B038c

LOANER COPY

PLAINS EXPLORATION AND PRODUCTION
PRODUCED WATER TREATMENT FACILITY
FINAL SUBSEQUENT ENVIRONMENTAL IMPACT REPORT



Lead Agency:
County of San Luis Obispo
Department of Planning and Building

Environmental Consultant:
Padre Associates, Inc.
811 El Capitan Way, Suite 130
San Luis Obispo, California 93401

April 2008

E.I.R. CERTIFIED
Board of Supervisors Action
Dated SEPT. 23, 2008

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

TABLE OF CONTENTS

Section			Page
1.0	**INTRODUCTION**		**1-1**
	1.1	BACKGROUND	1-1
	1.2	TYPE OF ENVIRONMENTAL IMPACT REPORT (EIR)	1-1
	1.3	USES OF THE SEIR	1-2
	1.4	ENVIRONMENTAL PROCEDURES	1-3
	1.5	ORGANIZATION OF THE SEIR	1-4
	1.6	FOCUS OF THE EIR AND ISSUES TO BE STUDIED AND RESOLVED	1-6
	1.7	IMPACT CATEGORIES	1-7
	1.8	LEAD, RESPONSIBLE, AND INTERESTED AGENCIES	1-7
	1.9	PROJECT APPLICANT AND CONTACTS	1-8
2.0	**SUMMARY OF ENVIRONMENTAL EFFECTS**		**2-1**
	2.1	PROPOSED PROJECT	2-1
	2.2	AREAS OF CONTROVERSY	2-1
	2.3	ISSUES TO BE RESOLVED	2-1
	2.4	SUMMARY OF ALTERNATIVES ANALYSIS	2-2
	2.5	MITIGATION MONITORING PLAN	2-2
	2.6	SUMMARY OF IMPACTS AND MITIGATION MEASURES	2-3
3.0	**PROJECT DESCRIPTION**		**3-1**
	3.1	INTRODUCTION	3-1
	3.2	PROJECT LOCATION	3-2
	3.3	PROJECT OBJECTIVES	3-2
	3.4	PROJECT DESCRIPTION	3-7
	3.5	CONSTRUCTION CONSIDERATIONS	3-25
	3.6	OPERATIONS	3-26
4.0	**PHYSICAL SETTING & LAND USE POLICY CONSISTENCY**		**4-1**
	4.1	PHYSICAL SETTING	4-1
	4.2	LAND USES IN THE AFFECTED AREA	4-2
	4.3	ADOPTED PLANS AND POLICIES GOVERNING THE AREA	4-2
	4.4	ANALYSIS OF IMPACTS RELATED TO LAND USE AND PLAN CONSISTENCY	4-5
5.0	**ENVIRONMENTAL IMPACT ANALYSIS**		**5-1**
	5.1	ISSUES PREVIOUSLY ADDRESSED/CONSIDERED LESS THAN SIGNIFICANT	5.1-1
	5.2	AIR QUALITY	5.2-1
	5.3	BIOLOGICAL RESOURCES	5.3-1
	5.4	GEOLOGY AND SOILS	5.4-1
	5.5	HYDROLOGY AND WATER QUALITY	5.5-1
	5.6	HAZARDS AND HAZARDOUS MATERIALS	5.6-1

TABLE OF CONTENTS (CONTINUED)

6.0 PROJECT ALTERNATIVES 6-1
6.1 ALTERNATIVES DELETED FROM FURTHER CONSIDERATION 6-1
6.2 ALTERNATIVES ANALYZED 6-3
6.3 ENVIRONMENTALLY SUPERIOR ALTERNATIVE 6-13

7.0 GROWTH INDUCEMENT AND SIGNIFICANT IRREVERSIBLE IMPACTS 7-1
7.1 GROWTH-INDUCING IMPACTS 7-1
7.2 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL IMPACTS 7-2

