic behavior of local cats whose sole nourishment was either dead seafood or remnants of fish discarded by the unsuspecting villagers.

In humans, the severity of signs and symptoms varied according to the amount of methyl mercury contaminated fish ingested. They included numbness of the perioral areas and extremities, disturbances in speech, ataxia, gait impairment, sensory, hearing, and speech disturbances, as well as concentric constriction of the visual fields. It would later be shown that the concentric constriction of visual fields, ataxia, and sensory disturbances were char-

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(9)

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MEDICAL PROGRESS REVIEW

The Many Faces of Methylmercury Poisoning

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7.2-138

ABSTRACT

Methylmercury (MM) is a very potent neurotoxic agent. Its role in polluting the environment is well documented. A vast amount of study over the past several decades has finally provided insight into many aspects of its effect. Exposure to MM may be through ingestion of poisoned fish or inadvertent misuse of grain treated with the poison as a fungicide. Major epidemics have occurred in Japan (Fetal Minamata disease), Iraq, Pakistan, Guatemala, and Ghana. Sporadic incidences have occurred in the United States and Canada. There is no effective antidote to counteract the effect of MM on the central nervous system, although the information documented should provide hope for more effective therapy in acute cases.

Mercury

It is "The hottest, the coldest, a true healer, a wicked murderer, a precious medicine and a deadly poison, a friend that can flatter and lie."

J. Woodall, 1639 [1]

It is now over forty years since the first clinical description of methylmercury (MM) poisoning in man [2]. Profound neurological disturbances were detected in a group of four patients exposed to

TABLE 1. Hunter-Russell Syndrome

Sensory impairment
Constriction of visual fields
Hearing impairment
Ataxia
Speech disturbances

industrial MM compounds. The constellation of signs and symptoms of MM poisoning bears the name of the authors, Hunter and Russell, the Hunter-Russell Syndrome. Table 1 depicts the five prominent signs and symptoms of the syndrome.

After an interval of 15 years, one of these patients has come to necropsy. Detailed pathological findings were reported by the same authors [3]. They described cerebellar cortical atrophy, selectively involving the granular cell layer of the neocerebellum and bilateral cortical atrophy in the area striata.

The short-chain alkyl organic mercury compounds (ethyl- and methylmercury) present a significant environmental health hazard to animals and humans. The most toxic of the organic mercury compounds is MM, the etiologic agent in the Japanese outbreak where the poison was transmitted through fish [4]. It is also widely used in agriculture as a fungicide for the treatment of seed grain. The MM cation possesses a unique biological property, rendering it one of the most poisonous compounds ever known to man through its profound and, in most cases, permanent effect on the nervous system.

This article is an attempt to review the different pharmacological, toxicological, epidemiological, and clinical aspects of MM poisoning.

BASIC CHEMISTRY

The organomercurials (phenyl and alkylmercury) in use today contain mercury with one covalent link to a carbon atom. This is a heterogeneous group of compounds with varying degrees of toxicity. The alkylmercury salts are by far the most dangerous of these compounds; MM is the most common [5]. The carbon-mercury bond in the organomercurial molecule is not always stable and after entering the ecocycle can undergo a process of biotransformation resulting in the release of inorganic mercury. This process of biotransformation is bidirectional and under favorable conditions the carbon-mercury bond may be formed [6]. The short-chain alkylmercurials (methyl mercuric cation), on the other hand, are extremely stable, even to strong acids in vitro [7].

TABLE 2. Important Properties of Short-Chain Alkylmercury Compounds

1. Delayed total body clearance due to increased enterohepatic circulation
2. 90% concentration within red blood cells (especially in the case of MM)
3. Ready passage through the blood-brain barrier
4. Disregard for the placental barrier
5. High affinity for fetal hemoglobin
6. High affinity for sulfhydryl group
7. Inhibition of choline acetylase activity

placental barrier than is mercuric chloride or phenylmercuric acetate [17]. In vitro studies have demonstrated that MM inhibits choline acetylase (choline acetyltransferase) [18]. Choline acetylase is an enzyme containing sulfhydryl amino acids. It catalyzes the final step in the synthesis of acetylcholine. Alkylmercuries have strong affinity for fetal hemoglobin [19] with a subsequent deleterious effect on the developing fetus (this will be discussed under teratogenicity of MM). Table 2 summarizes the important properties of short-chain alkylmercury compounds.

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ROUTES OF ENTRANCE

Methyl- and ethylmercury enter the body of animal or human by one of three routes [20]:

1. The respiratory tract
2. The gastrointestinal tract
3. Skin or mucous membranes

The absorption efficiency through all three routes is high. Moreover, alkylmercury readily passes into all tissue compartments of the body [11, 21].

SOURCES OF ALKYLMERCURY POISONING

Agriculture

Most cases of human poisoning with alkylmercury have resulted from the misuse of methyl- or ethylmercury compounds that are used

as fungicides to protect cereal seed grain (wheat and barley). They are inexpensive and highly effective, leading to a high crop yield. Widespread outbreaks have occurred in Iraq [22-24], Pakistan [25], Guatemala [26], and Ghana [27]. The two outbreaks in Iraq in 1956 and 1960 were both caused by the fungicide ethylmercury-p-toluene sulfonamide. Methylmercury dicyandiamide was responsible for the epidemics in Guatemala in 1963, 1964, and 1965. A similar outbreak occurred in Pakistan in 1969. The largest and most catastrophic ever recorded in terms if its extent and the ensuing morbidity and mortality occurred in Iraq (February 1972 to August 1972). Homemade bread prepared from wheat treated with a variety of organic compounds of mercury (phenylmercuric acetate, methylmercury dicyandiamide, methylmercury acetate, and ethylmercury) was consumed by a large segment of rural peasants of Iraq. The evidence pointed strongly to MM compounds as the cause of the epidemic [24].

Industry

Industrial pollution of lakes, rivers, and streams has resulted in high levels of alkylmercury in fish. This may result from direct release of organic compounds of mercury into the water or through biotransformation of inorganic mercury by microbial action [28]. This methylation of inorganic mercury occurs in the presence of an extract of a methanogenic bacterium and methyl vitamin B_{12} [29].

Biotransformation

The various mercury compounds coming in contact with the bottom mud of waterways are converted to MM. This is then passed up the food chain and concentrated several thousandfold in fish and shellfish [28].

Geological Sources

Mercury found in the ocean has come from the normal geological processes of erosion. Although this source of mercury is uncontrollable, it must be considered when evaluating concentrations in air and water used by man. The human exposure from this source of mercury does not present any hazard to health since the concentration of the metal is very low. Table 3 is a list of the sources of alkylmercury in the human diet.

TABLE 3. Sources of Alkylmercury in the Human Diet

Food stuff	Source
Cereals	Fungicides
Fish	Pollution
Fish	Geological sources

THE EPIDEMIOLOGY OF ORGANIC MERCURY POISONING

The earliest indication that MM was an environmental hazard came from the two epidemics in Minamata Bay and in the Agano River in Niigata, Japan, during the period 1953-1960. In Minamata, 121 people were poisoned with MM; 46 of them died [30]. In Niigata, 47 cases were identified with six deaths [31]. In both the Minamata and Niigata epidemics there was a relationship between the general nature of the disease and the level of intake of fish [32]. In both epidemics, one source of mercury was discharges from factories using mercuric chloride catalysts in the manufacture of vinyl chloride and acetaldehyde. Adults and children consuming contaminated fish suffered a degenerative neurological disease. "Fetal Minamata Disease" was the name coined for fetuses poisoned with MM when it was observed that 6% of births in Minamata (in contrast to about 0.5% elsewhere in Japan) resulted in children with cerebral palsy [4].

During the year 1969 in New Mexico, a family of nine, including a pregnant woman, ate pork over a period of 4 months. The animals had been fed seed grain coated with MM. Two children and one adult developed signs and symptoms of MM poisoning [33, 34]. It is the only published report of fetal toxicity due to MM poisoning in the United States.

The 1972 outbreak of MM poisoning in Iraq was a major one, with 6530 hospital admissions and 459 hospital deaths attributed to MM [24]. Farmers ate homemade bread prepared from seed wheat treated with MM fungicide. This route appeared to be the predominant cause of the poisoning. The grain was colored with a red dye to indicate that it had been treated with mercury. Washing the grain removed the dye but not the MM and gave the farmers the erroneous impression that the grain was edible. Some farmers fed test doses to chickens and other domestic animals for a period of a few days and observed no immediate harmful effects because of the long latency between the onset of symptoms and the ingestion of MM. This gave the farmers a false sense of security. Moreover, the sacks of grain were labeled with written and diagramatic warnings in English, a language that is unfamiliar to the population.

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TABLE 4. History of Alkylmercury Poisonings Outbreaks[a]

Vehicle of exposure	Outbreak location	Year	Reported cases	Agent
Fish	Minamata	1953-60	121	Methylmercury
Seed grain	Iraq	1956	100	Granosan (ethylmercury)
Seed grain	Iraq	1960	1022	Granosan (ethylmercury)
Fish	Niigata	1964-65	48	Methylmercury
Seed grain	Guatemala	1963-65	45	Methylmercury
Seed grain	Ghana	1967	144	Ethylmercury
Seed grain	Pakistan	1969	100	Methylmercury
Seed grain	Iraq	1971	6530	Methylmercury

[a]Adopted and modified from Clarkson et al. [35].

Table 4 summarizes the history of epidemics of alkylmercury poisoning around the world.

Except for three epidemics caused by ethylmercury (Iraq in 1956 and 1960; Ghana in 1967), the majority of the outbreaks was due to MM.

GENERAL CLINICAL MANIFESTATIONS OF ORGANIC MERCURY COMPOUNDS POISONING

The symptoms and signs of one population exposed to MM in the Iraqi epidemic of 1971-1972 resembled those previously described in other outbreaks of MM poisoning [24]. Parasthesias, ataxia, visual changes, dysarthria, hearing defects, and deaths were all described in the adult and pediatric population who ingested the poison; parasthesias were the earliest and most persistent. The clinical observation that neurological symptoms and signs were predominant during the 1971 Iraqi outbreak lead to the early assumption that MM may have been the etiological agent. MM was confirmed later by analytical studies of the treated seed and of the blood and hair samples collected from the patients. The involvement of cardiovascular, urinary, gastrointestinal, and hemopoietic systems, which was commonly encountered in ethylmercury poisoning in the 1956 and 1970 outbreaks in Iraq [36], was absent in the 1971 outbreak.

The short-chain alkylmercury compounds, especially MM, are clas-

Sr. Orquiza Pardo

CHAPTER 6

EFFECTS ON HUMAN HEALTH

Methylmercury compounds have no known normal metabolic function; their presence in the tissues of living organisms, including man, represents contamination from environmental sources. Ultimately, limits for the release of any potentially toxic substance, including mercury, into the general biosphere must be assessed in terms of risk both to human populations that might be exposed to it, and to the ecology. A useful cost-benefit analysis of the use of mercury compounds and their release into the environment would require accurate and specific delineation of risk. Risk must be defined in terms of the toxic effects of acute, as well as chronic or lifetime, human exposure, including all life-cycle stages. In addition to evaluating toxic effects on the central nervous system, the potential risks of adverse genetic, reproductive, teratogenic, and carcinogenic effects of these nonessential compounds must be determined before definitive human and environmental tolerance levels can be estimated with confidence.

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DEFINITIONS

The critical concentration of a toxic substance in a cell or organ is that level at which an adverse or critical effect can be detected by clinical observation, functional tests, or morphological or biochemical techniques. Critical organ concentration is defined as the mean concentration in an organ at the time any of its cells reaches critical concentration. The critical organ is the organ that first attains critical organ concentration (Task Group on Metal Accumulation 1973).

Existing evidence strongly indicates that the critical organ system in methylmercury ($MeHg^+$) poisoning of man is the central nervous system (Berglund et al. 1971, Bakir et al. 1973, Task Group on Metal Accumulation 1973, WHO 1976a, Tsubaki and Irukayama 1977). Symptoms and signs observed in human populations after exposure

13

to toxic doses of methylmercury are dominated by neurological disturbance. These effects may appear weeks to months after acute exposure to toxic doses. A progression of symptoms and signs after short- and long-term exposure includes: paraesthesia (numbness and tingling of the lips, mouth, hands, and feet), dysarthria, ataxia, concentric constriction of the visual fields, blurred vision, blindness, deafness, and ultimately death.

Relationships between dose and degree of an effect have not been quantitatively established for methylmercury because of difficulties in quantitating clinical effects. It has, however, been possible to relate dose and appearance of various effects of methylmercury. Doses have been estimated from ingested amounts as well as index media such as blood or hair concentrations. An indication of the primitiveness of current ability to measure effect is that the critical effect has to be defined as broadly as paraesthesia, a symptom response reported by the exposed individual. No other effect has yet been recognized at lower doses.

An effect is a defined biological reaction that may be quantifiable and graded (degree of effect), or quantal (all or none). Response is the frequency of an effect in a population resulting from exposure to a specific dose, i.e., an enumeration of reactors versus nonreactors. Effect may be thought of as a change, due to a dose, within an individual; response, the number of different individuals of a total population showing a specific effect (Task Group on Metal Accumulation 1973). Thus, it follows that there is a population dose-response relationship for each observable effect.

TOXIC EFFECTS OF METHYLMERCURY IN ADULT POPULATIONS

Hazard Estimates

Studies of human populations in Japan and, more recently, in Iraq after large-scale, high-dose exposure have documented the toxicity of methylmercury compounds for human beings (Berglund et al. 1971; Bakir et al. 1973; WHO 1976a, 1976b; Tsubaki and Irukayama 1977). Observations on these and other exposed populations have been used to estimate the hazard of methylmercury exposure for human populations.

Review of the Health Effects of Methylmercury

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Key words: methylmercury; dose–response; health effects; fish.

The study critically reviews recent data relating to the health effects of methylmercury in man and the attendant dose–response relationships. New data obtained from animal studies, including pre- and postnatal exposure, are also examined. The consumption of fish and fish produce represents the major source of methylmercury exposure in the general population. Reported mercury concentrations in fish throughout the world are examined, particularly in the Mediterranean Sea. Here there is limited knowledge of methylmercury intake in critically exposed populations such as fishermen, employees of the fish industries and their families. The measurement of mercury in hair is now regarded as the most useful indicator of exposure but more experimental data are still required to increase the value of this index. The threshold levels of methylmercury in blood, hair and for dietary intake, as estimated by the World Health Organization, have been largely endorsed. However, new information from Japan and Canada suggests the existence of a latency period for some effects, so that the frequency or probability of their occurrence is inversely related to the duration of exposure. Incorporation of such findings would therefore lead to the designation of lower threshold values than are presently recognized. Pregnant women and the fetus have been identified as groups that are at special risk. The fetal blood mercury level is up to twice that of the mother and the sensitivity of both mother and fetus may be higher than in non-pregnant adults. This should be taken into account when assigning protective threshold concentrations.

INTRODUCTION

In 1976 the World Health Organization (WHO) issued the first of the Environmental Health Criteria documents on mercury[1] which examined, in particular, data from the three major outbreaks of methylmercury-induced illness; namely, at Minamata and Niigata in Japan, and in Iraq. By 1980 a considerable amount of new data had been published on health-related issues, which included suggestions of new areas of concern in other populations with large intakes of fish (the major source of methylmercury exposure in humans). Much of the data below[2] was presented at a further WHO Consultation[3] called to re-examine the new evidence. The United Nations Environment Programme (UNEP), the WHO and the Food and Agriculture Organization (FAO) also used the data at a meeting to consider the possible risks to health in countries bordering the Mediterranean Sea.[4]

The review below has been further updated to include recent important findings. It first considers reported data of fish mercury levels throughout the world, together with estimations of human exposure to methylmercury from dietary fish consumption.

The metabolism of methylmercury is examined with respect to its distribution in – and elimination from – human and animal tissues. The role of blood, hair and intake data in assessing exposure is considered in animals, humans and infants of exposed mothers.

The health effects on the central nervous system (CNS) in adult humans and in animals are then reviewed with particular attention being paid to data from human studies of exposed populations in Japan, Canada and elsewhere.

The generally greater vulnerability of prenatal life and infants to methylmercury is next reviewed using data from human studies and from experimental animals.

Finally, the dose–response relationships and thresholds are discussed, considering effects in animals, humans and the groups at special risk; namely, pregnant women and the fetus.

METHYLMERCURY IN FISH: THE SOURCE OF HUMAN EXPOSURE

General comments

It is accepted that for most individuals, consumption of fish and fish produce is by far the most significant route of exposure to environmental mercury. It is almost entirely in the methylmercury form. The contribution to total mercury intake via inhalation or the ingestion of mercury in terrestrial diet and drinking water is negligible by comparison.[5]

The Health Criteria Document confirmed several important findings related to methylmercury intake:

(1) Concentrations in most freshwater and marine fish are less than 100–200 $\mu g\ kg^{-1}$ wet weight† although higher levels of 200–5000 $\mu g\ kg^{-1}$ may be found in fish from contaminated freshwater, reaching 20 000 $\mu g\ kg^{-1}$ in badly polluted waters.

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‡ Medical Academy in Lodz, Institute of Environmental Research and Bioanalysis, 90-145 – Lodz, Narutowicza 120 A, Poland.

† Wet weight values are used throughout. Figures always pertain to fish muscle tissue.

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Mercury Rock Waste Studied For Effect on Public Health

By PETER KNUTSON

At least one species of fish in Clear Lake has concentrations of mercury higher than that allowed by the federal government for commercial distribution, according to test results, the Record-Bee has learned.

The State department of health is aware of the test results and says the mercury levels are not high enough to pose a health hazard. A spokesman says the department does not plan an investigation of the extent of the contamination and is not going to issue a health warning.

Medical experts disagree on what levels of mercury pose a health hazard.

The United States geological service is proposing further studies of mercury in lakebottom sediments, according to Mark Walters, environmental control officer for Lake county. Walters wrote a letter last Thursday to USGS on behalf of the planning department making recommendations on the scope of the study so it will be useful to the County.

From an investigation that began in early January, the Record-Bee has also learned:

—The report prepared by the health department on which it bases its opinion contains crucial errors.

—Results of tests on sediment from the lakebottom show a build-up of mercury that has occured in the past 50 to 100 years and may be due to careless disposal of mine wastes.

—Waste rock from old mercury mines is being used as fill material in construction projects in Lake county, including sewer and water installations.

—After learning on October 11, 1977 that its stockpile of mine wastes contained "extremely high" concentrations of mercury, it took the Kelseyville water district until February to remove the stockpile from its location near the bank of Kelsey Creek, despite warnings by County supervisor Ray Mostin.

Officials from various agencies say privately that an investigation into the source of mercury and extent of contamination is warranted by the evidence currently available.

Since the Record-Bee first learned of excessive mercury levels in fish and sediment, several agencies contacted by this paper have conducted further tests.

Mercury concentrations in fish are greatest in Large-mouth bass, according to the tests conducted by fish and game.

But high levels of mercury have also been detected in catfish, carp and hitch.

The California department of health was aware of mercury concentrations in carp as early as July 12, 1976, and has been informed of subsequent test results on game fish which were conducted by fish and game.

Officials in the Lake County branch of the health department said there was no danger from the mercury mine wastes stockpiled at the Kelseyville water district and say mine wastes are not contributing to high concentrations in the sediment.

The department of food and drug administration of the federal government has designated .50 parts per million of mercury in the flesh of fish as its federal action guideline level. When commercial fish products which cross state lines contain .50 parts per million of mercury, they are prohibited from being sold.

A total of three tests have been conducted recently on Clear Lake fish: one by the federal food and drug administration, and two by the State fish and game department—all showing evidence of excessive levels of mercury in some Clear Lake fish.

The mercury contained in the mine wastes and also found in lake bottom deposits is elemental mercury, which is considered dangerous only in relatively large quantities.

The mercury in the fish however is methyl-mercury, which is an organic compound formed from elemental mercury and is dangerous in very small quantities, according to health experts.

Methyl-mercury is formed from inorganic mercury by exposure to bacteria.

Officials familiar with the situation speculate that the mercury in the fish is the result of elemental mercury deposits in the sediment of the lakebottom being changed into methyl-mercury by bacteria and then entering the food chain.

The first indication that Clear Lake fish might contain excessive levels of mercury came in 1976 as a result of a test by the food and drug administration of the federal government.

A small sampling, 12 fish altogether, was taken from the lake on March 24 and 25, 1976 and analyzed for pesticide and mercury contamination.

"Three of the 12 samples we analyzed were found to contain excessive residues of both pesticides and mercury," Ronald G. Fischer, director of the compliance branch of the San Francisco office said in a letter, dated July 12, 1976, and addressed to Chambers F. Bryson of the State department of public health.

The mercury level of one carp was listed as .44 parts per million (ppm), a second carp at .60 ppm, and a hitch at .56 ppm.

"Information obtained during our investigation shows that the fish are harvested live, held and shipped live to local consignees."

Fischer identified Frank Grasteit, of Lakeport, and Richard Bartholf, of Ukiah, as those harvesting the fish, and asked Bryson to notify his office if any interstate distribution of the fish was discovered —"so that we can make appropriate follow-up."

A copy of the letter was sent to the department of fish and game office in Yountville, prompting an immediate investigation.

(Continued on Page A-3)

Lake County Record-Bee 3/1/78

(15)

HEALTH WARNINGS 1988

The State Department of Health Services (DHS) determines whether a public health hazard exists in eating fish from certain locations in California, on the basis of data from laboratory testing programs. Over the past several years the following health advisories have been issued based upon DHS' determinations:

Santa Monica Bay/Palos Verdes Peninsula/Los Angeles–Long Beach harbor area (Southern California)

Because of elevated DDT and PCB levels:

- No one should eat white croaker (tom cod, kingfish) from this area.
- No one should eat the liver of any species of fish from this area.
- Women who are pregnant or may ever become pregnant and nursing mothers should eat no more than 4 oz. of one local sport fish per month (not to include any white croaker).
- Children age 15 and under should eat no more than 4 oz. of one local sport fish per month (not to include any white croaker).
- Others who eat sport fish from this area should consume no more than 2 lbs. of fish per month (not to include any white croaker).
- No one should eat any species of fish caught in areas immediately around White Point Outfall (near Palos Verdes Peninsula), Gerald Desmond Bridge (in Long Beach Harbor), and Cabrillo Pier (in Los Angeles Harbor).

DHS recommends that skin and fatty tissue be removed from fish before cooking, and that fish be cooked by baking or broiling on a rack to reduce DDT and PCB levels in the edible portions.

Salton Sea (Imperial and Riverside Counties)

Because of elevated selenium levels, no one should eat more than 4 oz. of croaker, orangemouth corvina, sargo, and tilapia taken from the Salton Sea in any two-week period. Women who are pregnant or who may soon become pregnant, nursing mothers, and children age 15 and under should not eat fish from this area. (An additional warning for the New River has been published and posted by the Imperial County Health Department for people to avoid physical contact with the waters of the New River and to avoid eating any fish of any variety.)

Clear Lake (Lake County)

Because of elevated mercury levels, women who are pregnant or may soon become pregnant, nursing mothers, and children under age 6 should not eat fish from Clear Lake, Lake County. Adults should eat no more than the amount indicated below. Children 6–15 years of age should eat no more than one-half the amount indicated.

largemouth bass over 15": 1 lb. per month
or largemouth bass under 15": 2 lbs. per month
or channel catfish over 24": 1 lb. per month
or channel catfish under 24": 3 lbs. per month
or crappie over 12": 1 lb. per month
or crappie under 12": 3 lbs. per month
or all white catfish: 3 lbs. per month
or all brown bullhead: 6 lbs. per month
or all Sacramento blackfish: 6 lbs. per month
or all hitch: 10 lbs. per month

San Francisco Bay Delta region

Because of elevated mercury levels, no one should eat more than four meals per month of any striped bass from the San Francisco Bay Delta region. Women who are pregnant or may soon become pregnant, nursing mothers, and children under age 6 should not eat fish from the area.

Because of possible infestation by parasitic organisms, no fish of any kind from the Bay-Delta region should be eaten raw. Thorough cooking destroys such parasites.

Lake Nacimiento (San Luis Obispo County)

Because of elevated mercury levels, no one should eat more than four meals per month of largemouth bass from Lake Nacimiento, San Luis Obispo County. No women who are pregnant or may soon become pregnant, nursing mothers, and children under age 6 should eat largemouth bass from the area.

Harbor Park Lake (Los Angeles County)

Because of elevated chlordane and DDT levels, no one should eat goldfish or carp from Harbor Park Lake, Los Angeles County.

Grassland area (Merced County)

Because of elevated selenium levels, no one should eat more than 4 oz. of fish from the Grassland area, Merced County, in any two-week period. Women who are pregnant or may soon become pregnant, nursing mothers, and children age 15 and under should not eat fish from this area.

Because of elevated selenium levels, no one should eat fish taken from the Kesterson National Wildlife Refuge, Grassland area, Merced County.

Lake Berryessa (Napa County)

Because of elevated mercury levels, women who are pregnant or may soon become pregnant, nursing mothers, and children under age 6 should not eat fish from Lake Berryessa, Napa County. Adults should eat no more than the amount indicated below. Children 6–15 years of age should eat no more than one-half the amount indicated.

largemouth bass over 15": 1 lb. per month
or largemouth bass under 15": 2 lbs. per month
or all smallmouth bass: 1 lb. per month
or all channel catfish: 3 lbs. per month
or all white catfish: 2 lbs. per month
or all rainbow trout: 10 lbs. per month

Lake Herman (Solano County)

Because of elevated mercury levels, women who are pregnant or may soon become pregnant, nursing mothers, and children under age 6 should not eat fish from Lake Herman, Solano County. Adults should eat no more than 1 pound per month of largemouth bass, and children 6–15 years of age should eat no more than 8 ounces per month of largemouth bass.

Guadalupe Reservoir, Calero Reservoir, Almaden Reservoir, Guadalupe River, Guadalupe Creek, Alamitos Creek, and the associated percolation ponds along the river and creeks (Santa Clara County)

Because of elevated mercury levels in fish, no one should consume any fish taken from these locations.

Art work was rendered by Paul Johnson.

Cover Photograph: R. Valentine Atkinson.

Photograph, Courtesy California Trout.

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WHOLE ROCK ANALYSIS OF OVERBURDEN SAMPLES FOR McLAUGHLIN PROJECT

PARAMETER	UNITS	SAMPLE DESIGNATION											
		1AB	1C	1D	2	3	4	5	6	7	8	9	10
Aluminum	mg/kg	13,000	32,000	13,000	29,000	44,000	30,000	28,000	8,300	20,000	5,800	6,400	18,000
Antimony	mg/kg	150	23	63	95	250	120	63	160	240	530	350	160
Arsenic	mg/kg	440	95	270	280	320	210	210	330	430	760	380	300
Barium	mg/kg	50	110	40	82	280	230	120	600	160	81	300	92
Beryllium	mg/kg	0.4	0.7	0.6	0.8	0.4	0.8	0.6	0.1	0.6	0.2	0.2	0.5
Boron	mg/kg	380	770	420	510	830	420	460	250	590	1,500	550	850
Cadmium	mg/kg	0.3	0.9	1.7	1.4	1.5	1.4	1.8	1.4	1.6	1.6	1.4	1.6
Calcium	mg/kg	4,400	6,200	1,300	380	9,200	16,000	11,000	110	5,600	13,000	12,000	16,000
Chromium	mg/kg	120	78	68	54	370	420	130	180	270	720	390	380
Cobalt	mg/kg	35	28	26	64	43	87	46	8.0	48	82	37	48
Copper	mg/kg	55	60	59	68	52	54	68	44	48	29	45	43
Gold	mg/kg	1.5	3.0	<1	3.1	4.7	3.7	1.8	<1	2.3	<1	1.0	2.2
Iron	mg/kg	49,000	44,000	35,000	46,000	48,000	42,000	71,000	26,000	51,000	60,000	40,000	51,000
Lead	mg/kg	3.0	4.1	6.0	8.2	1.0	1.0	<1	<1	1.0	6.1	<1	5.1
Magnesium	mg/kg	26,000	16,000	4,700	3,900	13,000	34,000	31,000	1,300	16,000	99,000	22,000	83,000
Manganese	mg/kg	480	520	210	840	380	960	1,500	59	700	1,200	620	880
Mercury	mg/kg	140	14	6.9	5.6	32	10	1.6	21	5.8	10	42	2.4
Nickel	mg/kg	360	100	130	260	290	670	79	36	380	1,600	590	630
Potassium	mg/kg	2,000	9,400	2,800	6,100	2,000	1,800	5,600	6,100	4,100	230	390	2,200
Selenium	mg/kg	0.9	1.5	0.3	1.8	2.2	<0.1	<0.1	0.3	0.4	<0.1	2.0	2.2
Silica	%	62	58	59	48	52	48	51	58	55	51	59	46
Silver	mg/kg	9.4	0.5	1.1	1.0	<0.1	0.2	0.3	0.2	0.3	9.4	0.4	0.7
Sodium	mg/kg	220	270	200	320	3,400	4,100	410	260	760	150	150	210
Strontium	mg/kg	66	110	36	64	180	370	81	59	190	180	260	220
Sulfur	%	2.94	0.92	2.97	0.18	0.07	1.52	1.32	1.55	4.55	2.80	0.97	0.78
Thallium	mg/kg	2.2	1.1	3.9	3.0	3.9	10	2.0	4.2	2.9	2.9	1.1	1.1
Vanadium	mg/kg	130	130	120	110	180	190	380	130	130	33	34	130
Zinc	mg/kg	98	160	130	270	75	150	96	26	82	34	41	81

TABLE 3.1

DAPTOL

	621.0
	279.0
	345.0
	<4.4
	14.6
	035.0
	496.0
	257.0
	178.0
	181.0
	51.8
	44.0
	92.5
	66.6
	78.4
	73.0
	03.0
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Bull. Environm. Contam. Toxicol. 23,779-783 (1979)

Source of Mercury in Fish in New Impoundments

J. A. Cox, J. Camahan, J. DiNunzio, J. McCoy, and J. Meister
Department of Chemistry and Biochemistry, Southern Illinois University at Carbondale, Carbondale, Ill. 62901

That high levels of mercury are often found in fish flesh in new impoundments is well-known; however, the source(s) of the mercury is typically not identified. From the present study data are obtained which support a hypothesis that the primary source may often be natural rather than anthropogenic. A subsequent conclusion is that the problem will be short-term; within ca. 5 years the mercury levels in fish in such systems should be normal.

This study was performed on Cedar Lake, Jackson and Union Counties in Southern Illinois. The reservoir was constructed in the early 1970's, reaching normal pool level during 1974, with a surface area of 7.1×10^6 m^2 and volume of $5.1 \times 10^7 m^3$. The $1.8 \times 10^8 m^2$ watershed and lake area is unglatiated and composed primarily of Pennsylvanian sandstone stratum; some shale and limestone are present. The soil types are basically Belknap-Heymond.

In February, 1976, a joint test by the Illinois Department of Conservation, Illinois Department of Public Health and the Illinois Environmental Protection Agency found that the mercury in the largemouth bass, *micropterus salmoides*, in that impoundment often exceeded the 0.5 mg/kg (ppm) level which was the upper limit for safe consumption according to the U.S. Food and Drug Administration. The results were confirmed in our laboratories. The present study was initiated to determine the source of the mercury.

MATERIALS AND METHODS

The fish for this study were obtained by netting, shocking, and angling. Soil samples were taken with a core sampler. Bottom sediments were sampled with an Eckman dredge.

Total mercury was determined by flameless atomic absorption spectrometry (HATCH and OTT 1968). The method was modified by discarding the results when the blanks had less than 90% transmittance (COX *et al.* 1975).

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The determinations of total mercury in fish were referenced to the weight of fillets which were dried with filter paper. Soil and sediment samples were dried at 110°C, powdered, and screened with a 500 micron sieve prior to weighing and digestion.

The soil samples after screening were divided into three parts, of which one received addition of a known quantity of mercury. All portions (1-3 gm each) were digested in 20-25 mL of concentrated sulfuric acid. During the digestion three additions of 30% hydrogen peroxide, 2 mL each, were made. The digestion was stopped when the solutions became gray. About 0.5 mL of 5% $KMnO_4$ and 20 mL of water were added. The solutions were filtered and diluted to 100 mL. Except for the filtration and standard addition, the procedure is that recommended previously (HATCH and OTT 1968). If the recovery of the added mercury exceeded 75%, the results were retained.

Methylmercury was determined by gas chromatography with a ^{63}Ni electron capture detector. Sample treatment, which involves extraction from an aqueous slurry into benzene in the presence of cysteine acetate, followed a previously reported procedure (WESTOO 1967).

Reagent Grade chemicals were used throughout except that the nitric, perchloric, and sulfuric acids were Baker Analyzed, Suitable for Mercury Determination. Distilled water was used after passing through a mixed bed ion exchange column and charcoal filter.

RESULTS AND DISCUSSION

During the course of this investigation about 200 fish samples were analyzed for mercury. As expected, species which were high in the food chain contained more mercury.

A typical set of data are summarized in Table 1. For bass the overall average, 0.48 ppm, was near the above mentioned recommended limit of 0.5 ppm Hg for safe consumption. The flesh of crappies, *pomoxis annularis*, showed a similar result, a 0.59 ppm Hg average for 15 samples taken during a comparable period. Bluegills, *lepomis macrochirus*, which are lower in the foodchain, gave an average value below 0.2 ppm.

The above results suggest that the high Hg levels in the bass and crappies are a result of biomagnification through the foodchain. Supporting this interpretation is the percentage of the mercury which is organically-bound. Five largemouth bass in the range of 23-36 cm had an average methylmercury chloride

TABLE 1

Mercury in Cedar Lake Largemouth Bass, Fall, 1976

length,cm	ppm Hg,range	ppm Hg,ave.	Samples
15-25	0.14-0.31	0.27	3
25-35	0.11-0.81	0.49	11
35-60	0.49-1.20	0.67	4

:ontent of 0.32 ppm which was 58% of the total Hg in :hese samples. Further, the organic mercury concentra-:ion was highly dependent upon size, ranging from).0 ppm in the 23 cm sample to 0.55 ppm in the 35 cm)ass. Biomagnification is known to mainly occur with rganic mercury; the retention of methylmercury in fish lesh is on the order of at least a few years which ccounts for the effect of size (age) on concentration LELAND *et al.* 1976, HASSELROT 1974).

The data in Table 2 indicate that the mercury ntered the food chain from the soil which was inundated

TABLE 2

Effect of the Aquatic Environment on the Mercury oncentration in the Soil

	Hg,ppm			
	site 1	site 2	site 3	site 4
shore	0.08	0.04	0.15	0.11
oreline	0.01	0.02	0.08	0.05
ke bottom	0.00	0.02	0.00	0.02

(21)

when the impoundment was constructed. Here sites along the lake were selected on the basis of having undisturbed soil features over a wide area. Onshore samples were taken about 20m from the maximum pool shoreline. Lake bottom samples were dredged from depths of 5-10 m below the normal pool surface. The three locations at each site were on a straight line.

The Hg level on the lake bottom is clearly well-below that onshore, and the shoreline yields an intermediate value. Apparently the mercury in the soil is in an insoluble state but can enter the food chain through action of micro-organisms in the aquatic environment.

Direct solubility of the mercury species is unlikely. The Hg content of the water is 0.01 µg/L, or less, which is below the average level in water supplies (DURUM *et al.* 1971). Although this concentration is sufficient to cause high Hg levels in fish (POTTER *et al.* 1975), it would not yield the high organic mercury contents which were observed.

A consequence of the soil being the source of the mercury is that upon depletion, which has essentially occurred according to the Table 2 results, the average concentrations in the fish in the impoundment should become lower because of the influence of recent hatches. Indeed, recent data from the Illinois Department of Public Health (BUITT 1979) verify this prediction. Nine largemouth bass which were collected in September and October 1977 had an average level of 0.19 ppm Hg (range, 0.12-0.24 ppm).

Of general importance is that the source of the mercury in the soil is apparently natural rather than anthropogenic. The possibility of mercury-based fungicides being the source is discounted because of the limited area of the watershed where they could have been used and because 30 soil tests at various locations in the watershed did not show elevated Hg levels. In the latter, only one sample, 0.8 ppm, was out of the onshore range of Table 2. Repeated tests in that area did not show other samples with high concentrations. A coal-burning power plant in the area was also not considered the source since a recent study on an impoundment which is located immediately downwind of such a plant only showed 0.07 ppm Hg in largemouth bass (ANDERSON and SMITH 1977).

That the Hg source is probably natural is quite significant when it is considered that the soil type of the watershed is not associated with unusually high Hg levels. Thus predator fish in new impoundments should

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be anticipated to have elevated Hg concentrations. If such impoundments are to be used as fisheries, close monitoring of Hg in the predator fish during the first few years is recommended. It may sometimes be necessary to ban fish harvest during this period.

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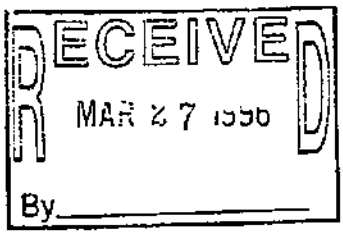
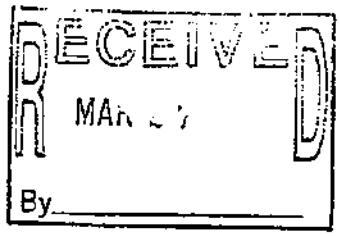
WALTER STORZ
3-27-96

Question that should be answered by County Counsel & Assessor
Are we opening a door for a possible law suit?
Who is going to be held responsible if there is a law suit under the following condition?
1. Do erosion?
2. Do to weeds from the buffer zone getting into neighboring property?
3. Do to loss of value of properties next to pits?
4. How about water quality?

We as taxpayers want to know the answer. And we must insist the answer be a yes or no. The answer should be made public. The taxpayers have a right to know.
We also have the right to know the supervisors response to these questions.

Walter Storz





MEMO:

To Whom It May Concern:

I'm writing regarding the out of channel mining. I would like to see it permitted but also used as a flood control by placing weirs to skim the water into the pits when it reaches certain elevation.

Also regarding the concerns of financing any future contamination of our underground water supply. I'm suggestion an additional $0.05 per ton to be assessed and placed into a trust fund that cannot be used for anything but to clean our water supply if it becomes contaminated due to mining. This fund would remain in this account for a minimum of 50 years after the mining has ceased.

Sincerely,

Short Parker

Short Parker

3/24/96

FAX	Heidi Tschudin, Project Manager & Dave Morrison
Fax #	916-444-0227 or 666-8156
Phone	916-447-1809
From:	Bob & Mitzi Speirs
	PHONE: 916-796-3355 FAX : 916-796-2256

Heidi & Dave:

I have been told that some of your consultants question my statements about viruses in the environment and are awaiting documentationl

Would you please asked your EIR consultants to consider the enclosed information in regards to groundwater pollution from deep wet pits.

Bob

Rerun pages
1, 8, 9, 10, 11, 12

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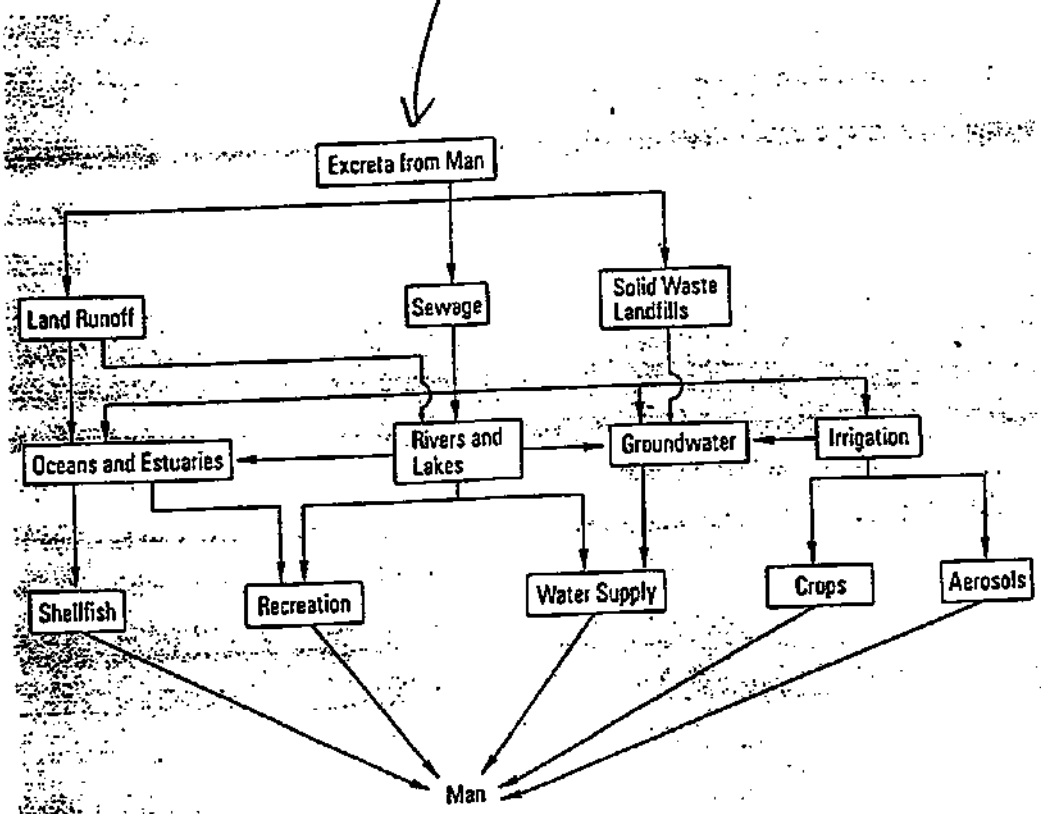
Monographs in Virology
Editor: J.L. Melnick

Enteric Viruses in Water

Just substitute duck and other animal excreta

Editor: J.L. Melnick



KARGER

"WATER - ONE OF LIFE'S MOST ESSENTIAL NEEDS, WHICH WHEN CONTAMINATED, BECOMES A VECTOR OF DISEASE WITH ENORMOUS IMPLICATIONS FOR PUBLIC HEALTH."

GM---1

Looking for infection in all the wrong places

By Spyros Andreopoulos

THE MYSTERY illness with the flu-like symptoms that has claimed several lives at a Navajo Reservation in the U.S., the outbreak of cholera in India and the spread of AIDS worldwide indicate that we are losing the war on bugs.

In our zeal to trumpet the many advances of modern medicine, including the control of pathogens with vaccines and antibiotics, we have overestimated our ability to defend against local and global epidemics.

What's needed, Nobel Prize winning geneticist Joshua Lederberg of Rockefeller University urged as long ago as 1975, is vigorous research on the biology of viruses. "As the custodian of an ever more crowded planet, we must look to research on viruses and other pathogens as one of the keys to survival," he told attendants at a conference at Asilomar on developing safety guidelines for genetic engineering research. "Besides this, we should also be multiplying manyfold our often piteously small investment in public health measures for global health."

Spyros Andreopoulos is a science writer and director of communications for Stanford Medical Center. He wrote this report for Pacific News Service.

The paradox of having achieved stunning advances in hygiene and disease prevention, Lederberg pointed out, was that there are now populations who have been immunized since childhood to life-threatening infections but for that very reason are more vulnerable to new epidemics.

How viruses become virulent and spread is still a great mystery. Writing in the April issue of Scientific American, biologist Paul W. Ewald of Amherst College took issue with the conventional view that bugs thrive only so long as their hosts are alive and well. Instead, he agreed with those biologists who now believe that human behavior – both individual and social – can also influence whether microorganisms evolve into benign or harmful forms.

Pathogens that cause cholera, smallpox, tuberculoses and AIDS, for example, have severe effects on humans. Others rarely cause any damage beyond a cold or sore throat. The variations in virulence hinge in part on how a pathogen is transmitted and its ability to survive outside the host for long periods.

To spread infectiousness, pathogens must avoid being destroyed by the host's immune system while maintaining access to new hosts. They commonly do so by hiding in a host cell and suppressing the creation of proteins that would trigger an immune response. They remain dormant until their host causes them to be transmitted to susceptible individuals either through physical contact, sexual activity (as is the case with AIDS) or through a vector such as a mosquito.

SOMETIMES TAKING simple sanitation or hygiene measures against certain infectious agents is all that's needed. The introduction of uncontaminated drinking water supplies in cholera-endemic regions of India in the 1950s and 1960s, for example, reduced virulence in bacteria because in clean water they can't benefit by reproducing rapidly. But in Bangladesh, where socioeconomic turbulence delayed water purification, a virulent form of cholera persists.

Similarly, researchers at the National Cancer Institute have documented a lengthening of the time between HIV infection and the onset of AIDS among male homosexuals independent of their treatment with the drug AZT. The finding is viewed as a hopeful sign of a decline in HIV virulence in response to altered individual behavior as a result of public education and improved knowledge about transmission of HIV.

In contrast, HIV-positive intravenous drug users who continued high-risk sexual activity did not experience a lengthening of time before they came down with AIDS.

Unfortunately, it has taken the AIDS epidemic to prompt an re-examination of infectious microorganisms and their threats to human health in the U.S.

A recent report published by the Institute of Medicine's Task Force on Emergent Infections emphasizes the nation's urgent need to strengthen the research and monitoring of viruses on a global basis, provide wider availability to existing vaccines and remove legal obstacles to the development of new ones.

"Perhaps the most important message," comments Lederberg, who edited the IOM report, "is that infection knows no national boundaries and we will pay dearly if we ignore the smoldering of infection anywhere. At the extreme, the global contamination of our species by disease is hypothetically possible."

As a nation, Lederberg believes, we have the knowledge necessary to confront the problem, but what is lacking is public understanding and political leadership to make the war on bugs a national priority.

OTE

NOTE

GM-2

Waterborne outbreak of Norwalk virus gastroenteritis at a southwest US resort: role of geological formations in contamination of well water

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STEPHAN S. MONROE HANI K. ATRASH LORE E. LEE STEVEN J. ENGLENDER

From April 17 to May 1, 1989, gastroenteritis developed in about 900 people during a visit to a new resort in Arizona, USA. Of 240 guests surveyed, 110 had a gastrointestinal illness that was significantly associated with the drinking of tap water from the resort's well (relative risk = 16·1, 95% confidence interval 14·5 to 17·8) and this risk increased significantly with the number of glasses of water consumed ($p < 0·005$). Three of seven paired sera tested for antibodies to the Norwalk agent had a four-fold or greater rise in titre. Water contaminated with faecal coliforms was traced back to the deep water well, which remained contaminated even after prolonged pumping. Effluent from the resort's sewage treatment facility seeped through fractures in the subsurface rock (with little filtration) directly into the resort's deep well. Although the latest technology was used to design the resort's water and sewage treatment plants, the region's unique geological conditions posed unexpected problems that may trouble developers faced with similar subsurface geological formations and arid climatic conditions in many parts of the world. In these areas, novel solutions are needed to provide adequate facilities for the treatment of sewage and supply of pure drinking water.

Lancet 1991: 337: 1200–04.

Introduction

Nearly 100 million Americans are supplied with drinking water derived from underground sources.[1] This water is generally regarded as pure and clean and has rarely been identified as a source for the transmission of communicable diseases. In instances in which disease transmission was traced to drinking well water, contamination was often due to human error and occurred at the site where the water was

ADDRESSES: Division of Reproductive Health, Center for Chronic Disease Prevention and Health Promotion (H. W. Lawson, MD, M. M. Braun, MD, H. K. Atrash, MD), and Division of Viral and Rickettsial Diseases, Center for Infectious Diseases (R. I. M. Glass, MD, S. E. Stine, BS, S. S. Monroe, PhD), Centers for Disease Control, Atlanta, Georgia 30333; and Arizona Department of Health Services (L. E. Lee, MPH, S. J. Englender, MD), Phoenix, Arizona 85007, USA. Correspondence to Dr H. W. Lawson, 1600 Clifton Road, N.E. K23, Atlanta, Georgia 30333, USA.

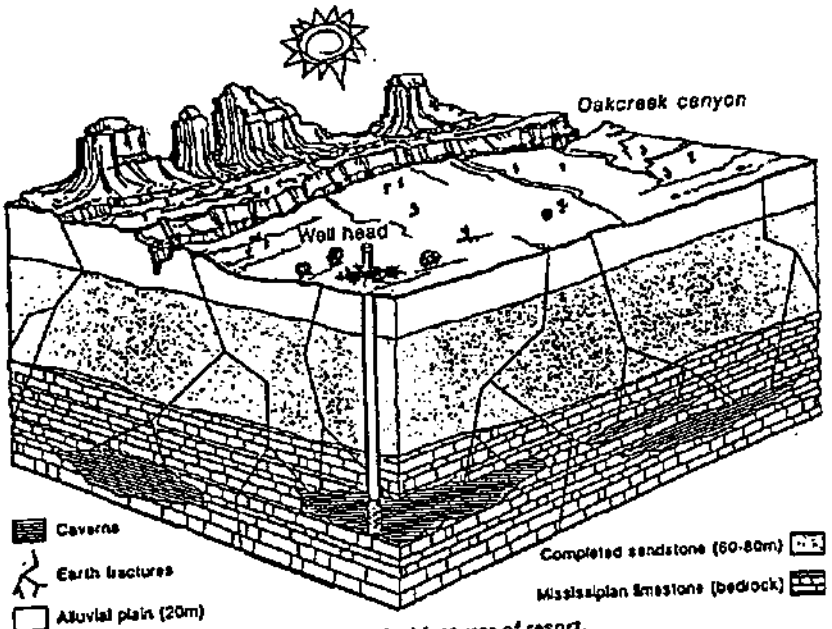

Fig 1—Geological features of resort.