8.0 CUMULATIVE ANALYSIS 8-1
8.1 INTRODUCTION 8-1
8.2 DISCUSSION 8-1
8.3 IMPACT ANALYSIS 8-5

9.0 RESPONSE TO COMMENTS 9-1

10.0 LIST OF REPORT PREPARERS 10-1

11.0 REFERENCES 11-1

LIST OF TABLES

Table	Title	Page
2-1	Summary of Impacts and Mitigation Measures	2-5
3-1	Chemical and Power Requirements	3-18
3-2	Waste Streams	3-19
4.4-1	San Luis Obispo County Energy Element	4-12
4.4-2	San Luis Obispo County Agriculture and Open Space Element	4-16
5.2-1	Ambient Air Quality Standards	5.2-3
5.2-2	Summary of Air Quality Standard Exceedances	5.2-5
5.2-3	GHG Emissions Inventory	5.2-8
5.2-4	Construction Emissions Estimates	5.2-10
5.2-5	Summary of Health Risk Assessment	5.2-15
5.2-6	Operational Cumulative Emissions Estimates	5.2-18
5.3-1	Biological Field Survey Dates	5.3-6
5.3-2	Definitions of Special-Status Plant Species	5.3-14
5.3-3	Special-Status Plant Species Potentially Occurring in the Project Area	5.3-15

5.3-4 Definitions of Special-Status Wildlife Species 5.3-23
5.3-5 Special-Status Wildlife Species Potentially Occurring in the Project Area 5.3-23
5.3-6 Plant Community Impact Summary Table 5.3-50
5.3-7 Toxic Metal Concentrations Not to be Exceeded in Aquatic Life Habitats Compared to PXP Produced Water Metal Concentrations 5.3-57
5.5-1 Pismo Creek Baseline Basin Plan Water Quality Objectives 5.5-3
5.5-2 Reported Pre- and Post-Treatment Concentrations of Constituents of Concern for PXP RO Water Treatment Facility 5.5-12
6-1 Qualitative Comparison of Project Alternatives 6-5

LIST OF FIGURES

Figure Title **Page**
3-1 Site Vicinity Map 3-3
3-2 Site Location Map 3-5
3-3 Property Plan 3-9
3-4 Facility Area Plan 3-11
3-5 Facility Site Plan 3-13
3-6 Block Flow Diagram 3-15
3-7 Discharge Schematic 3-21
3-8 Grading and Equipment 3-27
5.3-1 Plant Communities Map 5.3-9
5.3-2 Distribution of Special-Status Species 5.3-21
5.3-3 Focused Impact Map 5.3-39
5.3-4 Phase IV Open Space Easement 5.3-43
5.4-1 Stratigraphic Column for Price Canyon Area 5.4-3
5.4-2 Major Fault Structures Near Price Canyon 5.4-5
5.5-1 Pismo Creek Hydrologic Basin 5.5-5
8-1 Cumulative Projects Map 8-3

APPENDICES

A. NOTICE OF PREPARATION
B. NOTICE OF PREPARATION RESPONSES
C. ENTRIX DOCUMENTS
D. AIR QUALITY
E. BIOLOGICAL RESOURCES
F. WATER QUALITY
G. PUBLIC DRAFT COMMENTS AND RESPONSE TO COMMENTS MATRIX
H. MITIGATION MONITORING AND REPORTING PROGRAM

CHAPTER 1.0
INTRODUCTION

1.1 BACKGROUND

Pursuant to the California Environmental Quality Act (CEQA), this is a Subsequent Environmental Impact Report (SEIR) for the proposed Plains Exploration and Production (PXP) ~~Reverse Osmosis~~ Produced Water Reclamation Project (project).

1.1.1 Project Location

The project is located in Price Canyon approximately three miles northeast of the City of Pismo Beach in San Luis Obispo County, California (project site). The proposed project is in the Arroyo Grande Oil Field. The project site is located east and west of Price Canyon Road near its intersection with Ormonde Road, midway between Highway 101 and Highway 227. Figures 3-1 and 3-2 are location and vicinity maps of the proposed project site. The proposed project would take place within the area shown in Figure 3-3 - Property Plan.