GM---3

May 3, 1993

IGNIFICANCE OF WATER AND THE ENVIRONMENT IN THE TRANSMISSION OF VIRUS DISEASE

Dean O. Cliver (UW)

ous agents transmitted through the environment by:
vectors,
fomites
vehicles
aerosols
s are transmitted by vehicles mostly-water and other foods

formation is preferable to pure speculation

almost all of the viruses transmitted by foods and water originate in the human

nal tract. More than 100 types known to infect humans
caused by any of three serotypes of enteroviruses
several outbreaks attributed to water transmission - not too well documented
raw milk and recontaminated pasteurized milk frequent vehicles
itis A- infectious hepatitis
Premiere viral disease transmitted through vehicles
long incubation period complicates investigation of outbreaks.
gastroenteritis- produced by several groups of viruses
Norwalk agent -most common in this group
A, Non-B Hepatitis
have caused extremely large outbreaks of waterborne viral hepatitis
virus 4

ruses transmitted via vehicles have emanated from human intestines
Hepatitis A - always occurred via untreated or inadequately treated sewage
Food handlers - important source of spread
water -contaminated by wastewater - 2nd most frequent
Watercress growing in a stream contaminated with sewage
No root crop has been implicated so far
Shed only from liver - passing into bile duct
Stability of viruses in vehicles
Enteric viruses generally more stable than other viral groups in the environment

SUMMARY
Hepatitis A - about half reported cases due to drinking water contamination and help to contamination

GM---4

Scientists say pesticides may endanger river life

Toxic levels detected far downstream

By Jim Mayer
Bee Staff Writer

DISCOVERY

During this winter's drought-busting storms, as Central Valley rivers surged toward the Pacific Ocean, scientists discovered a wave of pesticides as far west as Martinez that was strong enough to be toxic to sensitive aquatic life.

"It was mind-boggling to me," said state scientist Christopher Foe.

After small storms during the drought, Foe detected pulses of pesticides in lower stretches of the Valley's great rivers – the Feather, Sacramento and San Joaquin, but he expected the pesticides would be diluted in wet years long before the rivers merged and flowed toward San Francisco Bay.

Instead, the abundant rain apparently washed more farm chemicals off fields and into streams – particularly off 900,000 acres of orchards that are doused with 1 million pounds of insecticide in the winter to kill beetles.

The discovery joined a growing body of evidence that farm chemicals are reaching the estuary at levels harmful at least to the most sensitive links in the food chain. The research – by Foe at the Central Valley Regional Water Quali-

Please see PESTICIDES, page A5

e Sacramento Bee Final • Monday, June 28, 1993

esticides: Stretch of San Joaquin River is frequently toxic

SAC BEE 5/18/93

Toxic groundwater

Local land-use laws should protect aquifers

Tom Arrandale is a contributing editor to Governing Magazine who lives in Albuquerque, N.M.

By Tom Arrandale

IT'S HARD to find a local-government official who'd be thrilled to learn that the federal Superfund program is coming to town to clean up toxic pollution. That makes it even more difficult to fathom why local governments still aren't doing all they can to guard vulnerable groundwater supplies against future Superfund fiascoes.

Aquifers supply drinking water for half the American people. If nothing else, Superfund has demonstrated how costly it can be to clean up those resources once they're contaminated.

At most toxic-waste sites, chemicals pose the most serious threats when they seep downward toward water tables. Yet many states have barely begun drafting comprehensive groundwater management plans or mapping the aquifers that are at risk of contamination. And many communities still shy away from managing how land is used above irreplaceable groundwater resources. Across most of the country, the feeling persists that "you can just put something down a hole in the ground and not pay any price for it," says Michel J. Paque, executive director of the Ground Water Protection Council.

Indeed, we've always treated groundwater as a cheap and conveniently invisible cesspool. Oil-drilling operations and many industrial plants have been injecting contaminant-laced fluids into the ground through wells drilled for that purpose. Gasoline and other storage tanks leak petroleum and chemicals, while fertilizers and pesticides from farmlands and golf courses seep through permeable soils. And human wastes flowing through poorly located septic tanks have been contaminating the water beneath semirural subdivisions.

All too often, we've built those homes and industrial plants in river valleys and other places where groundwater lies closest to the surface. The U.S. Environmental Protection Agency has found that man-made chemicals have contaminated roughly 20 percent of the country's drinking water aquifers. In New Jersey alone, more than 5,000 domestic wells and close to 200 public water-supply wells have been contaminated by polluted groundwater.

NEW JERSEY, along with Massachusetts, Florida and other industrial states, has established protected zones surrounding drinking water wellheads

CUMMINGS/Los Angeles Times Syndicate

or soil formations where rainfall seeps into the ground to recharge groundwater aquifers. Those programs put the most sensitive areas off-limits to landfills, hazardous-waste dumps and other clearly dangerous facilities. They also require industrial plants to install double-walled fuel tanks and backup systems that will catch spilled chemicals in the event of accident. Taking another approach, Iowa in 1987 launched an innovative program encouraging farmers to voluntarily cut back on using chemicals that can find their way into aquifers.

Other states have been lagging behind. The Association of State and Interstate Water Pollution Control Administrators suggests diverting Superfund money to help states come up with comprehensive groundwater policies. Just before leaving office, former Environmental Protection Agency Administrator William K. Reilly approved guidelines for states to follow in setting up comprehensive groundwater management programs.

It's now clear that surface and groundwater systems are closely related, and Congress should set clear national goals for protecting both, preferably on a watershed-by-watershed basis. But protecting groundwater eventually comes down to regulating land use, and local governments need to take the initiative. Prodded by state laws and potential financial liability, cities and counties around the country are now closing down leaking landfills, but governments should also be steering industrial and residential growth away from sensitive groundwater systems.

AUSTIN, TEXAS, and Clarke County, Va., have imposed comprehensive land-use restrictions precisely for that purpose. To keep from contaminating an aquifer supplying drinking water to Spokane, Wash., the five-county Panhandle Health District in northern Idaho banned septic tanks on lots of less than five acres in Kootenai County and ordered subdivisions to contain all runoff from storm water. That, in effect, is forcing development closer to existing sewage treatment systems serving Coeur d'Alene and other towns.

"We cannot afford not to prevent contamination," contends Kenneth W. Lustig, the district's environmental health director, "because we cannot afford to clean it up." Yet around the country, most local leaders still don't seem to comprehend the connection between regulating how land is used and protecting water.

Two decades ago, it took the Cuyahoga River in Cleveland catching fire to persuade Congress to pass the Clean Water Act to remove pollution from lakes and streams. Today's Superfund morass is not quite that dramatic, but it should be all the warning communities around the country need that it's time to keep the same thing from happening to groundwater.

Governing Magazine

TO DAVE MORRISON

25
UI - 90308803
AU - Olanrewaju D
TI - Soak-away systems and possible groundwater pollution problems in developing countries.
AD - Department of Civil Engineering, Obafemi Awolowo University, Ile-Ife, Nigeria.
AB - People in the developing countries do not have adequate sanitation and everyone defaecates somewhere. Those who do not have a toilet or latrine have to resort to indiscriminate defaecation either in the sea shore such as in the Lagos lagoon in Nigeria, or vacant plots and open drains as in Iddo area of Lagos and sides of rural footpaths. Water closets (W.C.s) are the most accepted sanitation system, but the cost of operating and maintaining them is high. As a result sewerage is not appropriate for the majority of people in developing countries whose greater population live in rural areas and small towns. The majority of people in urban areas use septic tanks and very often most of these septic tanks are not properly designed or sometimes located too close to sources of water supply, which then become contaminated. It is generally believed that systems like septic tanks, pit latrines and aqua privies are capable of totally eliminating these pathogens. There are many problems associated with the physical, chemical and biological processes that may result in groundwater pollution from septic tanks. Many experiments have shown that faecal organisms do not travel any significant distance radially as a result of concentration gradient. They are, however, carried with groundwater flow. The task is to prevent pathogens from getting into the aquifer. This paper attempts to highlight the ability of some enteric viruses to survive septic tank wastewater treatment.

LA - Eng
SO - J R Soc Health 1990 Jun;110(3):108-12

GM---12

7.3 CONDITIONS OF APPROVAL FOR SOLANO SHORT-TERM, OFF-CHANNEL MINING PERMIT APPLICATION

Exhibit 3
CONDITIONS OF APPROVAL
FOR SOLANO CONCRETE COMPANY, INC. SHORT-TERM, OFF-CHANNEL MINING PERMIT APPLICATION

The following conditions of approval include final mitigation measures adopted by the Board of Supervisors from the certified EIR. Modification to mitigation measures can only occur if: 1) the effectiveness of the measure in reducing the applicable environmental impact is not affected; or, 2) subsequent environmental analysis is performed to examine to new proposed measure and associated environmental impact.

MISCELLANEOUS CONDITIONS

1. The applicants shall agree to indemnify, defend, and hold harmless the County or its agents, officers and employees from any claim, action, or proceeding (including damage, attorneys fees, and court cost awards) against the County or its agents, officers, or employees to attack, set aside, void, or annul an approval of the County, advisory agency, appeal board, or legislative body concerning the permit or entitlement when such action is brought within the applicable statute of limitations.

   The County is required to promptly notify the applicants of any claim, action, or proceeding, and must cooperate fully in the defense. If the County fails to promptly notify the applicants of any claim, action, or proceeding, or if the County fails to cooperate fully in the defense, the applicants shall not thereafter be responsible to defend, indemnify, or hold the County harmless as to that action. The County may require that the applicants post a bond in an amount determined to be sufficient to satisfy the above indemnification and defense obligation.

2. The applicant shall be limited to processing only that material within the identified 35 acre mining area, within the existing limits of 772,417 tons annually.

3. The Conditional Use Permit is approved for a period of three years, starting from the date mining commences. The applicant shall certify in writing to the County the date of mining commencement within three days after it occurs. Pursuant to the requirements of Resolution 94-82, the permit is non-renewable. The Conditional Use Permit shall commence within one year from the date of the Board of Supervisor's approval or said permit shall be null and void without further action.

3.5 The project to which these conditions are applicable is as described in the project EIR and summarized in the Yolo County Planning Commission staff report dated August 16, 1995. Any substantive changes in the project description shall require amendment or modification of the Conditional Use Permit.

4. The Conditional Use Permit shall be reviewed annually by the Yolo County Planning Commission (in conjunction with the annual Monitoring Report submitted

by the applicant) to ascertain compliance with all conditions of the permit and operating standards of applicable regulations, and to determine whether there have been significant changes in environmental conditions, land use, mining technology, or whether there is other good cause which would warrant the Community Development Agency to recommend modification of conditions.

The staff will present an annual Monitoring Report to the Commission at an advertised public hearing. The Planning Commission may modify any permit when necessary to assure compliance with the intent of applicable regulations, and any additional conditions applied.

5. The operation shall be subject to any future standards adopted as a part of the Off-Channel Mining Ordinance and/or Cache Creek Resource Management Plan.

6. The applicant shall be responsible for all costs associated with implementing and monitoring these conditions.

7. The applicant shall immediately notify the Community Development Director of any incidents such as fire, explosions, spills, land or slope failures, or other conditions which could pose hazard to life or property. Upon request of any County agency, the applicant shall provide a written report of any incident, within seven calendar days, which shall include, but not be limited to, a description of the facts of the incident, the corrective measures used, and the steps taken to prevent a recurrence of the incident. This condition does not supersede nor replace any requirement of any other governmental entity for reporting incidents.

8. The permit area shall be maintained in a neat and orderly manner so as not to create any hazardous condition or unsightly conditions which are visible from the surrounding area. Equipment and materials may be stored on the site which are appurtenant to the operation.

9. Lighting shall be shielded, site directed, and kept to a minimum to maintain the normal night-time light levels in the area.

9.5. The applicant shall submit a performance bond in the amount of $241,170 for reclamation of the Farnham West parcel, naming the County of Yolo and the California Department of Conservation as beneficiaries, prior to the commencement of mining.

EIR MITIGATION MEASURES

Land Use

10. The restored 3.1 acres of oak woodland and savanna habitat shall be dedicated to Yolo County or to an appropriate non-profit land trust such as the Nature Conservancy, at the election of the County of Yolo. Alternatively the County could require that the 3.1 acres be made subject to a conservation easement attached

to the title, which specifies that the land shall be restored to oak woodland/savanna and held in perpetuity for habitat. Public access would not be allowed until completion of mining occurs in the area. (Mitigation Measure 4.2-2)

Geology and Soils

11. If strong seismic shaking were experienced at the project site as the result of a moderate to large earthquake (M 6 or greater) along the CRSBBZ, then the project site shall be inspected by a qualified licensed civil or geotechnical engineer to determine if liquefaction or seismic subsidence has occurred and resulted in visible damage to reclaimed lands. (Mitigation Measure 4.3-2(a))

12. The cost of implementing recommendations for repair of reclaimed land caused during earthquakes or other natural events shall be met through application of contingency costs provided for by the project's financial assurances as required by SMARA. (Mitigation Measure 4.3-2(b))

13. Improvements to the levee system proposed by the project shall be made a priority and completed concurrently with the first phases of mining. Placement of fill shall be completed prior to the first of November, before onset of the rainy season, and prior to removal of aggregate from Mining Area A. The Reclamation Plan shall be amended to describe an on-site source of fill material and the final grading plan shall be adjusted to accommodate the additional material. (Mitigation Measure 4.3-3(a))

14. Implementation of Condition 12 (Mitigation Measure 4.3-2(b)), which provides for identification and financial assurances for damage to reclaimed lands caused by ground failure, would also be appropriate mitigation for damage (loss of soil and vegetation) related to flooding. (Mitigation Measure 4.3-3(b))

15. The areas of the south bank of Cache Creek controlled by the applicant, including levee slopes, shall be inspected on an annual basis by a qualified, licensed civil or geotechnical engineer. The inspections shall be conducted following the completion of annual aerial cartography conducted for the mining area. Areas of erosion damage shall be identified on the annual maps. Specific recommendations for correction of or protection against erosion damage shall be documented in the Annual Off-Channel Mining and Reclamation Progress Report submitted by the applicant to the Yolo County Community Development Agency. Recommended repairs or improvements shall be completed prior to the first of November in the year in which recommendations are made to ensure the work is completed before the onset of the rainy season. (Mitigation Measure 4.3-5)

16. The soil underlying and adjacent to the transmission tower at the project site shall not be removed. An area of about 10,000 square feet at the base of the tower should not be disturbed. Slopes below this pad should be excavated at a grade no steeper than 3:1. The slopes shall be vegetated with an erosion control mix. (Mitigation Measure 4.3-6(a))

17. The reclamation plan shall be amended to account for the soil that is not available under the transmission tower. The grading plan shall be adjusted to provide the additional fill soils by additional lowering of the surface. The adjusted grading plan shall maintain the 3:1 side slopes for the reclamation area. (Mitigation Measure 4.3-6(b))

Hydrology and Water Quality

18. Proposed levee upgrades shall be a condition of approval and completed during the initial phases of mining and reclamation of the proposed project. The levee upgrades shall be designed, inspected, and approved by a licensed geotechnical engineer, civil engineer, or certified engineering geologist. Grading for any levee improvements shall be restricted to the south side of the existing haul road (see Mitigation Measure 4.4-6). (Mitigation Measure 4.4-1(a))

19. The Annual Off-Channel Mining and Reclamation Progress Reports prepared for the project site and Hutson parcel shall include an analysis of the channel capacity of Cache Creek within 1,000 feet east and west of the Farnham West parcel boundaries. The analysis shall be conducted by a licensed civil engineer and shall be based on topographic mapping required by the County. The applicant is currently permitted to perform in-channel mining in this area of the creek. The in-channel mining could be conducted to remove accumulated sand and gravel to the elevation of the theoretical thalweg. However, if the topographic data indicate that aggradation (sediment accumulation) has resulted in a decrease in channel capacity of more than 10 percent of the existing capacity, a hydraulic analysis shall be prepared to determine the 100-year flood elevation. If the hydraulic analysis indicates that the channel would not convey the 100-year flood flow, the progress report shall present recommendations to establish adequate capacity for the 100-year flow; these measures could include in-channel gravel removal or levee modifications. The progress reports shall be submitted to the Yolo County Community Development Agency for review and implementation. (Mitigation Measure 4.4-1(b))

20. Following completion of the CCRMP and the County Off-Channel Mining Ordinance, the applicant shall comply with all requirements for flood control. (Mitigation Measure 4.4-1(c))

21. Fueling and maintenance of all rubber-tired loading, grading and support equipment shall be prohibited within the proposed excavation areas. Solano Concrete's SWPPP shall be amended to identify fueling and maintenance areas. Best Management Practices for the fueling area shall include secondary containment for fuel spills and specific spill response procedures for these areas. As currently practiced in the Hutson parcel mining area, fuel would be brought to the drag line location; the dragline would not be moved for fueling. Fueling and maintenance activities associated with draglines shall be conducted with proper safeguards to prevent hazardous materials releases within the gravel pit areas. Absorbent booms shall be stored in the mining area to allow rapid response and containment of any spills during dragline maintenance. The existing SWPPP and

SPCCP shall be amended, as necessary, to remain up-to-date with current local, State, and Federal regulations. (Mitigation Measure 4.4-4(a))

22. The reclamation plan shall be amended to include a perimeter berm that is at least one foot above the 100 year flood elevation of willow slough. The berm shall be constructed around the south, east, and west boundaries of reclaimed lands of the combined Hutson and Farnham West parcels as needed to protect against a 100-year flood on Willow Slough. Self-generating vegetation shall be established on all berms. Runoff shall be conveyed along the base of the berms in shallow vegetated swales.

    The materials necessary to construct the berms shall be obtained on-site. The volume calculations and grading presented in the reclamation plan shall be modified to accommodate construction of the berms. (Mitigation Measure 4.4-4(b))

    In addition, a temporary one-foot high berm or engineered drainage ditches shall be used to divert stormwater runoff around the mining area.

    A construction and maintenance plan for the berms and ditch system shall be prepared by a registered professional engineer and shall demonstrate: 1) capacity of proposed drainage ditches to withstand a 25-year flood event until agricultural productivity reaches or surpasses pre-mining levels; 2) regular inspections coincident with annual SMARA-required inspections; and 3) remedial measures if deficiencies are discovered.

23. A surface water and groundwater monitoring program shall be prepared and implemented by a qualified groundwater professional in conformance with industry standards for water quality sampling and testing procedures. As a minimum, the program shall include: (Mitigation Measure 4.4-5)

    - Annual monitoring of the following parameters at the open pit and three on-site monitoring wells: general minerals and inorganics; total petroleum hydrocarbons as diesel and motor oil (EPA 8015M); organophosphorus pesticides (EPA 8140); chlorinated herbicides (EPA 8150), and total coliform bacteria.

    - Annual reports that summarize data collection techniques, present testing results, including tabulated water quality and water level elevation, and provide conclusions on trends or necessary corrective actions shall be submitted to the Yolo County Community Development Agency as part of the annual monitoring and compliance report.

    - If testing results indicate the detection of petroleum hydrocarbons, pesticides, or herbicides in the pond water or in the wells, the following activities shall be performed:

        Additional water samples from the pit and all on-site monitoring wells shall be collected immediately and analyzed for the detected

compounds to determine if they have migrated away from the location where the contaminants were identified.

A qualified groundwater professional shall evaluate potential sources of the contaminants and make recommendations to the regulatory agencies for corrective action.

All grading along the perimeter of the pit shall be inspected by the applicant to ensure that agricultural runoff is not flowing into the pit.

Quarterly monitoring of the affected wells and appropriate adjoining wells shall occur until constituent levels drop below established limits.

Agriculture

24. Prior to project approval, the applicant shall provide financial assurances, consistent with requirements of SMARA, to Yolo County sufficient to assure that reclamation is completed and achieves agricultural productivity at current, or higher levels than currently exists. (Mitigation Measure 4.5-4(a))

25. Prior to project approval, the financial assurances plan submitted by the project applicant (Condition 24 -- Mitigation Measure 4.5-4(a)) shall be independently reviewed and approved to the satisfaction of the Yolo County Community Development Agency to assure that, in the event of applicant failure, sufficient funds exist to reclaim the project site incorporating all approved mitigation measures and project conditions of approval. (Mitigation Measure 4.5-4(b))

26. Implementation of Conditions 24 and 25 (Mitigation Measures 4.5-4(a) and 4.5-4(b)) would provide mitigation of the impact of reclamation on non-prime agriculture. (Mitigation Measure 4.5-5)

27. The applicant shall supplement the reclamation plan by adding statements that soils to be used in reclaiming will be removed only when soil moisture status is low, and that wind and water erosion from subsoil and subgrade materials stockpiles will be minimized using the same methods described in the plan for topsoil stockpile maintenance (Agricultural Reclamation Plan, Appendix D). (Mitigation Measure 4.5-7)

28. Construction of a perimeter berm, required by Mitigation Measure 4.4-4(b), would be appropriate mitigation of potential impacts of erosion or flooding on agricultural production. (Mitigation Measure 4.5-8)

Biotic Resources

29. The proposed restoration component of the reclamation plan shall be implemented to provide for replacement of all oaks to be removed from the site as part of the project. The oak trees removed during mining (nine trees) and reclamation (four trees) shall be replaced at a minimum ratio of 5:1 (replacement:lost) in the

restoration area or in fence row habitat areas required by Mitigation measure 4.6-3. The number of replacement trees shall be determined by the number of trunks on existing trees at breast height. The replacement shall require planting of "five-gallon" saplings, or an equivalent, such as 4- by 14-inch tree-pots. (Mitigation Measure 4.6-2)

30. The proposed *Habitat Restoration Plan* and the *Vegetation and Wildlife Analysis* by the applicant's biologist shall be revised to include provisions for fence row restoration and enhancement, allowing for reestablishment of scattered native trees, shrubs, and ground covers along margins of the reclaimed agricultural field. The revised *Plan* and *Analysis* reports shall specify ultimate fence row locations, identifying planting densities for trees and shrubs, and include provisions for monitoring and maintenance to ensure establishment. Since the boundary between the Hutson parcel and the Farnham parcel will be indistinguishable upon completion of reclamation, these plantings shall be placed in appropriate areas along the outer boundary of the two parcels, on either side of or on top of the berm required by Mitigation Measure 4.4-4.

    Plantings along the fence row habitat shall be modeled after the reclamation program for oak savanna habitat in the *Vegetation and Wildlife Analysis*, with similar monitoring provisions and application rates for grasses, forbs, and wild rose (*Rosa californica*), but a reduced density for target tree species. Valley oak (*Quercus lobata*) and blue elderberry (*Sambucus mexicana*) shall be planted at an average density of 11 and 5 trees per acre, respectively. Trees shall be planted as single plantings and groupings of five to ten plants, interspersed with the wild rose shrub plantings. Due to the upland location, California buckeye (*Aesculus californica*) shall not be included in the fence row restoration program. (Mitigation Measure 4.6-3)

31. A CDFG Code Section 2081 authorization, or the posting of a reclamation bond or letter of credit naming CDFG as the beneficiary, or other alternative mechanism acceptable to CDFG shall be executed prior to the approval of the project, or as an alternative payment of mitigation fees to the Yolo County fish and wildlife mitigation account shall be made prior to commencement of mining. It is recommended that mitigation be based on the temporary loss of agricultural land to mining. (Mitigation Measure 4.6-4, 5-1, and 5-6)

32. With the exception of vehicles necessary to construct, maintain, and monitor restoration, vehicles and grading activities shall be restricted from the proposed 3.1-acre restoration area to protect elderberry shrubs and suitable habitat for other special-status taxa of concern. (Mitigation Measure 4.6-5(a))

33. Slopes on stockpiled soils shall be graded to 2:1 for long-term storage to prevent use by bank swallows. At no time during the active breeding season (1 May through 31 July) shall slopes on stockpiles exceed 1:1, even on a temporary basis. Stockpiles shall be graded to a minimum 1:1 slope at the end of each work day where stockpiles have been disturbed during the active breeding season. (Mitigation Measure 4.6-5(b))

34. Proposed levee improvements shall be designed to avoid disturbance to the bank of Cache Creek and jurisdictional waters by restricting grading to the inboard side of the existing levee haul road. (Mitigation Measure 4.6-6(a))

35. Prior to installation of the culvert connecting the lowered reclaimed fields to Cache Creek, the applicant shall negotiate a Streambed Alteration Agreement with the State Department of Fish and Game, if applicable. (Mitigation Measure 4.6-6(b))

36. Graded slopes to the east and south of the reclaimed agricultural fields shall be seeded with a mixture of non-native and native grasses, including California brome (*Bromus carinatus*), to control erosion and provide a grassland cover. Slopes shall be seeded by the first of November prior to the winter rainy season. (Mitigation Measure 4.6-7(a))

37. The potential for establishment of noxious weeds on the reclaimed slopes is high. However, the slopes will be bounded on all but the north side of the project site by agricultural fields. Therefore, the spread of weeds would be limited by agricultural management. The proposed monitoring plan for plant establishment at the restoration area, which includes weed control, shall be extended to the fence row habitat areas proposed by Mitigation Measure 4.6-3. (Mitigation Measure 4.6-7(b))

Air Quality

38. Applicant shall water spray excavated areas and haul roads in sufficient quantities, as recommended by the Yolo-Solano AQMD, (at least twice a day) to prevent fugitive dust. Water shall cover the entire surface of haul roads and active excavation area. (Mitigation Measure 4.7-1(a))

39. The watering frequency shall be increased whenever the wind speed exceeds 15 mph to ensure that the ground is moist at all times. (Mitigation Measure 4.7-1(b))

40. Exposed soil stockpile surfaces, subject to wind erosion, shall be stabilized with appropriate vegetation to anchor the surface materials. Until vegetation is grown, all exposed stockpiled soil shall be watered with adequate frequency to keep the soil moist at all times. (Mitigation Measure 4.7-1(c))

41. To minimize the acreage exposed to wind erosion, overburden shall be stripped of vegetation only as mining areas are brought into operation. (Mitigation Measure 4.7-1(d))

42. To the extent feasible, topsoil and overburden shall be moved directly for use in ongoing reclamation of areas previously mined. The overburden excavation and reclamation sequence for this project shall be designed to reduce to a minimum the distance and the number of times that overburden is moved. (Mitigation Measure 4.7-1(e))

43. If water spraying cannot prevent nuisance conditions at the nearby residence, a dust-suppressant shall be used for the portion of the haul road closest to the residence. The dust suppressant selected shall be nontoxic and suitable for use near waterways. Nuisance conditions would be identified through complaints recorded by the Yolo-Solano Air Quality Management District. (Mitigation Measure 4.7-1(f))

44. Water sprinklers shall be installed around the area where dry aggregate materials are unloaded, if determined to be necessary and feasible by the Yolo-Solano AQMD. (Mitigation Measure 4.7-1(g))

45. The applicant shall continue to operate within permit standards established by the Yolo-Solano AQMD. (Mitigation Measure 4.7-2)

46. To be consistent with County policies, the County Administrative Officer will require further mitigation measures, after consultation with the Air Quality Management District, if there are such feasible and practical measures available. (Mitigation Measure 4.7-3)

Cultural Resources

47. If human skeletal remains are encountered during construction, all work within 20 meters of the discovery will be stopped immediately and the County Coroner will be notified. If the remains are Native American, the Native American Heritage Commission shall be consulted, and the most likely Native American descendant identified and given the opportunity to confer with the property owner about the disposition of the remains.

    If any cultural resources, such as chipped or ground stone, historic debris, building foundations, human bone or paleontological materials are discovered during ground-disturbance activities, all work within 20 meters of the discovery shall be stopped, an archaeologist shall be contacted to evaluate it, and the Yolo County Community Development Director shall be notified at once.

    Any cultural resources found on the proposed project sites will be recorded or described in a professional report and submitted to Yolo County and the Northwest Information Center. (Mitigation Measure 4.8.1-1)

Noise

48. Noise levels resulting from mining activities conducted between 6 PM and 6 AM shall not exceed an average noise level equivalent (Leq) of 65 dBA measured at the outermost boundary of the permit area and noise level of 60 dBA Ldn at the nearby residence. When aggregate mining is conducted after 6 PM, excavation shall not take place within 300 feet of the outermost boundaries of the permit area. (Mitigation Measure 4.8.2-2(a))

49. If necessary, equipment used during nighttime activities shall be equipped with non-sonic warning devices consistent with OSHA regulations, which may include fencing of the area to avoid pedestrian traffic, adequate lighting of the area, and placing an observer in clear view of the equipment operator to direct backing operations. Prior to commencement of operations without sonic warning devices, Solano Concrete would have to file a variance request with the Cal OSHA Standards Board showing that the proposed operation would provide equivalent safety to adopted safety procedures, including sonic devices (Hughes, 1995). (Mitigation Measure 4.8.2-2(b))

Transportation

50. The applicant shall be required as a condition of approval of the short-term aggregate mining application to post a bond (or enter into an equivalent financial assurance) sufficient to cover the cost of providing at least an eight-foot wide paved shoulder for approximately 300 feet along the south side of State Route 16 through the existing access road intersection, so that vehicles can pass aggregate trucks pulling into the Solano Concrete driveway. The cost estimate shall be to the satisfaction of the County of Yolo. The applicant shall not be required to cover in the bond, the cost of relocation of existing electrical poles. An encroachment permit from Caltrans will be required.

    Within three years, the bond shall either be used by the County to fully implement the described shoulder improvement, or applied toward implementation of a permanent long-term solution to safe project access at that location. (Mitigation Measure 4.8.8-1)

Human Health/Risk of Upset

51. Prior to the commencement of topsoil removal, topsoil shall be sampled in the areas to be disturbed by mining and reclamation in accordance with a sampling plan developed by a qualified environmental professional. A representative number of samples shall be collected and submitted to a State-certified laboratory for analysis of pesticides and herbicides. If the sampling results indicate that these compounds exist in the soil at levels that could pose health risks to workers or the public, a Site Health and Safety Plan shall be prepared by a certified industrial hygienist. If necessary, the plan shall specify appropriate personal protective equipment that would reduce the potential exposure pathways (inhalation, ingestion, and dermal contact) for compounds detected in the soil. All requirements of the plan shall be implemented. (Mitigation Measure 4.8.9-1(a))

52. Dust control measures required in Conditions of Approval 38 through 44 (Mitigation Measures 4.7-1(a) through 4.7-1(g)) shall be implemented to reduce dust production during mining and reclamation. (Mitigation Measure 4.8.9-1(b))

53. Prior to commencement of mining, Solano Concrete Company's Storm Water Pollution Prevention Plan shall be amended to specify the locations and methods

for fueling and maintenance of mining and reclamation equipment (see Mitigation Measure 4.4-4(a)). (Mitigation Measure 4.8.9-2)

54. Solano Concrete Company shall exclude all unnecessary personnel from the open excavation area, and shall fence (four feet high welded wire fence or equivalent) the steep-sided boundaries of the pit prior to the commencement of excavation activities. In addition, to prevent entry to the excavated area by unauthorized persons, signs shall be installed at the project site boundaries and access road, indicating it is a danger zone. (Mitigation Measure 4.8.9-3)

55. Solano Concrete Company shall prevent weed growth in the water and/or allow the Sacramento-Yolo Mosquito Abatement District to plant mosquitofish in the pond. (Mitigation Measure 4.8.9-4)

Cumulative Effects

56. Implement those applicable recommendations of Cache Creek Streamway Investigation, which are incorporated into the CCRMP. (Mitigation Measure 5-4)

57. Berms and/or ditches around mining/reclamation areas which are required by County Resolution 94-82, shall be constructed at the initial stages of mining to prevent surface water runoff from entering the mining areas.

    Fueling of mining and reclamation equipment (excluding the dragline) shall be performed outside the mining area.

    All mining and reclamation equipment shall be inspected on a regular basis and maintained to ensure that the equipment is not leaking fuel, lubricants, anti-freeze, or other hazardous materials.

    All mining areas shall be reclaimed to an elevation minimally five feet above the average high seasonal groundwater level as set forth in the Mining and Reclamation Plan. (Mitigation Measure 5-5)

58. Mining and reclamation plans that propose removal of protected plant species shall replace each disturbed or destroyed plant at a replacement ratio of 5:1 (replacement:loss). The number of replacement trees shall be determined by the number of trunks on existing trees at breast height. The replacement shall consist of 5-gallon saplings. The plans shall designate an area for the replacement plants and a vegetation plan that will ensure successful growth of the replacement plants. (Mitigation Measure 5-7)

59. Condition 47 (Mitigation Measure 4.8.1-1) for the proposed project shall be implemented for all cumulative project sites. This mitigation measure will provide for identification and protection of unrecognized cultural resources that could be disturbed by the cumulative projects. (Mitigation Measure 5-8).

7.4 SUMMARY TABLE FOR OCMP EIR

Table 2-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES					
Environmental Impact	**Level of Significance Before Mitigation**		**Mitigation Measures**	**Level of Significance After Mitigation**	
	LS	**S**		**LS**	**SU**
Land Use and Planning					
Impact 4.2-1: Consistency with Yolo County General Plan	OCMP, A-4, A-5a, A-5b and A-6	A-1a, A-1b, A-2, A-3	*Mitigation Measure 4.2-1a (OCMP, A-4, A-5a, A-5b, A-6)* *None required. However, the amendment to draft OCMP Objective 5.3-1 proposed in Mitigation Measure 4.2-5a would reinforce Implementation Strategy #2 of the Capay Valley Area Plan (as discussed above under "Draft OCMP and Implementing Ordinances") by encouraging the reclamation of land within the Capay Valley Area to agricultural uses (i.e., areas of creek maintenance). This action would enhance the compatibility of the OCMP, A-4, A-5a, A-5b, and A-6 with the Capay Valley Area Plan.* *Mitigation Measure 4.2-1b (A-1a, A-1b, A-2, A-3)* *In lieu of adopting an OCMP and its implementing ordinances, the County shall develop an alternate approach for responding to the requirements of General Plan Conservation Policies 34 and 35. An alternate approach would be to amend the General Plan to include Conservation Policies 42, 43, 44, and 45 as discussed in Section 4.2.*	OCMP, A-4, A-5a, A-5b, and A-6	A-1a, A-1b, A-2, A-3
Impact 4.2-2: Consistency with the Yolo County Zoning Ordinance and County Code	A-1a, A-1b, A-2, and A-3	OCMP, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.2-2a (OCMP, A-4, A-5a, A-5b, A-6)* *The following sections of the Yolo County Zoning Ordinance shall be amended to implement the OCMP and its implementing ordinances: Sections 8-2.404(g), 8-2.404(j), 8-2.604(n), 8-2.2311, 8-2.2312(a), and 8-2.2312(b). New sections shall be added to the Yolo County Zoning Ordinance at Section 8-2.404 (to address land use contracts in the A-P Zone), and at 8-2.23.8 (to address the Special Sand and Gravel Combining Zone [SGR]).*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.2-3: Consistency with the State Mining and Reclamation Act (SMARA) and the State Mining and Geology Board Reclamation Regulations	OCMP, A-4, A-5a, A-5b, and A-6	A-1a, A-1b, A-2, and A-3	*Mitigation Measure 4.2-3b (A-1a, A-1b, A-2 and A-3)* *In lieu of adopting an OCMP and its implementing ordinances, the County shall amend the mining regulations and ordinances to ensure consistency with SMARA and the State Reclamation Regulations.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.2-4: Consistency with the Regional Water Quality Control Board's Basin Plan		OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	*None Required* *Implementation of Mitigation Measures 4.4-2a and 4.4-3b would adequately mitigate this impact.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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	LS	**S**		**LS**	**SU**
Impact 4.2-5: Consistency with the RCD Agriculture Policies	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6		*Mitigation Measure 4.2-5a (OCMP, A-4, A-5a, A-5b, A-6)* *None required. As an improvement measure, however, it is recommended that the following language be added to Objective 5.3-1 of the OCMP:* *Reclamation of agricultural lands to other uses, however, is discouraged, wherever agricultural reclamation is feasible.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.2-6: Compatibility with Existing and Planned Land Uses	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6		*None required.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.2-7: Change in Land Use Intensity	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6		*None required at the program level.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.2-8: Land Use Incompatibility Due to Changes in the Creek Boundary	OCMP, A-1a, A-1b, A-2, and A-3, A-4, A-5a, A-5b, and A-6		*None required.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.2-9: Land Disturbance During Mining	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6		*None required.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.2-10: Potential for Additional Mining Above That Which Is Currently Known	A-1a, A-1b, A-2, and A-3	OCMP, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.2-10a (OCMP, A-4, A-5a, A-5b, A-6)* *The final OCMP boundaries shall be defined as including only those 2,932 acres (including a 45-acre borrow area) presently under consideration for rezoning.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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Environmental Impact	**Level of Significance Before Mitigation**		**Mitigation Measures**	**Level of Significance After Mitigation**	
	LS	**S**		**LS**	**SU**
Impact 4.2-11: Potential Impacts from the Future Sale or Transfer of Property Included within a Current Mining/Reclamation Application	A-1a, A-1b, A-2, and A-3	OCMP, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.2-11a (OCMP, A-4, A-5a, A-5b, A-6)* *The OCMP and its implementing ordinances shall be expanded and clarified to address the issue of transferability of mining permits. The clarification would indicate that if a property is sold or transferred, the tonnage attributed to that property transfers as well. If that tonnage is still processed at the original plant site pursuant to the original permit approval, no additional environmental assessment or permits would be required. If that transferred tonnage is processed elsewhere, additional analysis and approvals would be required.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.2-12: Compatibility with Watts-Woodland Airport Comprehensive Land Use Plan	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6		*None required at the program level.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Geology and Soils					
Impact 4.3-1: Potential for Damage from Seismic Shaking		OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.3-1a (OCMP, A-4, A-5a, A-5b, A-6)* *The following performance standards shall be added to the OCMP and its implementing ordinances and existing ordinances:* *Performance Standard 2.5-25: Improvements, including the construction of buildings, roadways or other public facilities proposed for construction in reclaimed mining pits shall require a geotechnical investigation of the stability of fills conducted by a qualified and licensed geotechnical engineer. A report on the results and recommendation of the investigation shall be submitted to the Yolo County Community Development Agency prior to the issuance of building permits.* *Performance Standard 2.5-26: Backfilled mining areas and slopes shall be inspected by the landowner following strong seismic shaking events. Observable damage shall be reported to the Yolo County Community Development Agency. If, upon inspection of the reported damage, the YCCDA determines that the damage requires repair to meet the intended use of the reclaimed land, the landowner shall perform the required repairs.* *Performance Standard 2.5-27: The cost of implementing recommendations for repair of reclaimed land caused during earthquakes or other natural events shall be met through application of contingency costs provided for by the project's financial assurances as required by SMARA.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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	LS	S		LS	SU
			Mitigation Measure 4.3-1b (A-1a, A-1b, A-2, A-3) *Existing mining ordinances shall require a geotechnical investigation of the stability of fills conducted by a qualified and licensed geotechnical engineer for improvements proposed for construction in reclaimed mining pits, including the construction of buildings, roadways, or other public facilities. A report on the results and recommendation of the investigation shall be submitted to the Yolo County Community Development Agency (or other similar authority in areas outside Yolo County) prior to the issuance of building permits.*		
Impact 4.3-2: Potential Impacts Related to Slope Stability, Erosion, and Sedimentation	A-1a and A-1b	OCMP, A-2, A-3, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.3-2a (OCMP, A-4, A-5a, A-5b, A-6)* *The following performance standards of the OCMP shall be modified as follows:* *Performance Standard 2.5-4: During mining operations, a series of benches may be excavated in a slope. The vertical height and slope of the benches shall not exceed ~~ten (10) feet, and all banks shall not exceed 1:2 (horizontal to vertical)~~ maximum standards for the specific soil types presented in California Code of Regulations, Title 8, Article 6. In general, vertical cutslopes between benches shall not exceed four (4) feet in height in topsoil and overburden sediments. Benching shall be allowed in cohesive soil (clay, sandy or silty clay, clayey silt) only. Slopes above the elevation of groundwater (determined at the time of excavation by the level of exposed water in the excavation) that exceed the maximum vertical height shall be excavated and maintained at slopes not greater than 2:1. Slopes located five (5) feet or less below the average summer low groundwater level shall not be steeper than 2:1. Slopes located more than five (5) feet below the average summer low groundwater level shall not ~~exceed~~ be steeper than 1:1 (horizontal to vertical). ~~below the summer low water level of exposed groundwater in water-filled excavations.~~* *Performance Standard 2.5-16: Except where benches are used, all banks above groundwater level shall be sloped no steeper than 2:1 (horizontal:vertical). Proposed steeper slopes shall be evaluated by a slope stability study, prepared by a qualified engineer. Slopes below the groundwater level shall be no steeper than 1:1 (horizontal:vertical). Slopes located five feet or less below the summer low groundwater level shall not be steeper than 2:1.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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			Performance Standard 2.5-17: Upon the completion of operations, grading and revegetation shall minimize erosion and convey surface runoff to natural outlets or interior basins. The condition of the land shall allow sufficient drainage to prevent water pockets or undue erosion. Natural and storm water drainage shall be designed so as to prevent flooding on surrounding properties and County rights-of-way. *Storm water runoff from mining areas shall be conveyed to lowered areas (detention basins) to provide detention of runoff generated during a 20-year, one-hour storm event. All drainage conveyance channels or pipes (including spillways for detention areas) shall be designed to ensure positive drainage and minimize erosion. The drainage conveyance system and storm water detention areas shall be designed and maintained in accordance with Best Management Practices for the reduction of pollutants associated with runoff from mined areas. The design and maintenance procedures shall be documented in the Storm Water Pollution Prevention Plan required for mining operations. The drainage system shall be inspected annually to ensure that the drainage system is functioning effectively and that adverse erosion and sedimentation are not occurring. The annual inspection shall be documented in the Annual Mining and Reclamation Report.* *Performance Standard 2.5-18: All final reclaimed slopes shall have a minimum safety factor equal to or greater than the critical gradient as determined by an engineering analysis of the slope stability. Final slopes less than five (5) feet below the average summer low groundwater level shall be designed in accordance with the reclaimed use and shall not be steeper than 2:1. Reclaimed wet pit slopes located five (5) feet or more below the average summer low groundwater level shall not ~~exceed~~ be steeper than 1:1 (horizontal:vertical), in order to minimize the effects of sedimentation and biological clogging on groundwater flow, to prevent stagnation and to protect the public health.* *The maximum slope angle for all final reclaimed slopes shall be determined by slope stability analysis performed by a licensed and qualified civil or geotechnical engineer and submitted with any mining and reclamation application for review by the Yolo County Community Development Agency (YCCDA). The slope stability analysis shall conform with industry standard methodologies rotational slope failures under static and pseudostatic (seismic) conditions. The minimum factor of safety for all design reclamation slopes located adjacent to levees or below existing structures shall not be less than 1.5 for static and 1.1 for pseudostatic (seismic) conditions. Other reclamation slopes shall meet a minimum factor of safety that is consistent with the post-reclamation use proposed for the mining area.*		

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			Performance Standard 2.5-21: The grading of final slopes, the replacement soil, and associated erosion control measures shall take place prior to November 1 in areas where mining has been completed. To minimize erosion, the finish grading of mining pit slopes above the average seasonal high groundwater level, with the exception of the location of designated haul roads, shall be performed as soon as practical after the completion of mining of overburden and unsaturated aggregate resources. A drought-tolerant, weed-free mix of native and non-native grass species shall be established on slopes prior to November 1 or alternate erosion control (mulch or netting) shall be placed on exposed soil on the slopes prior to this date. Phasing of mining to minimize the length of exposed mining slopes during the rainy season is encouraged. ~~all slopes above the groundwater level shall be seeded with a drought-tolerant mix of native and non-native grass species, as soon as is practical after grading and prior to November 1. The grass seed mix shall be weed-free.~~ *Mitigation Measure 4.3-2b (A-2, A-3)* *Local mining and reclamation regulations for mining operations outside the OCMP planning area shall adopt standards similar to Performance Standards 2.5-4, 2.5-17, 2.5-18, and 2.5-21 to control erosion during mining activities.*		
Impact 4.3-3: Potential for Erosion from Surface Water Discharge, Including "Pit Capture"	A-1a, A-1b, A-2 and A-3	OCMP, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.3-3a (OCMP, A-4, A-5a, A-5b, A-6)* *The following text shall be added to Action 4.4-2:* *Action 4.4-2: Designate the streamway influence boundary described in the Technical Studies as part of the Off-Channel Mining Plan. The boundary describes the general area of the creek subject to meandering, as defined by the historical activities of the channel. The streamway influence boundary also defines the area where in-stream and off-channel issues overlap and are addressed in each both plans. Whereas the streamway influence boundary shall be recognized as representative of historical conditions, the current hydraulic conditions of creek shall be considered in decision-making regarding channel and floodplain management.* *Action 4.4-3 from the OCMP shall be replaced by the following action:* *Action 4.4-3: Evaluation of proposed significant modifications to the flood plain, including off-channel mining areas, shall be made with reference to the channel improvement strategy and guidelines presented in the Cache Creek Resource Management Plan. This would ensure a consistent frame of reference and allow consideration of such modifications in the context of an integrated creek management program.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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			Action 4.4-6 shall be amended as follows: *Action 4.4-6: Allow for the design of spillways or other engineered features that provide controlled ~~pit capture during a catastrophic flood event~~ flooding of off-channel mining pits during flood events which exceed the 100-year flood event.* *Performance Standard 4.5-1 shall be amended as follows:* *Performance Standard 4.5-1: All off-channel surface mining operations shall be provided with a minimum one-hundred (100) year flood protection. Off-channel excavations that extend below the existing streambed elevation of Cache Creek shall be designed to minimize the possibility of levee breaching and/or pit capture~~, except under controlled circumstances~~.* *Performance Standard 4.5-2 shall be deleted from the OCMP.* *Performance Standard 4.5-3 shall be amended as follows:* *Performance Standard 4.5-3: Proposed off-channel excavations within the streamway influence boundary shall be set back a minimum of seven-hundred (700) feet from the existing channel bank, unless it is demonstrated ~~in a manner consistent with the Technical Studies~~ that a smaller distance would not adversely affect channel stability. Under no circumstances shall the setback be less than two-hundred (200) feet. The evaluation of the potential for adverse effects of bank erosion or failure of the land separating pits located less than 700 feet from the active channel shall include, at minimum, the following analyses:* *• The 200-foot setback area shall not include portions of the former historic active floodplain or formerly mined lands separated from the active channel by levees or unmined areas less than 200 feet wide (measured perpendicular to the active channel).* *• Identification of the former historic positions of the Cache Creek channels as delineated in the CCRMP Technical Studies, and determination if proposed project is located within the limits of the historic channel.* *• Description of current channel hydraulic conditions (based on existing or site-specific hydraulic models) for the Cache Creek channel adjacent to the site and extending not less than 1,000 feet upstream and downstream of the site.*		

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	LS	S		LS	SU
			: *Determination of erosion potential of stream bank adjacent to the site made on the basis of stream flow velocity and estimated shear stress on bank materials during 100-year flood flows and historic patterns of erosion.* : *Analytical slope stability analysis in conformance with Performance Standards 2.5-16 and 2.5-18. This slope stability analysis of the slopes separating the mining area from the creek channel shall include evaluation of stability conditions during 100-year flood flows in the channel.* : *Future proposed bank stabilization designs, if recommended, shall not conflict with channel design recommendations of the Cache Creek Resource Management Plan unless approved by the Technical Advisory Committee.* *The following Performance Standard shall be added to the OCMP and implementing ordinances:* *Performance Standard 4.5-8: Financial assurances for off-channel mining operations which include mining within 700 feet of the active channel of Cache Creek shall include adequate funding for maintenance during the mining and reclamation period of any bank stabilization features approved for the mining permit. Maintenance of the bank stabilization features following the completion of reclamation shall be the responsibility of the property owners under the Cache Creek Resource Management Plan.*		
Impact 4.3-4: Decreased Availability of Aggregate Resources	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6		*None required.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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Table 2-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation		Mitigation Measures	Level of Significance After Mitigation	
	LS	S		LS	SU
Hydrology and Water Quality					
Impact 4.4-1: Potential impacts to Groundwater Levels, Rate of Flow, and Direction of Flow	A-1a, A-1b, A-2, A-3, and A-4	OCMP, A-5a, A-5b, and A-6	*Mitigation Measure 4.4-1a (OCMP, A-5a, A-5b, A-6)* *Performance Standard 3.5-1 included in the OCMP shall be as follows:* *Performance Standard 3.5-1: The area of backfilled off-channel excavations extending below the groundwater table shall be minimized to reduce changes to groundwater levels and flow. Backfilled pits shall be oriented with regard to the direction of groundwater flow to prevent localized obstructions. If a backfilled off-channel excavation is proposed to penetrate either fifty (50) feet or one-half (½) into the saturated thickness of the shallow aquifer, then at least six months prior to the commencement of excavation below ~~the water table~~ average high groundwater level the applicant shall demonstrate in a manner consistent with the Technical Studies, that the pit design would not adversely affect active off-site wells within one-thousand (1,000) feet of the proposed pit boundary. If the application includes a series of backfilled pits, then the applicant shall also demonstrate that the cumulative effects of the multiple backfilled pits would not adversely affect groundwater flow, if there are any active off-site wells within one-thousand (1,000) feet of the pit boundaries.* *The applicant shall demonstrate, using MODFLOW,[1] that the proposed pit design would not adversely impact active off-site wells within 1,000 feet of the proposed pit boundary. An effect shall be considered adverse if the reduction in simulated groundwater levels exceeds two feet at any well located within 1,000 feet of the pit boundary or results in well failure. Average, historic low groundwater levels, which represent the condition of maximum threat to water levels in the subject well, shall be used for this simulation. If an adverse impact is identified by the MODFLOW simulation, the mining and reclamation plan would be modified or the applicant shall submit a written agreement that the well owner has agreed to relocate or redesign the well (at no expense to the County).* *In addition, the following performance standards measures shall be added to the OCMP:* *3.5-16 Site-specific aquifer testing shall be conducted, if needed, to determine aquifer properties for the required modeling.* *3.5-17 A well survey shall be conducted and all wells within 1,000 feet of the limits of mining plotted on a scaled map. Each property owner owning a parcel(s) within 1,000 feet of the proposed limits of mining shall be contacted and queried about wells that may be located near the mining area.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

[1]MODFLOW is a three-dimensional finite difference model used to simulate groundwater flow. A three-dimensional model would be necessary since aquifer permeability would vary with depth after reclamation.