1.1.2 Project Components

The project involves construction and operation of a 20,000 barrel per day water reclamation facility utilizing primarily reverse osmosis (RO) treatment technology and associated water distribution/disposal infrastructure. Two 210,000 gallon filtered water tanks, a 420,000 gallon Recovery Water Tank, and two 420,000 gallon day tanks would be designed to contain 12 hours of treated water. Additionally, three air stripping towers (air strippers), two heat exchangers and various other tanks and silos would be constructed. Infrastructure would be built on five combined building pads ranging in size from approximately 100-foot by 150-foot to 175-foot by 450-foot. Pipelines, a tempering pond, and an outfall to Pismo Creek would be constructed for disposal of the treated water. Please see Chapter 3.0 - Project Description for a detailed explanation of project components.

1.2 TYPE OF ENVIRONMENTAL IMPACT REPORT (EIR)

Pursuant to Section 15162 of the Guidelines for Implementation of California Environmental Quality Act (CEQA Guidelines), once an EIR has been certified for a project, no SEIR is required unless there is a substantial change in the conditions analyzed in the original EIR, indicating that there is a new or more severe significant effect. Specifically, an SEIR is necessary when the lead agency determines, on the basis of substantial evidence in light of the whole record, that substantial changes proposed in the project or conditions under which the project would be undertaken, including new information that was not known when the previous EIR was certified, will require major revisions to the previous EIR because of the involvement of new significant environmental effects or a substantial increase in the severity of previously identified effects.

In the case of the proposed project, a previous EIR was prepared and certified in 2005 (Padre, 2005). Due to changes in the project as identified in Chapter 3.0, preparation of this SEIR was determined to be necessary. This SEIR will be used by the lead agency (County of San Luis Obispo) to evaluate the proposed project's environmental impacts; it can be further used to modify, approve, or deny approval of the proposed project based on the analysis it provides.

Guidance for preparing project-specific SEIRs is contained under Sections 15161-15162 of the CEQA Guidelines which clarifies the scope and content of the EIR. In summary, an EIR examines the environmental impacts of a specific development project by focusing on the changes in the environment that would result from implementation of the project. The project EIR should examine all phases of the project, including planning, construction, and operations (CEQA Guidelines, Section 15161, 2006).

1.3 USES OF THE SEIR

In accordance with Section 15121 of the *State of California Environmental Quality Act Guidelines (State CEQA Guidelines)*, the purpose of this SEIR is to serve as an informational document that:

> *"...will inform public agencies, decision-makers and the public generally of significant environmental effects of the project, identify ways to minimize significant effects, and describe reasonable alternatives to the project..."*

It has been prepared consistent with CEQA, which has the following main objectives:

- Disclose to decision makers and the public the significant environmental effects of proposed activities;
- Identify ways to avoid or reduce environmental damage;
- Prevent environmental damage by requiring implementation of feasible alternatives or mitigation measures;
- Disclose to the public reasons for agency approval of projects with significant environmental effects;
- Foster interagency coordination in the review of projects; and,
- Enhance public participation in the planning process.

This SEIR addresses potential impacts that would logically and foreseeably occur from project implementation. The basis for the environmental impact analysis in this SEIR is the project description as presented in Chapter 3. This SEIR is based on a project-specific analysis for the proposed project. Where significant impacts are identified, project-specific mitigation measures will be developed to reduce impacts to less than significant levels. If project-specific mitigation measures cannot reduce the level of impacts to less than significant, the impact will remain significant and unavoidable.

1.4 ENVIRONMENTAL PROCEDURES

This SEIR has been prepared in accordance with CEQA, as amended (Public Resources Code, Section 21000, et seq.) and the Guidelines for Implementation of CEQA as amended (California Administrative Code Section 15000, et seq.). It complies with the rules, regulations, and procedures for implementation of the CEQA.

1.4.1 Notice of Preparation

A Notice of Preparation (NOP) was prepared for the proposed project and distributed to the Distribution List included in Appendix A. The NOP (State Clearinghouse No. 2007051143) was released on May 29, 2007, and was circulated to interested agencies, groups, and individuals for a 30-day review period, which concluded on June 27, 2007. Responses received on the NOP are included in Appendix B.

1.4.2 Public Draft SEIR

The SEIR will initially be published as a Draft SEIR and will be subject to review and comment by the public as well as responsible agencies and other interested organizations during the 45-day review period.