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	LS	**S**		**LS**	**SU**
Impact 4.4-2: Potential Degradation of Water Quality During Aggregate Mining and Reclamation	A-1a, A-1b, A-2, A-3, and A-4	OCMP, A-5a, A-5b, and A-6	*Mitigation Measure 4.4-2a (OCMP, A-5a, A-5b, A-6)* *Mitigation of potential water quality impacts would be addressed as described in the flowchart presented as Figure 4.4-9. The OCMP and implementing ordinances shall be modified as described below.* *Pollution Prevention* *Performance Standard 3.5-6 of the OCMP and the associated ordinance shall both be modified as follows:* *If any off-channel excavation proposes to extend below the level of seasonal high groundwater ~~level~~, then six months prior to the commencement of excavation below the ~~water table~~ average high groundwater level the applicant shall ~~demonstrate in a manner consistent with the Technical Studies that the pit is sufficiently set back from any active drinking water wells within one thousand (1,000) feet of the proposed pit boundaries in order to ensure that potential groundwater contamination is prevented~~. identify and locate all off-site wells within 1,000 feet of the proposed mining boundary. If active wells are identified, well characteristics (pumping rate, depth, and locations of screens) shall be determined. If wells are not located within 1,000 feet, the pre-mining impact evaluation would be considered complete.* *If mining is proposed within 1,000 feet of a municipal water supply or within 500 feet of a domestic water supply well, a capture zone analysis shall be conducted using the U.S. Environmental Protection Agency model WHPA. The simulation shall assume 30 days of continuous pumping of the water supply well (at its maximum probable yield) under analysis. A mining setback shall be established so that the capture zone and the pit do not coincide. Alternatively, the applicant shall submit a written agreement that the well owner has agreed to relocate or redesign the well (at no expense to the County). The analysis shall be prepared and signed by a Registered Professional Engineer or Certified Hydrogeologist and submitted to the County for review and shall be submitted to, and approved by, the County at least six months prior to commencement of excavation below the seasonal high groundwater level.* *Any new drinking water wells proposed for installation within 1,000 feet of a proposed wet pit mining area shall be subject to review by the Yolo County Environmental Health Department. The County shall determine, based on site-specific hydrogeology and available water quality data, whether to approve the proposed well installation.* *The County may retain appropriate staff or a contract consultant to provide third party critical review of all hydrogeologic reports related to mining applications.*	OCMP, A-1a; A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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Environmental Impact	Level of Significance Before Mitigation		Mitigation Measures	Level of Significance After Mitigation	
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			Performance Standard 3.5-3 of the OCMP and the associated ordinance shall be replaced with the following Performance Standard: *Surface water shall be prevented from entering mined areas, through perimeter berms or ditches and grading. Appropriate erosion control measures shall be incorporated into all surface drainage systems. Drainage and detention facilities within the proposed mining areas shall be designed to prevent discharges to the wet pits and surface water conveyances (i.e., creeks and sloughs) from the 20-year/1-hour storm or less. For events greater than the 20-year/1-hour storm, runoff shall be directed into surface water conveyances. Drainage plans shall not rely solely on ditches and berms to direct runoff away from the wet pit. Without proper maintenance, berms and ditches may deteriorate with time and become ineffective. Drainage plans shall emphasize grading of disturbed areas that results in broad gentle slopes that drain away from the pits. Grading plans shall be reviewed by the County to evaluate compliance with drainage plan objectives prior to project approval.* *In addition, a restriction shall be recorded on the deed that requires berms and ditches to be permanently maintained in a condition consistent with the final approval. The deed restriction shall require inspection of the berms and ditches by a registered geologist or professional engineer every five years after completion of reclamation. An inspection report including recommendations for corrective action, if needed, shall be submitted to the Yolo County Community Development Agency following each inspection. The property owner shall be required to implement recommended corrective action, if any. In addition, an inspection easement (which allows County staff or other authorized personnel) to inspect the ditches and berms shall be recorded on the deed.* *Performance Standard 2.5-8 of the OCMP and the associated ordinance shall be modified as follows:* *Unnecessary personnel shall be excluded from off-channel excavations. Open wet pits shall be fenced with a four strand barbed wire fence or the equivalent, prior to the commencement of excavation, during excavation, and during reclamation. Fencing may enclose the property of which mining is a part, the mining site, or both. In addition, signs shall be installed at the project site boundaries and access road, indicating that the excavation area is ~~a danger zone~~ restricted. Additional security (e.g., gates with protected locks and wing fences to prevent drive-arounds) shall be provided at all vehicular access routes. The fencing and gates shall be maintained throughout the mining and reclamation period and after completion of reclamation. A requirement shall be recorded on the deed of the property which requires the landowner to maintain fences and gates.* *The potential for water quality degradation resulting from operation of motorized watercraft is adequately mitigated by Performance Standards 3.5-10 and 2.5-8.*		

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			The potential for eutrophication of the wet pit lakes would be adequately mitigated by Performance Standards 2.5-18 and 3.5-11 (discussed in Impact 4.4-3). *Performance Standard 2.4-11 of the OCMP and associated ordinance shall be deleted.* *Monitoring* *Performance Standard 3.5-4 of the OCMP and the associated ordinance shall be modified as follows:* *All surface mining operations that propose off-channel excavations extending below the groundwater table shall develop and maintain a groundwater monitoring program consisting of two components; water level measurements and water quality testing. A groundwater level monitoring program shall be initiated at least six months prior to removal of overburden. At a minimum, the groundwater level monitoring program shall consist of three monitoring wells, with at least one well upgradient of the wet pit and one well downgradient of the wet pit. Monitoring programs for proposed mining areas exceeding 100 acres (total proposed mining area over the life of the project) shall include one additional well for each 100 acres to be mined. Therefore, proposed mining areas of 1 to 99 acres would require 3 wells, 100 to 199 acres would require four wells, 200 to 299 acres would require 5 wells, and so on. These wells shall be distributed through the vicinity of the proposed mining area and used for groundwater level measurements. Groundwater levels shall be collected from the monitoring wells on a quarterly basis for six months prior to mining and for the duration of the mining period. All wellheads shall be surveyed with horizontal and vertical control to allow calculation of groundwater elevations and development of groundwater contour maps. Groundwater levels shall be measured with an accuracy of plus or minus 0.01 foot, at minimum.* *Water quality in the vicinity of each active wet pit mining location would be evaluated by analyzing samples from selected monitoring wells (one upgradient and one downgradient) and wet pit surface water sampling locations. Since mining would be conducted in phases over a relatively long period of time, pit boundaries would change with time. Selection, and installation if necessary, of downgradient monitoring wells, which would be critical to adequately characterize the groundwater quality in the vicinity of the wet pits, would be proposed by the applicant for review and approval by the County. The selected monitoring wells shall be installed and sampled at least six months prior to removal of overburden. The downgradient wells shall be located as near to active wet pit mining areas as is practical. The upgradient wells shall be located an adequate distance from the proposed mining area to ensure that effect of the wet pit on water quality in the well would be negligible. The water samples from the wet pit shall be collected in a manner so as to ensure that they are representative of water quality within the wet pit. The minimum sampling schedule and required analyses are described below.*		

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			Groundwater level and pit water surface level measurements: Quarterly in all wells for the duration of mining and reclamation For proposed wet pit mining, sample collection and analysis of physical, chemical, and biological constituents shall be conducted according the following specifications: • Prior to removal of overburden- One upgradient and one downgradient well shall be sampled at least six months prior to removal of overburden and again at the start of excavation. The samples shall, at minimum, be analyzed for general minerals, inorganics, nitrates, total petroleum hydrocarbons (TPH) as diesel and motor oil, benzene, toluene, ethylbenzene, and xylenes (BTEX), pesticides (EPA 8140 and 8150), and coliform (with E. coli confirmation). • During wet pit mining and active reclamation- The wet pit shall be sampled semi-annually for the duration of mining and active reclamation. The samples shall, at minimum, be analyzed for general minerals, inorganics, nitrates, TPH as diesel and motor oil, BTEX, pesticides (EPA 8140 and 8150), and coliform (with E. coli confirmation). One upgradient and one downgradient well shall be analyzed, at minimum, for general minerals, inorganics, nitrates, TPH as diesel and motor oil, BTEX, pesticides (EPA 8140 and 8150), and coliform (with E. coli confirmation). The wells shall be sampled according to the following schedule: 0-2 years: Semi-annually 2 years to completion of reclamation: Annually • After active reclamation- After all heavy equipment work has been completed in the vicinity of the pit, the TPH and BTEX analyses may be discontinued. The wet pit and one upgradient and one downgradient well shall be sampled and analyzed for pH, temperature, nutrients (phosphorus and nitrogen), total dissolved solids, total coliform (with E. coli confirmation), and biological oxygen demand. This monitoring shall be conducted every two years for a ten year period after completion of reclamation.		

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			A report to the County Community Development Agency and Department of Environmental Health shall be submitted ~~annually regarding the results of the groundwater monitoring program~~ within 30 days of the required groundwater testing. *If, at the completion of the mining and reclamation period, water quality has not been impacted, all monitoring wells shall be destroyed in accordance with California Department of Water Resources Well Standards (DWR, 1991). If the County or other agency wishes to maintain the wells for future water resources evaluation, selected wells could be preserved for this use.* *The County may retain appropriate staff or a contract consultant to provide third party critical review of all hydrogeologic reports related to monitoring.* *Data Evaluation/Corrective Action* *The following Performance Standard shall be added to the OCMP and implementing ordinance.* *PS. 3.5-16: A performance bond shall be acquired to ensure that monitoring continues through the mining period and ten years after the completion of reclamation.* *Action 3.4-4 of the OCMP shall be modified as follows:* *The Yolo County Community Development Agency shall designate staff to ~~begin compiling and coordinating the monitoring information generated by the off-channel mining operations, in order to form the foundation for preparing an ongoing groundwater database covering the entire County~~ coordinate with City, County, regional, and State agencies that may wish to receive copies of data generated from the off-channel mining operations, including the towns of Capay, Esparto, Yolo, and Madison, the city of Woodland, and the Yolo County Flood Control and Water Conservation District, the Water Resources Agency, the Central Valley Regional Water Quality Control Board, and the California Department of Water Resources. The data base shall be expanded to include other relevant sources of information, so that it can be used as reference material for ~~the Water Resources Agency and other~~ regional water planning efforts.*		

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			If at any time during the monitoring period, testing results indicate that sampling parameters exceed Maximum Contaminant Levels (MCLs), as reported in the California Code of Regulations, or established background levels, a qualified professional shall evaluate potential sources of the contaminants. The evaluation shall determine the source and process of migration (surface or subsurface) of the contaminants. A report shall be submitted to the regulatory agencies (Yolo County Community Development Agency and the Central Valley Regional Water Quality Control Board) which identifies the source of the detected contaminants and specifies remedial actions to be implemented by the applicant for corrective action. If it is determined that the source of water quality degradation is off- site, and County and RWQCB are in agreement with this conclusion, the applicant shall not be responsible for corrective action. *If corrective action is ineffective or infeasible, the responsible party must provide reparation to affected well owners, either by treatment of water at the wellhead or by procurement of alternate water supply.* *Analysis of environmental impact for projects in the vicinity of the wet pits shall include consideration of potential water quality impacts on the open water bodies.*		
Impact 4.4-3: Potential Degradation of Water Quality after Reclamation of Mined Lands	A-1a, A-1b, A-2, A-3, and A-4	OCMP, A-5a, A-5b, and A-6	*Mitigation Measure 4.4-3a (OCMP, A-5a, A-5b, A-6)* *In addition to the policies included in the OCMP, the following mitigation measures shall be implemented:* *The potential for eutrophication and biological degradation of wet pit lakes would be adequately mitigated by Performance Standards 2.5-18 and 3.5-11, and Mitigation Measure 4.4-2a.* *The potential for illegal discharges to occur would be adequately mitigated by Mitigation Measure 4.4-2a.* *The potential for water quality degradation resulting from legal operation of motorized watercraft is adequately mitigated by Performance Standard 3.5-10. The potential impacts associated with illegal operation of watercraft in the lakes is adequately mitigated by the requirement for fencing and locked gates, discussed above (Performance Standard 2.5-8).*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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			The potential impacts associated with groundwater quality degradation would be partially mitigated by implementation of the monitoring program described in Mitigation Measure 4.2-2. In addition, the following Performance Standard shall be added to the OCMP and implementing ordinance: *Overburden and processing fines shall be used whenever possible to support reclamation activities around reclaimed wet pits. These materials may be used in reclamation activities without testing for agricultural chemicals. If topsoil (A-horizon soil), formerly in agricultural production, is proposed for use within the drainage area of a wet pit, the soils must be sampled prior to placement and analyzed for pesticides and herbicides (EPA 8140 and 8150). Samples shall be collected and analyzed in accordance with EPA Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, Third Edition (as updated). Topsoil that contains pesticides or herbicides above the Maximum Contaminant Levels for primary drinking water (California Code or Regulations) shall not be placed in areas that drain to the wet pits.* *The following performance standards shall be added to the OCMP:* *Prior to approval of reclamation of aggregate mining areas to permanent lakes, the County shall commission a sampling and analysis program, to be implemented in one existing wet pit mining area within the OCMP planning area, to evaluate the potential for increased methylmercury production associated with wet pit mining and reclamation of mining areas to permanent lakes. The program shall include sampling of water and sediments from the bottom of the existing pit and analysis of the samples for organic content, pH, dissolved oxygen content, dissolved carbon content, and total mercury. In addition, samples of predatory fish (preferably, largemouth bass) shall be collected and analyzed for mercury and methylmercury content. If the initial sampling indicates either of the following conditions, the County shall perform verification sampling:* • *Average concentrations of total mercury in excess of 0.000012 mg/l in the water;* • *Mercury levels in fish samples in excess of 0.5 mg/kg.* *If verification sampling indicates exceedance of these mercury standards, the County shall not approve reclamation of mining areas to permanent lakes.*		

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			In the event of approval of reclamation of mined areas to permanent lakes, the first lake reclaimed as part of each approved long-range mining plan shall be evaluated annually by the landowner for five years for conditions that could result in significant methylmercury production. The annual evaluations shall be conducted by a qualified aquatic biologist or limnologist and shall include the following analyses: • *Lake condition profiling during the period June through September, including measurements of pH, eH (or redox potential), temperature, dissolved oxygen, and total dissolved carbon.* • *Collection of a minimum of five predator fish (preferably largemouth bass) specimens and analysis of the specimens for mercury and methylmercury content.* *If the average fish specimen mercury content exceeds 0.5 mg/kg for two consecutive years, wet pit mining on property controlled by the mining operator/owner shall be suspended and the owner/operator shall either:* • *Present a revised reclamation plan to the Yolo County Community Development Agency which provides for filling reclaimed lake to a level five feet above average seasonal high groundwater level with a suitable backfill material, or* • *Present a mitigation plan to the Yolo County Community Development Agency which provides a feasible and reliable method for reducing methylmercury production. Potential mitigation could include permanent aeration of bottom levels of the lake, alteration of water chemistry (increasing pH or dissolved organic carbon levels), or control of anaerobic bacteria populations. The mitigation plan would require approval by the Regional Water Quality Control Board, Department of Fish and Game, and the Yolo County Department of Environmental Health.*		
Impact 4.4-4: Loss of Water from Aquifer Storage Due to Evaporation	A-1a, A-1b, A-2, A-3, and A-4	OCMP, A-5a, A-5b, and A-6	*Mitigation Measure 4.4-4a (OCMP, A-5a, A-5b, A-6)* *Performance Standard 3.5-12 of the OCMP shall be modified as follows:* ~~*Reclaimed wet pits shall minimize shallow depths in order to reduce evapotranspiration, unless the shallow areas are being reclaimed to wetland habitat. Wet pits shall be considered shallow when they extend less than ten (10) feet into the groundwater table.*~~ *All permanent wet pits shall be reclaimed to include valuable wildlife habitat to offset evaporation losses from wet pits.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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Impact 4.4-5: Potential Impacts Associated with Groundwater Recharge	A-1a, A-1b, A-2, and A-3	OCMP, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.4-5a (OCMP, A-4, A-5a, A-5b, A-6)* *The County shall eliminate the following Actions and Performance Standards from the OCMP: Objective 3.3-3, Actions 3.4-2, 3.4-6 through 3.4-8, Performance Standards 3.5-7, 3.5-9, 3.5-14, and 3.5-15.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.4-6: Potential Impacts Resulting from Storm-Related Flooding	A-1a, A-1b, A-2, and A-3	OCMP, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.4-6a (OCMP, A-4, A-5a, A-5b, A-6)* *The following performance standard shall be added to the OCMP:* *Performance Standard 4.5-8: Flood protection upgrades shall be completed in the vicinity of the mining and processing areas, if necessary, to ensure protection from the 100-year flood event. Flood protection shall be provided from flooding associated with overtopping of the alluvial separators or levees along Cache Creek and all tributaries and drainage channels (including, but not limited to, Willow Slough and Lamb Valley Slough).* *The flood protection upgrades shall be designed and constructed to provide the necessary 100-year protection without exacerbating downstream flooding problems. Downstream flooding could be increased if floodplain storage areas were removed from the drainage system by constructing levees in areas where they did not exist before (or raising levees that are overtopped in floods up to the 100-year event). Alternative flood management design systems (potentially using detention basins, infiltration galleries, and/or floodplain storage in noncritical areas) shall be required as a condition of project approval.* *The following performance standard shall be added to the OCMP:* *Performance Standard 4.5-9: The County Floodplain Administrator shall file for a Letter of Map Revision with FEMA, to update the FIRMs affected by channel maintenance activities and levee improvements with the planning area every ten years.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.4-7: Potential Impacts from Flooding Related to Dam Failure	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6		*None required.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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Environmental Impact	**Level of Significance Before Mitigation**		**Mitigation Measures**	**Level of Significance After Mitigation**	
	LS	**S**		**LS**	**SU**
Impact 4.4-8: Potential Impacts Associated with Inundation of Dry Pits or Lowered Reclaimed Surfaces by High Groundwater Conditions	A-1a, A-1b, A-2, A-3, and A-4	OCMP, A-5a, A-5b, and A-6	*Mitigation Measure 4.4-8a (OCMP, A-5a, A-5b, A-6)* *The following performance standard shall be added to the OCMP and associated ordinance:* *Performance Standard 3.5-16: The final distance between reclaimed lowered surfaces and average high groundwater shall not be less than five feet. The average high groundwater level shall be established for each proposed mining area. The degree of groundwater level fluctuation varies with location throughout the basin and within relatively small areas (proposed mining sites). The determination of average high groundwater level shall be conducted by a professional engineer or certified hydrogeologist and shall be based on wet season water level elevation data collected at the proposed site or adjacent areas with similar hydrogeological conditions. Water level records prior to 1977 shall not be used since they would reflect conditions prior to installation of the Indian Valley Dam. The dam caused a significant change in hydrology of the basin and data collected before its installation shall not be used in estimation current average high groundwater levels. The wells shall be adequately distributed throughout the proposed mining site to reflect spatial variation in groundwater levels and fluctuations.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Agriculture					
Impact 4.5-1: Consistency with the California Land Conservation Act of 1965 (Williamson Act) Regulations	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6		*None required.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.5-2: Potential Impact of Permanent Loss of Agricultural Land Caused by Conversion of Agricultural Land to Other Post-Reclamation Uses		OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.5-2a (OCMP, A-4, A-5a, A-5b, A-6)* *The following Performance Standards shall be included in OCMP:* *Performance Standard 4.5-8: All proposed mining and reclamation plans shall provide information in permit applications to allow identification of portions of the proposed mined lands that meet the definition of "prime farmlands" as defined under the Williamson Act.*		OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6

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			Performance Standard 4.5-9: All mining permit applications that include "prime farmlands" as defined by the provisions of the Williamson Act shall identify the location and acreage of "prime farmlands" which, as a result of reclamation, would be permanently converted to non-agricultural uses. For each acre of "prime farmland" that would be converted to non-agricultural use, the reclamation plan shall present provisions to offset (at a 1:1 ratio) the conversion of these lands. The potential offsets can include, but not be limited to one or more of the following options: *• Identification of improvements by a qualified soil scientist to the agricultural capability of non-prime lands within or outside the project site that convert non-prime to prime agricultural conditions. These improvements can include permanent improvement of soil capability though soil amendments, reduction of soil limitations (such as excessive levels of toxins), or improvements in drainage for areas limited by flooding or low permeability soils.* *• Placement of permanent Agricultural Preserve easements on lands meeting Williamson Act definition of "prime farmland" that are not currently under Williamson Act contract.* *• Demonstration of the ability to provide irrigation to non-prime lands limited only by lack of irrigation water supply. The identified water supply cannot be made at the expense of "prime farmlands" currently using the same water supply.* *Mitigation Measure 4.5-2b (A-2, A-3)* *None required. However, agencies regulating aggregate mining projects in agricultural areas outside Yolo County shall consider adopting regulations similar to Performance Standard 4.5-9 to reduce the impacts of permanent conversion of agricultural land to non-agricultural uses.* *Mitigation Measure 4.5-2c (A-1a, A-1b)* *None available.*		
Impact 4.5-3: Potential Impacts of the Temporary Loss of Agricultural Productivity Due to Disturbance by Mining		OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.5-3a (OCMP, A-4, A-5a, A-5b, A-6)* *The following performance standard shall be added to OCMP:* *Performance Standard 5.5-3: All proposed mining and reclamation plans shall present a phasing plan for mining and reclamation activities. The phasing plan shall be structured to minimize the area of disturbed agricultural lands during each mining phase, and encourage the early completion of reclamation of agricultural land.*		OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6

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			Mitigation Measure 4.5-3b (A-1a, A-1b) *None available.* *Mitigation Measure 4.5-3c (A-2, A-3)* *Agencies regulating aggregate mining projects in agricultural areas outside Yolo County shall adopt performance standards, similar to Performance Standard 5.5-3 of the OCMP, to minimize the area and duration of disturbance of agricultural lands.*		
Impact 4.5-4: Permanent Loss of Agricultural Soils Due to Wind or Water Erosion	A-1a and A-1b	OCMP, A-2, A-3, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.5-4a (OCMP, A-2, A-3, A-4, A-5a, A-5b, A-6)* *OCMP Action 5.5-2 shall be amended as follows :* *Action 5.5-2: Topsoil, subsoil, and subgrade materials in stockpiles shall not exceed (40) feet in height, with slopes no steeper than 2:1 (horizontal:vertical). Stockpiles shall be seeded with a vegetative cover to prevent erosion and leaching. The use of topsoil for purposes other than reclamation shall not be allowed without the prior approval of the Community Development Director.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.5-5: Potential Impacts on Agricultural Capability Caused by Soil Management During Removal, Stockpiling, and Reuse		OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	*None required.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.5-6: Potential Impacts on Agricultural Production Related to Lowered Reclaimed Surfaces	A-1a and A-1b	OCMP, A-2, A-3, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.5-6a (OCMP, A-2, A-3, A-4, A-5a, A-5b, A-6)* *The OCMP and ordinances shall be augmented with the following standard:* *Performance Standard 5.5-5: Reclaimed agricultural surfaces shall be graded to provide adequate field gradients to allow surface/furrow irrigation of crops and allow for adequate storm water drainage.* *Mitigation Measure 4.5-6b (A-4, A-5a, A-5b, A-6)* *The addition of Performance Standard 3.5-16 (Mitigation Measure 4.4-2a) would reduce the potential damage to crops by high groundwater conditions.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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Impact 4.5-7: Potential Cumulative Loss of Productive Agricultural Land Within Yolo County		OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.5-7a (OCMP, A-1a, A-1b, A-4, A-5a, A-5b, A-6)* *Implementation of Mitigation Measure 4.5-2a would reduce the cumulative impact of permanent conversion of agricultural land to non-agricultural uses but not to a less-than-significant level.* *Mitigation Measure 4.5-7b (A-2, A-3)* *No enforceable mitigation available.*		OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6
Biological Resources					
Impact 4.6-1: Impact on Existing Vegetative Cover	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6		*None required.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.6-2: Impact on Sensitive Natural Community Types		OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.6-2a (OCMP, A-4, A-5a, A-5b, A-6)* *Section 10-4.502(b)(1) of the Off-Channel Surface Mining Ordinance shall be revised as follows:* *...The analysis shall propose appropriate measures to reduce any potential adverse impacts to species of concern, sensitive natural communities, or significant habitat.* *The following revisions shall be made to Performance Standard 6.5-2 of the OCMP:* 6.5-2. Avoid disturbance of ~~R~~riparian vegetation, including identified off-channel vegetation ~~shall be retained~~. Replacement habitat shall be established where complete avoidance is not possible ~~or replaced~~ according to a habitat restoration plan prepared by a qualified biologist, consistent with the goals of this plan. *The following shall be included as an additional Performance Standard in Chapter 6 of the OCMP:* *6.4-12. Avoid disturbance of oak woodland vegetation and mature oaks. Replacement habitat and plantings shall be established where complete avoidance is not possible according to a habitat restoration plan prepared by a qualified biologist, consistent with the goals of this plan.* *Mitigation Measure 4.6-2b (A-1a, A-1b, A-2, A-3)* *None Required.*	OCMP, A-4, A-5a, A-5b, and A-6	A-1a, A-1b, A-2, and A-3

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Impact 4.6-3: Disturbance to Wildlife Habitat and Disruption of Movement Corridors		OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.6-3a (OCMP, A-4, A-5a, A-5b, A-6)* *The following shall be incorporated as an additional Action policy in Chapter 6 of the OCMP:* *6.4-13. Where fence row habitat previously existed, reestablish fence row habitat as part of reclamation to agricultural use to replace and improve the wildlife habitat value of agricultural lands, allowing for reestablishment of scattered native trees, shrubs, and ground covers along the margins of reclaimed fields. Reestablished habitat can be in locations other than where occurred originally. Restoration plans shall specify ultimate fence row locations, identify planting densities for trees and shrubs, and include provisions for monitoring and maintenance to ensure establishment.* *The following shall be incorporated as an additional Action policy in Chapters 6 and 7 of the OCMP:* *6.4-14 and 7.4-9. Avoid disturbance to important wildlife habitat features such as nest trees, colonial breeding locations, elderberry host plants for VELB, and essential cover associated with riparian forest and oak woodland habitat. This shall include sensitive siting of haul roads, trails, and recreational facilities away from these features.* *Mitigation Measure 4.6-3a (A-1a, A-1b, A-2, A-3)* *None Required.*	OCMP, A-4, A-5a, A-5b, and A-6	A-1a, A-1b, A-2, and A-3
Impact 4.6-4: Impact on Special-Status Species		OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.6-4a (OCMP, A-4, A-5a, A-5b, A-6)* *The following shall be included as additional Action policies in Chapter 6 of the OCMP:* *6.4-15. Essential habitat for special-status species shall be protected and enhanced, or replaced as part of mitigation plans prepared by a qualified biologist.* *6.4-16. Restoration components of reclamation plans shall include provisions to enhance habitat for special-status species, where feasible.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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			Performance Standard 6.5-3 of the OCMP shall be replaced with the following: *6.5-3. Slopes on stockpiled soils shall be graded to 2:1 for long-term storage to prevent use by bank swallows. At no time during the active breeding season (1 May through 31 July) shall slopes on stockpiles exceed 1:1, even on a temporary basis. Stockpiles shall be graded to a minimum 1:1 slope at the end of each work day where stockpiles have been disturbed during the active breeding season.* *Performance Standard 6.5-7 of the OCMP shall be revised as follows:* *6.5-7. Proposed habitat restoration or mitigation plans shall be sent to the California Department of Fish and Game, U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers for review and comment to ensure that the projects do not conflict with other existing habitat enhancement efforts.* *Performance Standard 6.5-8 of the OCMP shall be revised as follows:* *6.5-8 All surface mining operations and reclamation plans shall complement the preservation and enhancement measures in ~~requirements of~~ the Yolo County Habitat ~~Management~~ Conservation Plan. Mining operators with lands designated as having a moderate to high potential for use as mitigation areas in the HCP shall be encouraged to participate in the Developer HCP Participation Options, including use of lands as mitigation sites.*		
Impact 4.6-5: Modifications to Jurisdictional Wetlands or Other Waters		OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.6-5a (OCMP, A-4, A-5a, A-5b, A-6)* *The following shall be included as an additional Action policy in Chapter 6 of the OCMP:* *6.4-14. Existing jurisdictional wetlands shall be retained to the extent possible. Replacement wetlands shall be provided where complete avoidance is not possible according to a habitat restoration plan prepared by a qualified wetland specialist and approved by jurisdictional agencies, ensuring no net loss of wetland acreage or habitat value.* *Performance Standard 6.5-7 of the OCMP shall be revised as recommended in Mitigation Measure 4.6-4a.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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Impact 4.6-6: Compatibility and Consistency of Restoration Provisions		OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.6-6a (OCMP, A-4, A-5a, A-5b, A-6)* *Action Policy 6.4-2 of the OCMP shall be revised as follows:* *6.4-2. Coordinate with the California Department of Fish and Game, U.S. Fish and Wildlife Service, and U.S. Army Corps of Engineers to ensure that proposed habitat restoration projects ~~do not conflict~~ are consistent with or complement the Off-Channel Mining Plan.* *Performance Standard 6.4-10 of the OCMP shall be revised as follows:* *6.4-10. Restore riparian habitat throughout the planning area, wherever appropriate. However, revegetative efforts shall be primarily focussed on implementing recommendations ~~Zones 1 and 2 of the Recommended Management Activity Zones, as~~ described in the Technical Studies and the subsequent Restoration Recommendations incorporated into the CCRMP.* *Performance Standard 6.5-9 of the OCMP shall be revised as follows:* *6.5-9. If any wet pit is proposed to be reclaimed for recreational uses and/or riparian habitat, the ~~application shall~~ design shall ~~the facility to~~ account for fluctuations in the groundwater table.* *Performance Standard 6.5-7 of the OCMP shall be revised as recommended in Mitigation Measure 4.6-4a.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Air Quality					
Impact 4.7-1: Potential Emissions of PM_{10}	A-1a, A-2, A-3, A-4, and A-5a	OCMP, A-1b, A-5b, and A-6	*Mitigation Measure 4.7-1a (OCMP, A-1b, A-5b, A-6)* *The following Performance Standards shall be added to the OCMP:* *Wherever practical and economically feasible, portable or movable conveyor systems shall be used to transport raw materials and overburden.*	A-1a, A-2, A-3, A-4, and A-5a	OCMP, A-1b, A-5b, and A-6

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Impact 4.7-2: Potential Emissions of Ozone Precursors (ROG and NO_x)	A-1a, A-2, A-4, and A-5a	OCMP, A-1b, A-3, A-5b, and A-6	*Mitigation Measure 4.7-2a (OCMP, A-1b, A-3, A-5b, A-6)* *The following Performance Standards shall be added to the OCMP:* *Wherever practical and economically feasible, portable or movable conveyor systems shall be used to transport raw materials and overburden.* *OCMP Performance Standard 2.5-7 and proposed Off-Channel Surface Mining Ordinance Section 10.4.11 shall be amended as follows:* *All ~~operational heavy equipment~~ internal combustion engine driven equipment and vehicles shall be kept tuned according to the manufacturer's specifications and properly maintained to minimize the leakage of oils and fuels. No vehicles or equipment shall be left idling longer than 5 minutes.*	A-1a, A-2, A-4, and A-5a	OCMP, A-1b, A-3, A-5b, and A-6
Impact 4.7-3: Cumulative Effects on Attainment of State and Federal Standards	A-1a, A-4, and A-5a	OCMP, A-1b, A-2, A-3, A-5b, and A-6	*Mitigation Measure 4.7-3b (OCMP, A-1b, A-2, A-3, A-5b, A-6)* *No enforceable mitigation measures are available.*	A-1a, A-4, and A-5a	OCMP, A-1b, A-2, A-3, A-5b, and A-6
Impact 4.7-4: Potential Impacts on Sensitive Receptors	OCMP, A-1a, A-2, A-3, A-4., A-5a, A-5b, and A-6	A-1b	*Mitigation Measure 4.7-4a (A-1b)* *None available.*	OCMP, A-1a, A-2, A-3, A-4., A-5a, A-5b, and A-6	A-1b
Traffic and Circulation					
Impact 4.8-1: Potential Increase in Trips Associated with Recycling	OCMP, A-1a, A-1b, A-2, A-3, A-4., A-5a, A-5b, and A-6		*None required.*	OCMP, A-1a, A-1b, A-2, A-3, A-4., A-5a, A-5b, and A-6	

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Impact 4.8-2 Potential for Increase in Vehicle Trips	A-1a, A-1b, A-2, A-4, and A-5a	OCMP A-3, 5b, and 6	*Mitigation Measure 4.8-2a (OCMP, A-3, A-5b, and A-6)* *Performance Standard 2.5-5 of the OCMP and Section 10-4.407 of the Off-Channel Surface Mining Ordinance shall be amended as follows:* *As a condition of approval, the operator shall ~~be required to construct~~ agree to assume joint pavement maintenance responsibility with the County (or shared with another producer using the same roadway) for all County roads along a designated haul route ~~to an engineered standard as established by the Public Works Department,~~ from the access point of the surface mining operation to the nearest State Highway. ~~Construction of the required improvements shall be completed prior to commencement of the mining operation.~~ The operator shall agree to submit an evaluation of the structural integrity of the identified roadways on or before December 1 of each year in which mining operations are permitted. The report shall be prepared by a registered professional engineer and/or Country staff with expertise in the area of roadway pavement and shall be subject to the approval of the Public Works Department. Based on the results of this annual evaluation, the Public Works Department shall identify the improvements required to maintain safe and efficient traffic operations on the road for the upcoming year. The County agrees to implement maintenance improvements similar to other County roads (i.e., fill cracks and chip seal). The operator agrees to implement the improvements beyond the typical County improvements in a timeframe set forth by the Public Works Department. ~~As an alternative, the operator may provide security in a form authorized by County Counsel equal to the estimated cost of road construction improvements, in which case improvements shall be completed within one (1) year.~~* *If a subsequent mining operation utilizes a road previously required to be improved pursuant to this subsection, then the subsequent operator shall ~~make a payment to the County based on an equitable portion of the relative impact of the proposed project. The amount paid to the County shall be reimbursed to the operator who made the previous road improvement~~ be responsible for compliance with the agreements and requirements of the previous operator.*	A-1a, A-1b, A-2, A-4, and A-5a	OCMP, A-3, 5b and 6

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	LS	S		LS	SU
Impact 4.8-3: Potential Change in LOS at the State Route 16 / Road 98 / Main Street Intersection	A-la, A-1b, A-2, A-4, and A-5a	OCMP, A-3, A-5b, and A-6	*Mitigation Measure 4.8-3a: (OCMP, A-3, A-5b, A-6)* *The following performance standard shall be added to the OCMP and its implementing ordinance:* *Each operator shall pay its fair share toward improvements required to maintain LOS C operations on County roads or LOS D operations on State Highways. Fair share mitigation shall also be required to improve existing operational deficiencies of the transportation system. Specific locations shall be identified through the project-specific environmental review process for each operator's long-term mining permit application. Each operator shall participate in a funding program operated by Yolo County which is designed to ensure that all improvements are made in a timely manner and that a reimbursement mechanism is in place to ensure repayment of any costs contributed in excess of fair share amounts. The program shall be initiated upon the approval of the long-term mining permits and shall be updated biennially by Yolo County to ensure any new or modified impacts or funding sources are being addressed.*	OCMP, A-1a, A-1b, A-2, A-3, A-4., A-5a, A-5b, and A-6	
Impact 4.8-4: Potential Change in LOS at the State Route 16 / Road 89 Intersection	A-1a, A-1b, A-2, A-4, and A-5a	*OCMP, A-3, A-5b, and A-6*	*Mitigation Measure 4.8-4a (OCMP, A-3, A-5b, A-6)* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 3, 5b and 6.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.8-5: Potential Impacts to the Non-Standard Segment of Road 19, West of Interstate 505	A-1a, A-1b, A-2, A-3	OCMP, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.8-5a (OCMP, A-4, A-5a, A-5b, A-6)* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 4, 5a, 5b and 6.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.8-6: Potential Impacts to the Non-Standard Segment of State Route 16 Between I-505 and the Entrance to the Solano Concrete Plant	A-1a, A-1b, A-2, A-4, and A-5a	OCMP, A-3, A-5b, and A-6	*Mitigation Measure 4.8-6a (OCMP, A-3, A-5b, A-6)* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 3, 5b and 6.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.8-7: Potential Impacts to the Non-Standard Segment of Road 14, West of Interstate 505	A-1a, A-1b, A-2, A-3	OCMP, A-4, A-5a, A- 5b, and A-6	*Mitigation Measure 4.8-7a (OCMP, A-4, A-5a, A-5b, A-6)* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 4, 5a, 5b and 6.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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Environmental Impact	Level of Significance Before Mitigation		Mitigation Measures	Level of Significance After Mitigation	
	LS	S		LS	SU
Impact 4.8-8: Potential Impacts to the Non-Standard Pavement Segment of Road 14, West of Interstate 505	A-1a, A-1b, A-2, A-3	OCMP, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.8-8a (OCMP, A-4, A-5a, A-5b, A-6)* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 4, 5a, 5b and 6.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.8-9: Potential Impacts to Two Non-Standard Bridges on Road 89, North of State Route 16	A-1a, A-1b, A-2, A-4, and A-5a	OCMP, A-3, A-5b, and A-6	*Mitigation Measure 4.8-9a (OCMP, A-3, A-5b, A-6)* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 3, 5b and 6.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.8-10: Potential Impacts to a Non-Standard Bridge on Road 19, West of Interstate 505	A-1a, A-1b, A-2, A-3	OCMP, A-3, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.8-10a (OCMP, A-4, A-5a, A-5b, A-6)* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 4, 5a, 5b and 6.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.8-11: Potential Impacts to a Non-Standard Bridge on Road 85, North of Road 16A	A-1a, A-1b, A-2, A-3	OCMP, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.8-11a (OCMP, A-4, A-5a, A-5b, A-6)* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 4, 5a, 5b and 6.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.8-12: Potential Impacts to a Non-Standard Bridge on Road 14, West of Interstate 505	A-1a, A-1b, A-2, A-3	OCMP, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.8-12a (OCMP, A-4, A-5a, A-5b, A-6)* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 4, 5a, 5b and 6.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.8-13: Potential Impacts to the Non-Standard Curve Radii at the Road 85 / Road 14 Intersection	A-1a, A-1b, A-2, A-3	OCMP, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.8-13a (OCMP, A-4, A-5a, A-5b, A-6)* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 5a, 5b and 6.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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	LS	S		LS	SU
Impact 4.8-14: Potential Impacts to the Non-Standard Curve Radii at the State Route 16 / Road 89 Intersection	A-1a, A-1b, A-2, A-4, and A-5a	OCMP, A-3, A-5b, and A-6	*Mitigation Measure 4.8-14a (OCMP, A-3, A-5b, A-6)* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 3, 5b and 6.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.8-15: Potential Impacts to the Non-Standard Curve Radii at the Road 20 / Road 96 Intersection	A-1a, A-1b, A-2, A-4, and A-5a	OCMP, A-3, A-5b, and A-6	*Mitigation Measure 4.8-15a (OCMP, A-3, A5b, A-6)* *Implementation of Mitigation Measure 4.8-3a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 3, 5b and 6.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.8-16: Potential for Accelerated Pavement Deterioration	A-1b an d A-2	OCMP, A-1a, A-3, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.8-16a (OCMP, A-1a, A-3, A-4, A-5a, A-5b, A-6)* *Implementation of Mitigation Measure 4.8-2a would reduce this impact to a less-than-significant level for the OCMP and Alternatives 1a, 3, 4, 5a, 5b and 6.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Noise					
Impact 4.9-1: Exposure to Unacceptable Noise Levels from Mining, Processing, Hauling, Reclamation, and Post-Reclamation Activities On Site	A-1a, A-1b, A-2, and A-3	OCMP, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.9-1a (OCMP, A-4, A-5a, A-5b, A-6)* *The performance standards in the Off-Channel Surface Mining Ordinance (Section 10-4.418) shall be modified so that the residential noise limit is a CNEL of 60 dB rather than the currently specified L_{eq} of 60 dB. This change shall also be made in the Off-Channel Mining Plan.* *Mitigation Measure 4.9-1b (OCMP, A-4, A-5a, A-5b, A-6)* *From 6:00 a.m. to 6:00 p.m., noise levels shall not exceed an average noise level equivalent (L_{eq}) of eighty (80) decibels (dBA) measured at the property boundaries of the site. However, noise levels may not exceed an average noise level equivalent (L_{eq}) of sixty (60) decibels for any nearby off-site residences or other noise-sensitive land uses.* *From 6:00 p.m. to 6:00 a.m., noise levels shall not exceed an average noise level equivalent (L_{eq}) of sixty-five (65) decibels (dBA) measured at the property boundaries of the site.* *Noise levels shall not exceed a community noise equivalent level (CNEL) of sixty (60) decibels (dBA) for any nearby off-site residence or other noise-sensitive land uses.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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	LS	**S**		**LS**	**SU**
			Mitigation Measure 4.9-1c (OCMP, A-4, A-5a, A-5b, A-6) *The following Performance Standard shall be added to the OCMP:* *Mining activities shall not exceed the noise limit of CNEL 60 dB at existing residences. An existing residence shall be considered the property line of any residentially zoned area or, in the case of agricultural land, any occupied residential structures. Achieving the noise standards could involve setbacks as proposed in the Off-Channel Surface Mining Ordinance (Section 10.4.425), the use of quieter equipment adjacent to residences, or the construction of landscaped berms between mining activities and residences.*		
Impact 4.9-2: Exposure to Unacceptable Increases in Noise Generated by Off-Site Truck Traffic	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6		*None required.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.9-3: Contribution to Increase in Cumulative Noise	A-2	OCMP, A-1a, A-1b, A-3, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.9-3a (OCMP, A-4, A-5a, A-5b, A-6)* *The following performance standard shall be added to the OCMP and its implementing ordinances:* *Operators shall provide acoustical analysis for future truck and traffic noise associated with the individual operations along County roadways identified as experiencing significant impacts due to increased traffic noise. The study shall identify noise levels at adjacent noise-sensitive receptors and ways to control the noise to the "normally acceptable" goal of a CNEL of 60 dB and reduce the increase over existing conditions to 5 dB or less. Typical measures that can be employed include construction of noise barriers (wood or masonry), earthen berms, or re-routing of truck traffic.* *Mitigation Measure 4.9-3c (A-1a, A-1b, A-3)* *Existing mining ordinances shall be modified to require an acoustical analysis for future truck and traffic noise associated with individual operations along County roadways identified as experiencing significant impacts due to increased traffic noise. The study shall identify noise levels at adjacent noise-sensitive receptors and ways to control the noise to the "normally acceptable" goal of a CNEL of 60 dB and reduce the increase over existing conditions to 5 dB or less. Typical measures that can be employed include construction of noise barriers (wood or masonry), earthen berms, or re-routing of truck traffic.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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	LS	**S**		**LS**	**SU**
Impact 4.9-4: Generation of Vibration or Nuisance Noise	A-1a, A-1b, and A-2	OCMP, A-3, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.9-4a (OCMP, A-3, A-4, A-5a, A-5b, A-6)* *The following new performance standard shall be added to the OCMP:* *If mining occurs within 1500 feet of residences, equipment used during nighttime activities shall be equipped with non-sonic warning devices consistent with OSHA regulations, which may include fencing of the area to avoid pedestrian traffic, adequate lighting of the area, and placing an observer in clear view of the equipment operator to direct backing operations. Prior to commencement of operations without sonic warning devices, operators shall file a variance request with the Cal OSHA Standards Board showing that the proposed operation would provide equivalent safety to adopted safety procedures, including sonic devices.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Aesthetics					
Impact 4.10-1: Effects on Existing Views or Vistas During Mining	A-2 and A-3	OCMP, A-1a, A-1b, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.10-1a (OCMP, A-4, A-5a, A-5b, A-6)* *In conjunction with the environmental review of individual projects permitted under the OCMP, means of minimizing the visibility of mining operations, facilities and landform alterations from public viewpoints shall be assessed based on site-specific visual characteristics and viewing conditions. The use of berms, vegetative screens, seeding, special plant materials and contouring the sides and top surfaces of modified landforms, or other measures, shall be incorporated into the individual mine and reclamation plans as appropriate.* *Mitigation Measure 4.10-1b (OCMP, A-4, A-5a, A-5b. A-6)* *Where mining occurs within 1,000 feet of a public right-of-way, including Roads 85, 87, 89, 94B and I-505, the operators shall phase mining such that no more than 50 acres of the area that lies within 1,000 feet of the right-of-way would be actively disturbed at any time. Actively disturbed areas are defined as those on which mining operations of any kind, or the implementation of reclamation such as grading, seeding or installation of plant material are taking place.* *Mitigation Measure 4.10-1c (A-1a, A-1b)* *None available.*		OCMP, A-1a, A-1b, A-4, A-5a, A-5b, and A-6

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	LS	S		LS	SU
Impact 4.10-2: Effects on Views or Vistas Following Reclamation	OCMP, A-4, A-5a, A-5b, and A-6	A-1a, A-1b, A-2, and A-3	*Mitigation Measure 4.10-2a (OCMP, A-4, A-5a, A-5b, A-6)* *None required. However, the following measure would further reduce impacts:* *In conjunction with the environmental review of individual projects permitted under the OCMP, further means of improving the appearance of the landscape after reclamation shall be assessed based on site-specific visual characteristics, site lines and view corridors. The use and placement of berms, vegetative screens, special plant materials, grading slopes and contouring the sides and top surfaces of modified landforms to mimic surrounding landforms, or other measures, shall be incorporated into the mine reclamation plans as appropriate.* *Mitigation Measure 4.10-2b (A-1a, A-1b, A-2 and A-3)* *No mitigation available.*	OCMP, A-4, A-5a, A-5b, and A-6	A-1a, A-1b, A-2, and A-3
Impact 4.10-3: Potential for Visual Incompatibility with Surrounding Land Uses	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6		*None required.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.10-4: Introduction of Light and Glare	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6		*None required.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.10-5: Consistency with Yolo County General Plan Policies	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6		*None required.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Issue 4.10-6: Contribution to Cumulative Visual Impacts	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6		*None required.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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	LS	**S**		**LS**	**SU**
Cultural Resources					
Impact 4.11-1: Potential Impacts to Cultural Resources		OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.11-1a (OCMP, A-4, A-5a, A-5b, A-6)* *The following Performance Standard shall be added to the OCMP:* *Damaging effects on cultural resources shall be avoided whenever possible. If avoidance is not feasible, the importance of the site shall be evaluated by a qualified professional prior to commencement of mining operations. If a cultural resource is determined not to be important, both the resource and the effect on it shall be reported to the County, and the resource need not be considered further. If avoidance of an important cultural resource is not feasible, a mitigation plan shall be prepared and implemented. The mitigation plan shall explain the importance of the resource, describe the proposed approach to mitigate destruction or damage to the site, and demonstrate how the proposed mitigation would serve the public interest.* *In addition, Performance Standard 2.5-3 of the OCMP shall be modified as follows:* *If human skeletal remains are encountered during excavation, all work within seventy-five (75) feet shall immediately stop, and the County Coroner shall be notified within twenty-four (24) hours. If remains are of Native American origin, the appropriate Native American community identified by the Native American Heritage Commission shall be contacted, and an agreement for treating or disposing of, with appropriate dignity, the remains and associated grave goods shall be developed. If any cultural resources such as chipped or ground stone, historical debris, building foundations, or paleontological materials are encountered during excavation, then all work within seventy-five (75) feet shall immediately stop and the Director shall be notified at once. Any cultural resources found on the site shall be recorded by a qualified archaeologist and the information shall be submitted to the County.* *Mitigation Measure 4.11-1b (A-1a, A-1b, A-2, A-3)* *None required. Impacts to cultural resources within areas where mining currently is permitted or in off-site areas are subject to existing State and Federal regulations and restrictions related to the disturbance of cultural resources.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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Hazards					
Impact 4.12-1: Potential Human Health And/Or Environmental Impacts from the Accidental Release of Petroleum Products and Other Chemicals Used During Mining and Reclamation And/Or at Processing Plants	A-1a, A-1b, A-2, and A-3	OCMP, A-4, A-5a, A-5b, and A-6	*Mitigation Measure 4.12-1a (OCMP, A-4, A-5a, A-5b, A-6)* *Goal 2.2-4 shall be revised as follows:* *Eliminate or minimize hazards to the public health and safety that are associated with surface mining operations and reclamation.* *Objective 2.3-3 shall be revised as follows:* *Provide standards and procedures for regulating surface mining operations and reclamation so that hazards are eliminated or minimized and potential adverse environmental effects are reduced or prevented.* *Action 2.4-2 shall be revised as follows:* *Improve the County's monitoring of surface mining by requiring that all operations within the planning area submit detailed annual reports, as well as copies of permits approved by other agencies of jurisdiction. Hazardous materials business plans must be submitted biannually, as required by the Health and Safety Code, unless the types of hazardous materials used change, in which case revised business plans must be submitted within 30 days of the change. This would enable the County to better assess the impacts of off-channel mining and the success of reclamation efforts.* *The following Performance Standard shall be added to the Aggregate Resources Element of the OCMP:* *Fueling and maintenance activities of rubber-tired equipment are prohibited within 100 feet of open bodies of water during mining and reclamation. All Storm Water Pollution Prevention Plans shall include provisions for releases of fuels during fueling activities for draglines.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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	LS	**S**		**LS**	**SU**
			Objective 3.3-3 and Action 3.4-3 shall be revised as follows: *Objective 3.3-3: Ensure that off-channel surface mines are operated such that surface and groundwater supplies are not adversely affected by erosion, lowering of the water table, and/or contamination <u>during mining and reclamation</u>.* *Action 3.4-3: Include a groundwater monitoring program as a condition of approval for any surface mining <u>and reclamation</u> operation that proposes off-channel excavations that extend below the groundwater level. The monitoring program shall require regular groundwater level data, as well as an ~~annual test for~~ a water quality <u>monitoring program</u> based on a set of developed standards.*		
Impact 4.12-2: Historic Pesticide Use May Affect the Health and Safety of Workers Engaged in Mining or Reclamation Activities	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6		*None required.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.12-3: Steep Pit Slopes May Present a Drowning Hazard to the Public	A-1a, A-1b, A-2, A-3, and A-4	OCMP, A-5a, A-5b, and A-6	*Mitigation Measure 4.12-3a (OCMP, A-5a, A-5b, A-6)* *Goals 2.2-4 and 2.3-3 shall be revised to include references to reclamation. Refer to Mitigation Measure 4.12-1a.* *Performance Standards 2.5-4, 2.5-16, and 2.5-18 shall be revised as required by Mitigation Measure 4.3-2a to require that slopes shall not be steeper than 2:1 five feet below the average summer low groundwater level.* *Performance Standard 2.5-8 shall be revised to include signage and fencing requirements during and after reclamation. These changes have been included in Mitigation Measure 4.4-2a in the Hydrology section.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.12-4: Open Bodies of Water May Become Breeding Areas for Mosquitoes. An Increase in the Mosquito Population Could Adversely Affect the Public Health	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6		*None required.*	OCMP, A-1a, A-1b, A-2, A-3, A-4, A-5a, A-5b, and A-6	