1.4.3 Final SEIR

Following public review and comment on the Draft SEIR, written responses to comments on the Draft SEIR will be prepared. The responses to comments may specify changes to the Draft. The responses to comments, and any changes to the Draft SEIR therein specified, will become the Final SEIR. The Final SEIR will be presented to the San Luis Obispo County Planning Commission for certification as to its adequacy under CEQA.

1.4.4 Mitigation Monitoring Program

In accordance with CEQA (Section 21081.6), when changes have been incorporated into a project that avoid significant environmental effects or reduce them to a level of insignificance, the lead agency must adopt a Mitigation Monitoring Program (MMP) to ensure compliance during implementation.

The MMP for the proposed project will be prepared for presentation to the Planning Commission along with the Final SEIR. The MMP will include all adopted mitigation measures and will describe how the mitigation measures will be implemented and monitored,

The County shall be responsible for recording and tracking implementation of the MMP. The County record shall include:

- Personnel responsible for monitoring mitigation measures;
- Verification and schedule of compliance; and,
- A record of any remedial action taken for non-compliance with the MMP.

1.5 ORGANIZATION OF THE SEIR

This document provides an array of environmental information in different levels of detail depending upon the scope of potential impacts to each issue area. The document is structured in a manner to allow the reader to easily track information from the Summary (Chapter 2) through the Project Description (Chapter 3) and the Impact Analyses (Chapter 5). Impacts are numbered consecutively, and where appropriate, are associated with a mitigation measure that is correspondingly numbered. This numbering system is carried over into the summary to allow easy location of the document's discussion regarding a particular impact.

This SEIR includes a project-specific level of analysis for the proposed project. Chapters in the SEIR include general information, such as the environmental setting and relevant regulatory considerations for each environmental resource area as related to the proposed project, and proposed project impacts, which includes a discussion of the impacts and mitigation measures specific to the proposed project.

This document is organized to be read in several ways depending upon the reader's available time or interest in a particular issue area. The briefest approach to the document involves reading only the project summary (Chapter 2), which contains general information about the project, potential impacts, and mitigation measures. A somewhat more detailed review of the document might involve careful reading of the full project description (Chapter 3) and description of the alternatives (Chapter 6), as well as the summary. For those with an interest in a particular issue area, it may be appropriate to review a specific chapter or set of chapters based on the reader's interest in a particular environmental resources area (e.g., air quality, water quality, etc.). Finally, one can read the entire document for a detailed presentation of all potential environmental effects of the project as proposed, and alternatives to the project.

The CEQA Guidelines require that each SEIR contain areas of description and analysis. The following subsections identify areas of particular interest and the corresponding chapters in this SEIR:

1.0 Introduction

The Introduction Section discusses procedural matters, document format and organization, and project sponsors and contact persons.

2.0 Summary

The Summary (Section 15123 of the CEQA Guidelines) includes: an Executive Summary of the SEIR; and a summary table listing significant impacts of the proposed project, any recommended mitigation measures, and the effect of the mitigation measures.

3.0 Project Description

The Project Description (Section 15124 of the CEQA Guidelines) includes a description of the project location and vicinity. It also identifies the applicant's objective, project characteristics, and required discretionary actions.

4.0 Land Use Policy Consistency

This section provides information on the community setting and reviews the General Plan, applicable community plans and land use ordinances, and assesses the consistency of the proposed project with these adopted plans, policies, and ordinances. This section also examines the compatibility of the proposed project with existing land uses in the project vicinity.

5.0 Environmental Impact Analysis

This section is the substantive portion of the SEIR and contains the full environmental analysis as required under Sections 15126 and 15143 of the CEQA Guidelines. This section achieves the following:

- Identifies significant environmental impacts of the proposed project and alternatives, including thresholds for significance; both project-specific and cumulative impacts by issue area will be identified and assessed;
- Discloses any significant environmental effects of the proposed project and alternatives, which cannot be avoided if the proposal is implemented;
- Discusses issues addressed in previous EIR; and,
- Develops mitigation measures to avoid or minimize the significant effects. Mitigation measures are reasonably expected to reduce significant adverse impacts of development to a less-than-significant level. Where no mitigation measures are available to reduce an impact to less-than-significant, the impact is termed significant and unavoidable. Mitigation measures will be incorporated into a monitoring program.