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A-2 = No Mining (Alternative Site)
A-3 = Plant Operations Only (Importation)
A-4 = Shallow Mining (Alternative Method/Reclamation)
A-5a = Decreased Mining (Restricted Allocation)
A-5b = Decreased Mining (Shorter Mining Period)
A-6 = Agricultural Reclamation (with Mining Operations as Proposed)

Table 2-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES					
Environmental Impact	Level of Significance Before Mitigation		Mitigation Measures	Level of Significance After Mitigation	
	LS	S		LS	SU
Public Services and Utilities					
Impact 4.13-1: Potential for Long-Term Impacts to Open Space and Recreational Opportunities in the Lower Cache Creek Area	OCMP, A-1a, A-1b, A-2, and A-3, A-4, A-5a, A-5b, and A-6		*None required.*	OCMP, A-1a, A-1b, A-2, and A-3, A-4, A-5a, A-5b, and A-6	
Impact 4.13-2: Potential Increase in Demand for Public Services	OCMP, A-1a, A-1b, A-2, and A-3, A-4, A-5a, A-5b, and A-6		*Mitigation Measure 4.13-2a (OCMP, A-4, A-5a, A-5b, A-6)* *None required; however, the following is recommended:* *The County shall identify the costs of implementing the policies contained in the OCMP, and determine a fair-share cost program for reimbursement by gravel operators and any other affected parties.* *Mitigation Measure 4.13-2b (A-1a, A-1b, A-2, A-3)* *None required.*	OCMP, A-1a, A-1b, A-2, and A-3, A-4, A-5a, A-5b, and A-6	

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7.5 SUMMARY TABLE FOR CCRMP EIR

Table 2-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES					
Environmental Impact	**Level of Significance Before Mitigation**		**Mitigation Measures**	**Level of Significance After Mitigation**	
	LS	**S**		**LS**	**SU**
Land Use and Planning					
Impact 4.2-1: Consistency with Yolo County General Plan	CCRMP and A-3	A-1a, A-1b, and A-2	*Mitigation Measure 4.2-1b (A-1a, A-1b, and A-2)* *In lieu of adopting the CCRMP, the County shall develop an alternate approach for responding to the requirements of General Plan Conservation Policy 35. An alternate approach would be to amend the General Plan to include Conservation Policies, 42, 43, 44, and 45 as discussed in the text.*	CCRMP and A-3	A-1a, A-1b, and A-2
Impact 4.2-2: Consistency with the Yolo County Zoning Ordinance and County Code	CCRMP, A-1a, A-1b, A-2, and A-3		*Mitigation Measure 4.2-2a (CCRMP, A-3)* *None required.* *However, if the SMARA exemption is approved, it is recommended that Section 8-2.2312(a) of the Zoning Ordinance be amended by deleting reference to in-channel surface mining as follows:* ~~*Applicability for in-channel surface mining. The Special Sand and Gravel Combining Zone (SG) may be combined with the existing zoning of any land, including A-1 and A-P zoned land, located within a channel as defined by Chapter 3 of Title 10 of this Code.*~~ ~~*The use of any land within a channel and designated by the Special Sand and Gravel Combining Zone (SG) for mining purposes shall be allowed only pursuant to Chapter 3 of Title 10 of this Code entitled 'Interim In-Channel Surface Mining Regulations,' or successors thereto.*~~	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.2-3: Consistency with the State Mining and Reclamation Act (SMARA) and the State Mining and Geology Board Reclamation Regulations	A-2 and A-3	CCRMP, A-1a, and A-1b	*Mitigation Measure 4.2-3a (OCMP)* *None required.* *However, if the CCRMP is found to be subject to SMARA, the County should submit the Plan, including the CCIP, to Division of Mines and Geology for review and approval as the mining and reclamation plan for the study area of the creek.* *Mitigation Measure 4.2-3b (A-1a, A-1b)* *The County shall incorporate mineral resource management policies into its General Plan as required by SMARA and submit the policies to Division of Mines and Geology for review and comment prior to adoption.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.2-4: Compatibility with Existing and Planned Land Uses	CCRMP and A-2	A-1a, A-1b, and A-3	*Mitigation Measure 4.2-4b (A-1a, A-1b, A-3)* *None available.*	CCRMP, A-2	A-1a, A-1b, and A-3

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Environmental Impact	**Level of Significance Before Mitigation**		**Mitigation Measures**	**Level of Significance After Mitigation**	
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Impact 4.2-5: Change in Land Use Intensity	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.2-6: Land Use Incompatibility Due to Changes in the Creek Boundary	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.2-7: Establishment of a Conceptual Planning Framework for the Long-Term Preservation and Development of Open Space and Recreational Opportunities in the Lower Cache Creek Area.	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Geology and Soils					
Impact 4.3-1: Impacts of Sediment Deposition and Removal Potentially Affecting Creek Stability and Causing Lateral Erosion of the Channel Bed or Banks, Resulting in Loss of Agricultural Lands or Other Valuable Improvements, Such as Roads, Bridges, or Other Structures		CCRMP, A-1a, A-1b, A-2 and A-3	*Mitigation Measure 4.3-1a (CCRMP)* *The CCRMP shall be amended to include the following additional or modified actions and performance standards:* *Action 2.4-2: Limit the amount of aggregate removed from the channel to the ~~average~~ amount of sand and gravel deposited during the previous year (approximately 200,000 tons on average as estimated by the TAC based on channel morphology data), except where bank excavation is necessary to widen the channel as a part of implementing the Test 3 Run Boundary, or where potential erosion and flooding problems exist. The amount and location of in-channel aggregate removal shall be carried out according to the ongoing recommendations of the Technical Studies and the Technical Advisory Committee, with the voluntary cooperation of the landowners involved.* *Action 2.4-15: Present a request to the State Mining and Geology Board to grant an exemption from the requirements of SMARA for all channel improvement projects approved under the Cache Creek Improvement Program.* *Action 2.4-16: Draft the County In-channel Ordinance to prohibit commercial mining with the CCRMP planning area and specify that aggregate extraction within the area shall be limited to activities necessary to complete channel improvement projects.*	CCRMP, A-1a, A-1b, and A-2	A-3

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	LS	S		LS	SU
			Action 6.4-4: ~~Provide a mechanism for the widening and ongoing maintenance of Cache Creek by not including any sand and gravel removed from the channel as a part of an operation's maximum annual production.~~ Draft the County In-channel Ordinance to require that , upon revocation of existing in-channel mining permits, the tonnage of aggregate removed by an aggregate mining operator in completion of approved channel improvement projects is excluded from the operator's permitted maximum annual production. These market incentives would ensure that the necessary work would be accomplished at little cost to the County. ~~while generating royalties for the owner of any property where excavation takes place~~ *Action 6.4-5: ~~Develop agreements with the~~ Provide technical support through the TAC to mining operators, property owners, and government agencies involved with Cache Creek to ~~allow for channel maintenance and repair. These agreements would permit to~~ facilitate the removal of channel deposits that affect property and structures, the construction of flood protection and erosion control measures, and the provision of emergency labor, equipment, and materials during and/or after flood events.* *PS. 2.5-6: Require all channel improvement projects to comply with the requirements of the CCIP and implementing regulations.* *Mitigation Measure 4.3-1b (CCRMP)* *The CCRMP shall be amended to include the CCIP and the following additional or modified Performance Standards:* *PS. 2.5-7: Require the TAC to annually prepare a list of priority channel improvement projects which will be identified and described in an annual report to the Board of Supervisors. Channel improvements which could improve channel stability at the location of bridges or other structures shall maintain a high priority until implementation. Following review by the Board, the TAC shall contact individual landowners to explain recommended channel improvements for their property and describe available resources for design and implementation of the projects.* *PS. 6.5-9: In-channel haul roads shall be located along the toe of the streambank, in order to provide additional bank stabilization and to minimize disturbance of the low-flow channel. Construction of the haul roads shall not result in excavation of the toe of the streambank. Each operation may have no more than two (2) haul roads that cross the low-flow channel. Haul roads shall comply with all applicable requirements of the ~~Department of Fish and Game~~.*		

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Environmental Impact	Level of Significance Before Mitigation		Mitigation Measures	Level of Significance After Mitigation	
	LS	S		LS	SU
			PS. 6.5-10: ~~No excavation shall take place within thirty (30) feet of the top of the channel bank, in order to protect riparian vegetation and to prevent undermining of the bank toe.~~ Approved channel improvement projects requiring excavation of channel banks and removal of riparian vegetation shall revegetate upon completion of excavation activities or shall develop similar habitat at a suitable off-site location. *PS. 6.5-6: Final slopes for in-channel excavations shall conform with the channel slope and sinuosity guidelines shown in Figure 12 [of the CCRMP]. Excavations shall be sloped in a downstream direction, toward the low-flow channel. When recommended by the TAC, alternate grading plans may be approved.* *PS. 6.5-7: In-channel excavations shall generally conform with the cross-section profiles shown in Figures 13 through 17 [of the CCRMP]. When recommended by the TAC, alternate grading plans may be approved.* *PS. 6.5-12: Where gravel bars are to be excavated, aggregate removal shall be limited to the downstream portion of the deposit and may not exceed seventy-five (75) percent of the length of the bar. Twenty-five (25) percent of the upstream portion of the gravel bar shall be retained, in order to allow for the establishment of riparian vegetation. Complete removal of gravel bars may be recommended by the TAC only if hydraulic conditions related to the bar are recognized to threaten structures and property.* *PS. 6.5-14: Proposed off-channel excavations located within the streamway influence boundary shall be set back a minimum of seven-hundred (700) feet from the existing channel bank, unless an engineering analysis demonstrates that a smaller distance will not adversely affect channel stability within the reach. If the proposed engineering measures are demonstrated to be feasible, then the minimum setback distance shall be no less than two-hundred (200) feet.*		

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Environmental Impact	**Level of Significance Before Mitigation**		**Mitigation Measures**	**Level of Significance After Mitigation**	
	LS	**S**		**LS**	**SU**
			Approval of any off-channel mining project located within 700 feet of the existing channel bank shall be contingent upon an enforceable agreement which requires the project operator to participate in the completion of channel improvement projects. The agreement shall also require that the operator provide a bond or other financial instrument for maintenance during the mining and reclamation period of any bank stabilization features approved for the mining project. The agreement shall also require that a deed restriction be placed on the underlying property which requires maintenance of the streambank protection by future owners of the property. Maintenance of the bank stabilization on features following completion of reclamation shall be the responsibility of the property owner. *PS. 4.5-23: The TAC shall evaluate the vegetative cover within the CCRMP on an annual basis. At a minimum of once every five years, the existing hydraulic model of the Cache Creek channel shall be updated based on current conditions, including estimates of channel roughness. If sensitivity analysis indicates that the existing vegetation is contributing to adverse channel roughness, the TAC shall recommend removal of vegetation within selected areas of the channel.* *Mitigation Measure 4.3-1c (A-1a, A-1b, A-2)* *All development projects, including in-channel mining operations, which result in modification of the 100-year flood hazard zones along Cache Creek shall be required to submit applications for Floodplain Development Permits. The applications shall be reviewed by the Yolo County Community Development Agency and the Department of Public Works. Applications for projects that are determined to present conditions, which could cause or contribute to channel instability, shall not be approved.* *Mitigation Measure 4.3-1d (A-3)* *None available.*		
Impact 4.3-2: Modifications of the Channel During Improvement Projects Could Potentially Result in Unstable Conditions Upstream or Downstream of the Projects	A-3	CCRMP, A-1a, A-1b, and A-2	*Mitigation Measure 4.3-2a (CCRMP)* *The CCRMP shall be modified to include the following performance standard:* *PS. 2.5-8: The review by the TAC of all Floodplain Development Permit applications for Cache Creek channel improvement projects within the CCRMP area shall include an evaluation of potential upstream and downstream effects of the proposed channel modifications. The TAC shall evaluate data on hydraulic conditions presented in the permit application. The TAC shall also examine aerial photographs and perform a reconnaissance investigation of the site and surrounding areas to identify potential upstream and downstream effects.*	CCRMP, A-1a, A-1b, A-2, and A-3	

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Environmental Impact	**Level of Significance Before Mitigation**		**Mitigation Measures**	**Level of Significance After Mitigation**	
	LS	**S**		**LS**	**SU**
			Mitigation Measure 4.3-2b (A-1a, A-1b, A-2) *The Yolo County Community Development Agency shall require analysis of potential changes in hydraulic conditions within 1,000 feet upstream and downstream of the proposed project boundaries for all Floodplain Development Permits along Cache Creek. The analysis shall be performed by a qualified licensed engineer and shall include evaluation of the 2-year, 50-year, and 100-year flood stage and average flow velocities before and after implementation of the proposed project using HEC-2, or equivalent model. ~~The hydraulic analysis shall be reviewed by the Department of Public Works prior to issuance of a permit.~~*		
Impact 4.3-3: Channel Instability Within the CCRMP Planning Area Could Be Affected by Significant Changes in Upstream or Downstream Portions of the Watershed	CCRMP and A-3	A-1a, A-1b, and A-2	*Mitigation Measure 4.3-3b (A-1a, A-1b, A-2)* *The Yolo County Community Development Agency, in conjunction with the Yolo County Public Works Department, shall evaluate potential impacts of proposed projects within the Cache Creek watershed on hydraulic conditions of the Cache Creek channel within the CCRMP planning area to ensure that adverse hydraulic conditions do not develop and appropriate restoration projects are implemented.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Hydrology and Water Quality					
Impact 4.4-1: Potential Impacts Associated with Flooding Outside the Planning Area	A-1a and A-1b	CCRMP, A-2, and A-3	*Mitigation Measure 4.4-1a (CCRMP)* *Action 2.3-10 of the CCRMP shall be modified:* *Action 2.3-10: The County shall manage collection of ~~Monitor and collect~~ the information necessary to make informed decisions about the management of Cache Creek, including: regular water and sediment discharge data at Capay and Yolo gauge sites, water and sediment discharge data at other sites during high flow events, and topographic data showing the erosion, aggradation, and the alignment of the low-flow channel within the creek. This data should be maintained in the County Geographic Information System, so that staff and the Technical Advisory Committee can coordinate this information with the results of other monitoring programs to develop a comprehensive and integrated approach to resource management. Monitoring may, at the discretion of the County, be conducted by either consultants or trained volunteers, including landowners, public interest groups, the aggregate industry, and students, as a part of future public education programs associated with Cache Creek. However, the County shall maintain responsibility for collection of high quality data.*	CCRMP, A-1a, A-1b, and A-3	A-2

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Environmental Impact	Level of Significance Before Mitigation		Mitigation Measures	Level of Significance After Mitigation	
	LS	S		LS	SU
			The following performance standard shall be added to the CCRMP: *Existing flooding problems near Woodland shall not be exacerbated by activities conducted under the CCRMP or CCIP.* *PS. 2.5-5: The Technical Advisory Committee shall review topographic data and such other information as is appropriate, to determine the amount and location of aggregate to be removed from the channel. Aggregate removal from the channel shall only be recommended in order to provide flood control, protect existing structures, minimize bank erosion, or implement the Test 3 Run Boundary. Except for bank excavation to widen the channel, annual aggregate removal shall not exceed the amount of sand and gravel deposited the previous year, as determined by aerial photography analysis.* *Recommendations shall take into consideration the desires of the property owner where excavation is to take place, as well as the concerns of property owners in the immediate vicinity.* *The provisions of the draft Cache Creek Improvements Program shall be implemented by the County Resource Management Coordinator, with the assistance of the Technical Advisory Committee, for review and approval of the County Board of Supervisors. The CCIP shall contain provisions to ensure that 100-year flood protection is maintained within the planning area and the existing flooding problems downstream are not exacerbated by channel reshaping. This shall be accomplished by annual monitoring of channel geomorphology, distribution and density of plant material within the channel, and modeling to forecast changes in base flood elevations. When modeling indicates that the channel is approaching loss of 100-year conveyance capacity (or has already lost this capacity) the TAC should prescribe action to reestablish 100-year capacity with adequate tolerances.* *The County shall review and monitor removal of aggregate and/or plant material, as prescribed by the TAC. The County, at its discretion, may enlist the aid of gravel mining operators, other private property owners, or conduct the maintenance activities using County resources.* *Figure 2 of the CCRMP shall be modified as shown on Figure 4.4-7 to more accurately identify areas of potential flood hazard.*		

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			Action 2.4-6 shall be modified as follows: *Action 2.4-6: Work with other agencies having jurisdiction over Cache Creek including, but not limited to, the Yolo County Flood Control and Water Conservation District, the U.S. Army Corps of Engineers, the State Reclamation Board, State Department of Water Resources, and the Federal Emergency Management Agency in developing a coordinated solution for managing flood events throughout the watershed of Cache Creek.* *As a part of this effort, the County should coordinate with the U.S. Army Corps to make appropriate sedimentation and channel stability assessments in conjunction with the development of flood control alternatives near the downstream end of the study area. This would ensure that both agencies are using the same sets of assumptions when making recommendations about the management of Cache Creek.* *The County Resource Management Coordinator shall maintain contact with the specified agencies. Interagency contact shall be initiated at least annually. The Resource Management Coordinator shall encourage coordination between the County and other agencies.* *Action 3.4-2 shall be modified as follows:* *Action 3.4-2: The County Resource Management Coordinator, and other appropriate County staff, shall negotiate cooperative agreements with the Yolo County Flood Control and Water Conservation District, U.S. Army Corps of Engineers, Regional Water Quality Control Board, Yolo County Resource Conservation District, and U.S. Bureau of Land Management, among others, to extend the provisions of the CCRMP outside of the plan area and incorporate the requirements of other agencies of jurisdiction into the County's planning efforts. Interagency contact shall be initiated at least twice per year.* *Mitigation Measure 4.4-1c (A-2, A-3)* *Elimination of mining and in-channel maintenance will result in loss of 100-year protection. This is a significant and unavoidable impact for Alternative 2. Alternative 3 requires acquisition of floodplain easements for levee overtopping.*		

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	LS	**S**		**LS**	**SU**
Impact 4.4-2: Potential Impacts Associated with Inconsistencies Between the FEMA Designated 100-Year Flood Zone and More Recent Hydraulic Analyses	A-1a and A-1b	CCRMP, A-2, and A-3	*Mitigation Measure 4.4-2a (CCRMP, A-3)* *Action 2.4-7 shall be revised as follows:* *Action 2.4-7: Manage activities and development within the floodplain to avoid hazards and adverse impacts on surrounding properties. This shall be accomplished through enforcement of the County Flood Ordinance and ensuring that new development complies with the requirements of the State Reclamation Board.* *The County Floodplain Administrator shall file for a Letter of Map Revision with FEMA to update the FIRMs affected by channel reshaping within the planning area every ten years, or as needed.* *Mitigation Measure 4.4-2c (A-2)* *The County Floodplain Administrator shall file for a Letter of Map Revision with FEMA, to update the FIRMs affected by channel aggradation within the planning area every ten years, or as needed.*		
Impact 4.4-3: Potential Impacts to Water Quality		CCRMP, A-1a, A-1b, A-2, and A-3	*Mitigation Measure 4.4-3a (CCRMP, A-3)* *Action 3.4-1 shall be modified as follows:* *Action 3.4-1: Discourage activities that impact the surface water quality of Cache Creek. Although surface mining operations are regulated, other land uses along the creek are not. The County shall work with the U.S. Natural Resource Conservation Service and the Yolo County Resource Conservation District to promote alternative soil and water management practices that improve local water resources. The County Resource Management Coordinator shall initiate contact with resource conservation agencies at least annually ~~twice each year~~.* *Pesticides and herbicides shall be used within the channel boundary ~~planning area~~ only under the direction of a certified pesticide/herbicide applicator. These chemicals shall not be applied prior to forecasted rainfall.* *Action 3.4-3 shall be modified as follows:* *Action 3.4-3: Provide for ~~an~~ annual testing or more frequent (if necessary) of ~~the~~ surface water quality ~~at various sites along~~ of Cache Creek at Cepay and Yolo. The sample collection and testing should be conducted in the fall or early winter so that the "first flush" of runoff is evaluated for water quality. The County should, when appropriate, enlist the assistance of other government agencies in carrying out the measurements, to reduce costs and provide accurate information. However, the County should not rely on others to complete the monitoring.*	CCRMP, A-1a, A-1b, A-2, and A-3	

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	LS	**S**		**LS**	**SU**
			Testing should include, but not be limited to, ~~such components as~~ pH, TDS, temperature, turbidity, total and fecal coliform, mercury, total petroleum hydrocarbons, dissolved oxygen, nitrogen, phosphorus, herbicides and ~~insecticides~~ pesticides (EPA Methods 8140 and 8150), suspended and floating matter, odor, and color. This information would ~~improve~~ assist in habitat restoration efforts and allow the County to monitor ~~potential~~ water quality trends within the planning area. The County Resource Management Coordinator should be responsible for collection, management, and distribution of all water quality data. *Mitigation Measure 4.4-3b (A-1a, A-1b, A-2)* *The County shall work with the U.S. Natural Resource Conservation Service and the Yolo County Resource Conservation District to promote alternative soil and water management practices that improve local water resources. The County Resource Management Coordinator shall initiate contact with resource conservation agencies at least twice each year.*		
Impact 4.4-4: Potential Impacts Associated with Water Supply for Biotic Restoration	A-1a, A-1b, A-2, and A-3	CCRMP	*Mitigation Measure 4.4-4a (CCRMP)* *The following modifications shall be made to Performance Standard 4.5-11:* *PS. 4.5-11: Existing hydrologic conditions (as described in Figure 4.4-1, the technical studies, and Jones and Stokes (1995)) shall be assumed for all proposed biotic reclamation activities. If an agreement were reached between the County and the YCFCWCD regarding maintenance of year-round flow in the creek, additional water would be available for restoration activities. The TAC would be responsible for identifying and implementing new restoration opportunities resulting from the increased water availability. All plantings should be carefully selected based on the existing hydrology and water availability of the reclamation area.* *Irrigation may be necessary for the first one or two summers in drier sites to allow the roots to develop sufficiently to tap into the summer groundwater level. A drip irrigation system may be necessary at least twice per month during dry periods for the first two years. The party undertaking restoration shall be responsible for acquisition of water supply, design, construction, and operation of the irrigation systems.*	CCRMP, A-1a, A-1b, A-2, and A-3	

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	LS	S		LS	SU
Impact 4.4-5: Potential Impacts Associated with Groundwater Recharge and Surface Water Supplies.	A-1a, A-1b, and A-2	CCRMP and A-3	*Mitigation Measure 4.4-5a (CCRMP, A-3)* *Action 3.4-5 shall be eliminated from the CCRMP.* *Objective 3.3-1 of the CCRMP shall be revised as follows:* *The County shall encourage the development of a groundwater recharge program, where appropriate, within the Cache Creek basin. The program may specify use of reclaimed mining pits and open lakes to the greatest extent feasible, while maintaining consistency with the other goals, objectives, actions, and performance standards of the OCMP and CCRMP.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Agriculture					
Impact 4.5-1: Potential Permanent Loss of Agricultural Land	CCRMP	A-1a, A-1b, A-2, and A-3	*Mitigation Measure 4.5-1a (CCRMP)* *None required.* *Mitigation Measure 4.5-1b (CCRMP, A-1a, A-1b, A-2)* *Any mining occurring off-channel shall be required to comply with OCMP policies.* *Mitigation Measure 4.5-1c (A-3)* *None available.*	CCRMP, A-1a, A-1b, and A-2	A-3
Impact 4.5-2: Potential Impacts of Habitat Restoration on Agricultural Productivity	A-1a, A-1b, and A-2	CCRMP and A-3	*Mitigation Measure 4.5-2a (CCRMP, A-3)* *The CCRMP shall be amended to include the following performance standard:* *PS. 7.5-4: The Yolo County Community Development Agency, in consultation with the Yolo County Resource Conservation District Board, and with approval by the Board of Supervisors, shall present a request to the California Department of Fish and Game to initiate a "Safe Harbor" program for the CCRMP/QCMP planning area, or develop a functionally equivalent program.* *Mitigation Measure 4.5-2b (CCRMP, A-3)* *The following performance standard shall be included in the CCRMP:*	CCRMP, A-1a, A-1b, A-2, and A-3	

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			PS. 7.5-6: All habitat restoration, creation, or enhancement plans proposed within the CCRMP channel boundary shall be reviewed by the County Agricultural Commissioner, if requested by proponents of channel modification projects. The Agricultural Commissioner shall ~~to~~ identify and recommend appropriate vegetative buffers between habitat areas and agricultural fields and effective management of site water resources (including appropriate integration of agricultural drainage features into habitat planning). Buffers that would result in partial or secondary loss of agricultural land shall not be recommended by the Agricultural Commissioner.		
Impact 4.5-3: Potential Impacts of Agricultural Activities on the Success of Habitat Restoration	A-1a, A-1b, and A-2	CCRMP and A-3	*Mitigation Measure 4.5-3a (CCRMP, A-3)* *Implementation of policies contained in the CCRMP and Mitigation Measures 4.5-2a and 4.5-2b would mitigate potential impacts of agriculture on habitat.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.5-4: Incremental Increases to Cumulative Losses of Agricultural Land and Productivity over Time	A-1a, A-1b, and A-2	CCRMP and A-3	*Mitigation Measure 4.5-4a (CCRMP)* *Implementation of Mitigation Measures 4.5-1a and 4.5-1b would reduce the impact of cumulative loss of agricultural land.* *Mitigation Measure 4.5-4c (A-3)* *None possible. The mitigation would preclude any erosion management or agricultural reclamation of lands lost to erosion.*	CCRMP, A-1a, A-1b, and A-2	A-3
Biological Resources					
Impact 4.6-1: Impact on Existing Vegetative Cover	A-1a, A-1b, and A-2	CCRMP and A-3	*Mitigation Measure 4.6-1a (CCRMP, A-3)* *The following revisions shall be made to Performance Standard 4.5-11.* *4.5-11 Irrigation of tree and shrub plantings may be necessary for the first ~~one or~~ two or three summers in drier sites to allow the roots to develop sufficiently to tap into the summer ground water level. ~~A drip~~ Irrigation ~~system~~ may be necessary at least twice per month during dry periods for the first ~~two~~ three years of establishment, preferably using a drip system. Water requirements of young plantings should be evaluated as part of routine monitoring, with adjustments to the frequency and duration of irrigation made in response to indications of stress.* *Mitigation Measure 4.6-1b (A-1a, A-1b, A-2)* *None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	

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Impact 4.6-2: Impact on Sensitive Natural Community Types		CCRMP, A-1a, A-1b, A-2, and A-3	*Mitigation Measure 4.6-2a (CCRMP, A-3)* *The following shall be included as an additional action in Chapter 4 of the CCRMP:* *4.4-12 Performance standards identifying appropriate species and planting densities for marshland, oak woodland, and riparian woodland restoration efforts should be considered guidelines. Variations from these guidelines shall be acceptable if alternative restoration plans have been prepared by a qualified biologist, consistent with the policies of the CCRMP, and approved by the Resource Management Coordinator or Planning Commission, depending on the magnitude of the proposed modification.* *Performance Standard 4.5-13(g) shall be revised to eliminate creeping wild rye, slender wheatgrass, reed canary grass, and yerba mansa from the planting list for marsh restoration plans.* *Mitigation Measure 4.6-2b (A-1a, A-1b, A-2)* *None available.*	CCRMP and A-3	A-1a, A-1b, A-2
Impact 4.6-3: Disturbance to Wildlife Habitat and Wildlife Movement Corridors	A-2	CCRMP, A-1a, A-1b, and A-3	*Mitigation Measure 4.6-3a (CCRMP, A-3)* *The following shall be incorporated as additional action in Chapters 4 and 5 of the CCRMP:* *4.4-13 and 5.4-8. Avoid disturbance to important wildlife habitat features such as nest trees, colonial breeding locations, elderberry host plants for VELB, and essential cover associated with riparian forest and oak woodland habitat. This should include sensitive siting of ~~haul roads~~, maintenance access, trails, and recreational facilities away from these features.* *Goal 5.2-3 of the CCRMP shall be revised as follows:* *5.2-3 Ensure the compatibility of recreational facilities with surrounding land uses and sensitive wildlife habitat, in order to minimize adverse impacts.* *Mitigation Measure 4.6-3c (A-1a, A-1b)* *None available.* *Mitigation Measure 4.6-3a (A-2)* *None required.*	CCRMP, A-2, and A-3	A-1a and A-1b

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Impact 4.6-4: Impact on Special-Status Species		CCRMP, A-1a, A-1b, A-2, and A-3	*Mitigation Measure 4.6-4a (CCRMP, A-3)* *The new Action (4.4-13) required in Mitigation Measure 4.6-3a would provide protection of essential habitat features for special-status species.* *The following shall be included as an additional action in Chapter 4 of the CCRMP:* *4.4-14. A biological data base search shall be completed prior to implementation of priority project. The data base shall compile existing information on occurrences of special-status species and areas supporting sensitive natural communities which should be considered for preservation. Where detailed information is not available, the data base shall be supplemented by reconnaissance-level field surveys to confirm the presence or absence of populations of special-status species, location of elderberry shrubs, and extent of sensitive natural communities along the previously unsurveyed creek segment. Essential habitat for special-status species shall be protected and enhanced as part of restoration efforts, or replaced as part of mitigation plans prepared by a qualified biologist.* *The following revisions shall be made to Performance Standard 4.4-4 of the CCRMP:* *4.4-4 Coordinate with the Cache Creek Conservancy, the H.A.W.K program, the Yolo County Flood Control and Water Conservation District, the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers to ensure that habitat restoration projects proposed by these and other entities are consistent with the Cache Creek Resources Management Plan. ~~Ensure that revegetation~~ Restoration plans shall compliment ~~be are consistent with~~ the preservation and enhancement measures in ~~efforts of~~ the Yolo County Habitat ~~Management Program~~ Conservation Plan.* *Mitigation Measure 4.6-4b (A-1a, A-1b, A-2)* *None available.*	CCRMP and A-3	A-1a, A-1b, and A-2
Impact 4.6-5: Modifications to Jurisdictional Wetlands or Other Waters	A-1a, A-1b, and A-2	CCRMP and A-3	*Mitigation Measure 4.6-5a (CCRMP, A-3)* *The following shall be included as an additional action in Chapter 4 of the CCRMP:* *4.4-15. Coordinate with jurisdictional agencies to establish "blanket" permits and agreements to ensure a consistent multi-agency approach to managing the creek.* *Mitigation Measure 4.6-5 (A-1a, A-1b, A-2)* *None required (beyond existing regulatory requirements)*	CCRMP, A-1a, A-1b, A-2, and A-3	

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Impact 4.6-6: Compatibility and Consistency of Restoration Provisions	A-1a, A-1b, A-2	CCRMP and A-3	*Mitigation Measure 4.6-6a (CCRMP, A-3)* *The following shall be included as an additional action in Chapter 4 of the CCRMP:* *4.4-16 Modifications to the in-channel areas shall be reviewed and approved by the Technical Advisory Committee to ensure that sensitive biological resources are protected and enhanced, that restoration plans are consistent with the policies of the CCRMP, and that the various habitat restoration projects are compatible.* *Action 4.4-4 shall be revised as recommended in Mitigation Measure 4.4-6a.* *Mitigation Measure 4.6-5b (A-1a, A-1b, A-2)* *None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Air Quality					
Impact 4.7-1: Potential Emissions of PM-10	CCRMP, A-1a, A-2, and A-3	A-1b	*Mitigation Measure 4.7-1b (A-1b)* *Wherever practical and economically feasible, portable or movable conveyor systems shall be used to transport raw materials and overburden instead of diesel-powered equipment.*	CCRMP, A-1a, A-2, and A-3	A-1b
Impact 4.7-2: Potential Emissions of Ozone Precursors (ROG and Nox)	CCRMP, A-1a, A-2, and A-3	A-1b	*Mitigation Measure 4.7-2a (CCRMP)* *None required, however, the following is recommended.* *The following new performance standard should be included in the CCRMP:* *All internal combustion engine driven equipment and vehicles shall be kept tuned according to the manufacturers specifications and properly maintained to minimize the leakage of oils and fuels. No vehicles or equipment shall be left idling for a period of longer than 5 minutes.* *Mitigation Measure 4.7-2b (A-1a, A-2, A-3)* *None required.* *Mitigation Measure 4.7-2c (A-1b)* *Implement Mitigation Measure 4.7-1b*	CCRMP, A-1a, A-2, and A-3	A-1b

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Impact 4.7-3: Cumulative Effects on Attainment of State and Federal Standards		CCRMP, A-1a, A-1b, A-2, and A-3	*Mitigation Measure 4.7-3a (CCRMP, A-1a, A-1b, A-2, A-3)* *Implement Mitigation Measures for Impacts 4.7-1a and 4.7-2b.*		CCRMP, A-1a, A-1b, A-2, and A-3
Traffic and Circulation					
Impact 4.8-1: Potential Increase in Vehicle Trips	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.8-2: Potential for Traffic Impacts During Bridge Reconstruction	CCRMP, A-1a, A-1b, and A-2	A-3	*Mitigation Measure 4.8-2a (A-3)* *The following performance standard shall be added to the CCRMP:* *The County shall develop a detailed traffic management plan to identify the routing of traffic during construction of each bridge structure. The plan shall be designed to ensure adverse traffic impacts are minimized, specifically addressing the routing of auto and truck travel, as well as transit, school bus operations and emergency vehicle access. For the Interstate 505 bridge, the County shall coordinate closely with Caltrans and obtain their approval for the construction and traffic management plan in conjunction with the encroachment permit process.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.8-3: Potential Change in LOS at the State Route 16/Road 98/Main Street Intersection	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.8-4: Potential change in LOS at the State Route 16/Road 89 Intersection	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.8-5: Potential Impacts to the Non-Standard Segment of Road 19, West of Interstate 505	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.8-6: Potential Impacts to the Non-Standard Segment of State Route 16 Between I-505 and the Entrance to the Solano Concrete Plant	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	

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Impact 4.8-7: Potential Impacts to the Non-Standard Segment of Road 14, West of Interstate 505	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.8-8: Potential Impacts to the Non-Standard Pavement Segment of Road 14, West of Interstate 505	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.8-9: Potential Impacts to Two Non-Standard Bridges on Road 89, North of State Route 16	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.8-10: Potential Impacts to a Non-Standard Bridge on Road 19, West of Interstate 505	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.8-11: Potential Impacts to a Non-Standard Bridge on Road 85, North of Road 16A	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.8-12: Potential Impacts to a Non-Standard Bridge on Road 14, West of Interstate 505	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.8-13: Potential Impacts to the Non-Standard Curve Radii at the Road 85 / Road 14 Intersection	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.8-14: Potential Impacts to the Non-Standard Curve Radii at the State Route 16 / Road 89 Intersection	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.8-15: Potential Impacts to the Non-Standard Curve Radii at the Road 20 / Road 96 Intersection	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.8-16: Potential for Accelerated Pavement Deterioration	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	

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Noise					
Impact 4.9-1: Exposure to Unacceptable Noise Levels from Channel Stabilization and Erosion Control	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.9-2: Exposure to Unacceptable Increases in Traffic Noise	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.9-3: Exposure to Noise from Future Passive Use of Open Space Areas along the Creek	A-1a, A-1b, A-2, and A-3	CCRMP	*Mitigation Measure 4.9-3a (CCRMP)* *The following shall be added to the CCRMP as a new performance standard:* *5.5-9: Noise analyses shall be conducted for proposed recreational uses where medium to large groups would congregate in common use areas. The study shall identify likely sources of noise and ways to reduce levels to minimize annoyance at adjacent properties.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.9-4: Exposure to Cumulative Noise Impacts	CCRMP, A-1a, A-1b, A-2 and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Aesthetics					
Impact 4.10-1: Effects on the Visual Character and Quality of Cache Creek.	CCRMP	A-1a, A-1b, A-2, and A-3	*Mitigation Measure 4.10-1b (A-1a, A-1b, A-2, A-3)* *None available.*	CCRMP	A-1a, A-1b, A-2, and A-3
Impact 4.10-2: Introduction of New Sources of Light and Glare	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.10-3: Consistency with Yolo County General Plan Policies	CCRMP, A-1a, A-1b, A-2, and A-3		*None required.*	CCRMP, A-1a, A-1b, A-2, and A-3	

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Impact 4.10-4: Contribution to Cumulative Changes in Regional Visual Quality	CCRMP	A-1a, A-1b, A-2, and A-3	*Mitigation Measure 4.10-4a (A-1a, A-1b, A-2, A-3)* *None available.*	CCRMP	A-1a, A-1b, A-2, and A-3
Cultural Resources					
Impact 4.11-1: Potential Impacts to Cultural Resources	A-2	CCRMP, A-1a, A-1b, and A-3	*Mitigation Measure 4.11-1a (CCRMP, A-3)* *Performance Standard 6.5-2 of the CCRMP shall be modified as follows:* *If human skeletal remains are encountered during excavation, all work within seventy-five (75) feet shall immediately stop, and the County Coroner shall be notified within twenty-four (24) hours. If remains are of Native American origin, the appropriate Native American community identified by the Native American Heritage Commission shall be contacted, and an agreement for treating or disposing, with appropriate dignity, of the remains and associated grave goods shall be developed. If any cultural resources such as chipped or ground stone, historical debris, building foundations, or paleontological materials are encountered during excavation, then all work within seventy-five (75) feet shall immediately stop and the Director shall be notified at once. Any cultural resources found on the site shall be recorded by a qualified archaeologist and the information shall be submitted to the County.* *An additional performance standard shall be added to the CCRMP as follows:* *Damaging effects on cultural resources shall be avoided whenever possible. If avoidance is not feasible, the importance of the site shall be evaluated by a qualified professional prior to commencement of excavation operations. If a cultural resource is determined not to be important, both the resource and the effect on it shall be reported to the County, and the resource need not be considered further. If avoidance of an important cultural resource is not feasible, a mitigation plan shall be prepared and implemented. The mitigation plan shall explain the importance of the resource, describe the proposed approach to mitigate destruction or damage to the site, and demonstrate how the proposed mitigation would serve the public interest.* *Mitigation Measure 4.11-1b (A-1a, A-1b)* *Impacts to cultural resources within areas where mining currently is permitted shall be mitigated as recommended in the environmental studies completed for permit approval.*	CCRMP, A-1a, A-1b, A-2, and A-3	

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	LS	**S**		**LS**	**SU**
Hazards					
Impact 4.12-1: Potential Human Health and/or Environmental Impacts from the Accidental Release of Petroleum Products and Other Chemicals Used during Channel Stabilization, Erosion Control, Weed Eradication, and Habitat Restoration.	A-1a, A-1b, A-2, and A-3	CCRMP	*Mitigation Measure 4.12-1a (CCRMP)* *An objective shall be added to Chapter 3 of the CCRMP to support Goal 3.2-4, as follows:* *Obj. 3.3-5: Promote safe hazardous materials use and handling procedures during creek management activities.* *Mitigation Measure 4.12-1b (CCRMP)* *An action shall be added to Chapter 3 of the CCRMP as follows:* *Action 3.4-6: Establish operating standards for the use and handling of hazardous materials in and near the Cache Creek channel.* *Mitigation Measure 4.12-1c (CCRMP)* *Performance Standard 3.5-1 shall be revised as follows:* *PS 3.5-1: All heavy equipment used for the channel improvement projects shall be kept in good working order to reduce emissions and preclude the leakage of oils and fuels. Fueling and maintenance activities shall not occur within 100 feet of the active channel. All procedures for handling, storage, and disposal of hazardous materials shall be described in a Storm Water Pollution Prevention Plan if required for the projects.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Impact 4.12-2: Historic and Future Pesticide Use May Affect the Environment and the Health and Safety of Workers Engaged in Creek Management Activities	A-1a, A-1b, A-2, and A-3	CCRMP	*Mitigation 4.12-2a (CCRMP)* *The following objective and performance standard shall be added to the CCRMP. In addition to these additions, Action 3.4-3 has been revised in Section 4.4, Hydrology to include the analysis of pesticides for annual water monitoring activities.* *Objective 3.3-5: Eliminate water quality impacts from the use of pesticides, fertilizers, and other soil amendments in the channel.* *Performance Standard 3.5-5: Water quality data collected from Cache Creek shall be regularly evaluated ~~annually~~ by a trained professional to determine whether the use of chemicals in the habitat restoration areas is affecting water quality. If chemicals are used and a correlation between use and degradation of water quality is established, use of chemicals in the habitat restoration areas shall be reevaluated.*	CCRMP, A-1a, A-1b, A-2, and A-3	

LS = less than significant
S = significant
SU = significant and unavoidable
CCRMP = Cache Creek Resources Management Plan (and CCIP)

A-1a = No Project (Existing Conditions)
A-1b = No Project (Existing Permits and Regulatory Condition)
A-2 = No Mining (Alternative Site)
A-3 = Channel Bank Widening (Implement Streamway Influence Boundary)

Table 2-1: SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation		Mitigation Measures	Level of Significance After Mitigation	
	LS	S		LS	SU
Impact 4.12-3: Open Bodies of Water May Become Breeding Areas for Mosquitoes. An Increase in the Mosquito Population Could Adversely Affect the Public Health		CCRMP, A-1a, A-1b, A-2, and A-3	*Mitigation Measure 4.12-3a (CCRMP)* *None required.* *While the impacts associated with this alternative would be less than significant, it is recommended that the CCRMP be amended to include the following policies in Chapter 3 as follows:* *Goal 3.2-5: Provide habitat restoration without increasing generation of mosquitoes.* *Objective 3.3-6: Minimize mosquito generating potential in habitat restoration areas.* *Action 3.4-6: Coordinate all habitat restoration efforts with the Sacramento-Yolo Mosquito and Vector Control District.*	CCRMP, A-1a, A-1b, A-2, and A-3	
Public Services and Utilities					
Impact 4.13-1: Potential Increase in Demand for Public Services	CCRMP, A-1a, A-1b, A-2, and A-3		*Mitigation Measure 4.13-1a (CCRMP)* *None required, however, the following is recommended:* *The County shall identify the costs of implementing the policies contained in the CCRMP, and determine a fair-share cost program for reimbursement by gravel operators and any other affected parties.*	CCRMP, A-1a, A-1b, A-2, and A-3	

LS = less than significant
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CCRMP = Cache Creek Resources Management Plan (and CCIP)

A-1a = No Project (Existing Conditions)
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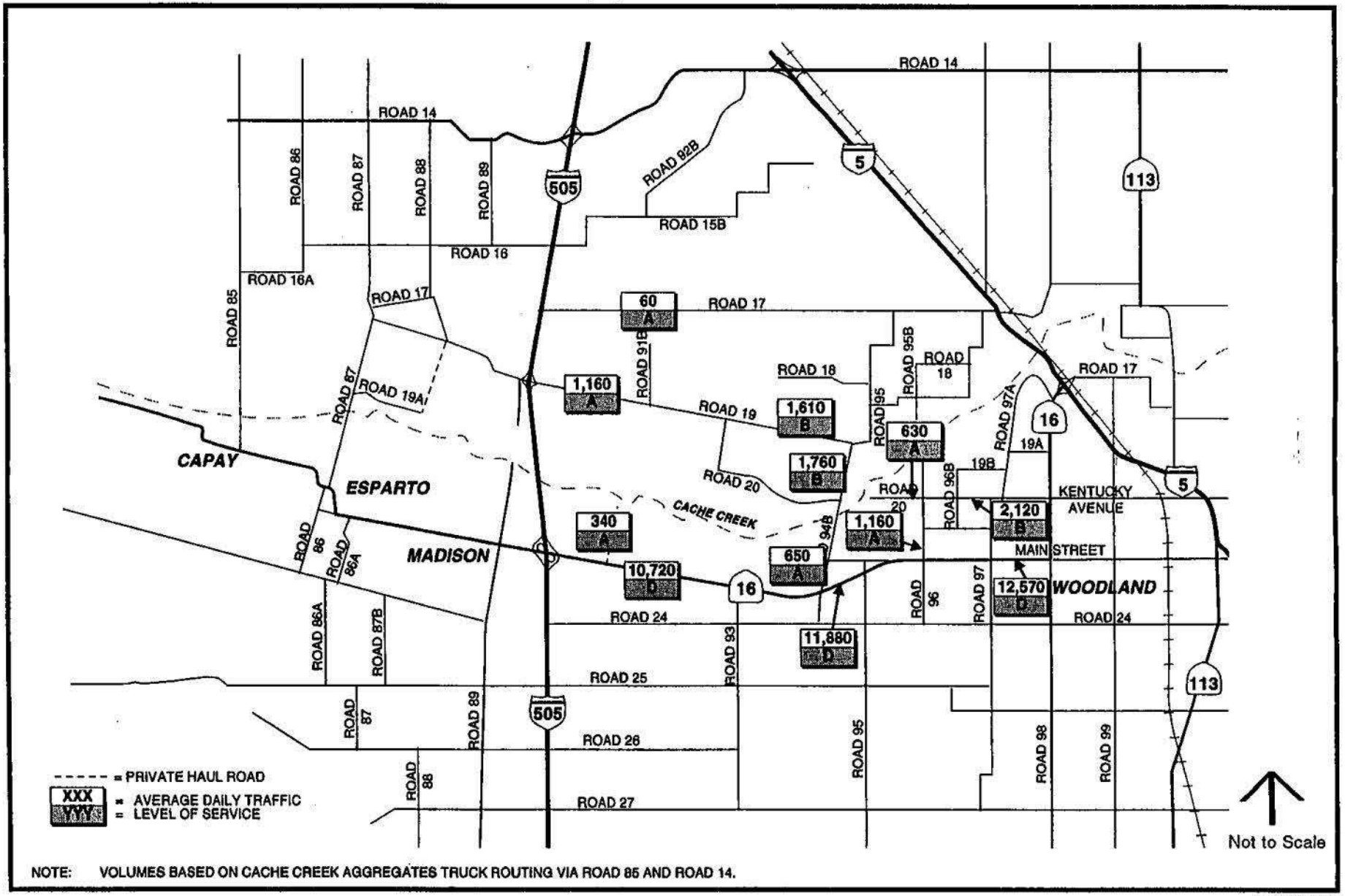
7.6 DETAILED TRANSPORTATION ANALYSIS

CUMULATIVE NO PROJECT PROJECT ROADWAY SEGMENT VOLUMES AND LEVELS OF SERVICE

Figure 7.6-1



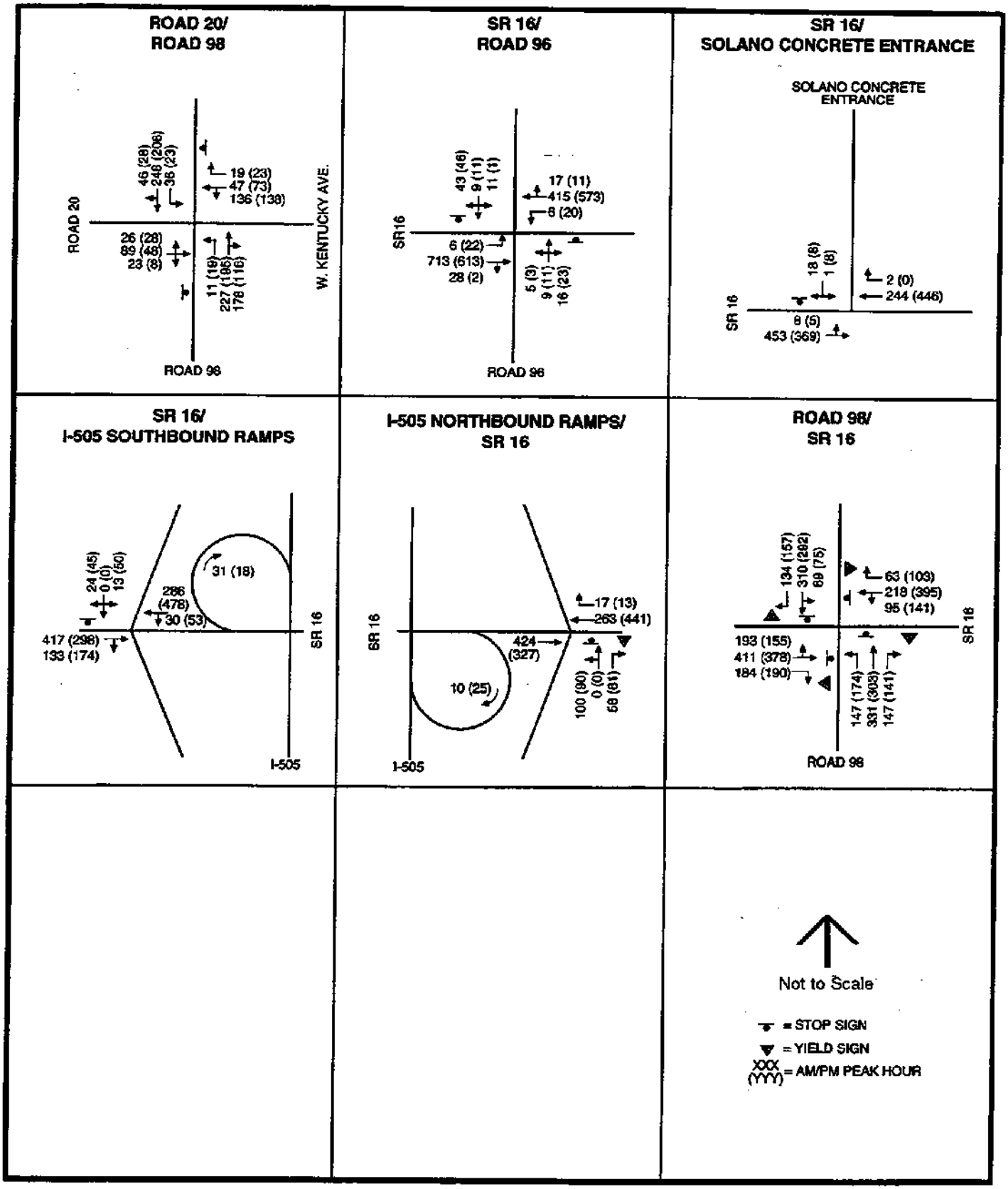
NOTE: VOLUMES BASED ON CACHE CREEK AGGREGATES TRUCK ROUTING VIA ROAD 85 AND ROAD 14.

Source: Fehr & Peers Associates, Inc.

BASELINE

95263-00.03 3/15/96 Solano Long-Term

CUMULATIVE NO PROJECT (2027) Figure 7.6-2
A.M. AND P.M. PEAK HOUR TRAFFIC VOLUMES



Source: Fehr & Peers Associates, Inc.

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