Where feasible, County-approved thresholds of significance are used to aid in determining the significance of environmental effects. A threshold of significance is an identifiable quantitative, qualitative, or performance level of a particular environmental effect. Noncompliance with this performance level is considered a significant impact and compliance is considered less than significant under CEQA Guidelines Section 15064.7.

Where there are multiple thresholds of significance for a given issue area, more than one specific threshold associated with an impact is identified.

6.0 Alternatives

The Alternatives Section examines a variety of suggested project alternatives as well as options currently under consideration or which may conceivably reduce the project's environmental impacts. The alternatives include a "no project" alternative in order to allow decision-makers to compare the effects of not approving a project or alternative. The purpose of this section is to provide decision-makers with a summary assessment of the comparative effects of each of the alternatives, focusing on the significant, unavoidable impacts, both short and long-term, and on mitigation measures for such impacts. The CEQA Guidelines (Section 15126) require that a reasonable range of alternatives to the proposed project be discussed in the SEIR and state that "the discussion of alternatives should focus on those alternatives capable of eliminating significant physical 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."

7.0 Growth Inducement and Significant Irreversible Impacts

This section describes the Growth Inducing Impacts and Irreversible Environmental Changes associated with the project.

8.0 Cumulative Analyses

This section describes the cumulative effects of project impacts considered in the context of other approved or reasonably anticipated projects in the area.

1.6 FOCUS OF THE SEIR ANALYSIS AND ISSUES TO BE STUDIED AND RESOLVED

Preliminary review of the proposed project and discussions with the County of San Luis Obispo (County) determined that the SEIR should be focused on the following issue areas:

- Air Quality
- Biological Resources
- Geology and Soils
- Hazards
- Hydrology and Water Quality

The following issue areas were determined to not require further analysis or would implement standard prescriptive mitigation measures and are briefly discussed in Section 5.1 - Issues Previously Addressed:

- Aesthetics
- Agricultural Resources
- Cultural Resources
- Noise

- Population and Housing
- Public Services
- Traffic and Circulation
- Utilities and Service Systems
- Wastewater

1.7 IMPACT CATEGORIES

Short-term and long-term impacts are analyzed. Each impact statement is classified as to the level of significance, based on the significance thresholds, and the availability of measures to feasibly mitigate project effects. Impact categories include:

- Class 1. Significant unavoidable adverse impacts that cannot be mitigated. A Class I impact is one for which a solution has not been formulated, either because of the limits of technical and/or scientific knowledge, or unfeasibility from a technical, economic, and/or political perspective. Under CEQA, a Class I impact would require a "finding of overriding consideration" by the County to approve the project.
- Class 2. Adverse environmental impacts that can be mitigated to less than significant levels. Measures have been identified that can feasibly be implemented and will avoid the impact altogether by not taking a certain action or parts of an action; minimize impacts by limiting the degree or magnitude of the action and its implemented; rectify the impact by repairing, rehabilitating, or restoring the affected environment; or compensate for the impact by replacing or providing substitute resources or environments.
- Class 3. Adverse environmental impacts that are less than significant or have no identified impact. These impacts, while adverse, are not of a sufficient magnitude, intensity, or duration to disrupt the environment, and have no serious consequences. As a result, no mitigation is required.
- Class 4. Beneficial impacts benefit or improve the environment and no mitigation is required.

1.8 LEAD, RESPONSIBLE, AND INTERESTED AGENCIES

1.8.1 Lead Agency

The County is the lead agency for the project in accordance with Sections 15050 and 15367 of the State CEQA Guidelines. The lead agency is defined as the public agency, which has the principal responsibility for carrying out or disapproving a project.

1.8.2 Responsible/Trustee Agencies

Section 15381 of the State CEQA Guidelines defines a Responsible Agency as a "public agency, which proposes to carry out or approve a project for which a Lead Agency is preparing or has prepared an SEIR or Negative Declaration." For the purposes of the CEQA, the term

"Responsible Agency" includes all public agencies other than the lead agency, which have a discretionary approval power over the project. The responsible agency must notify the lead agency during the NOP period as to the scope and content of the environmental information related to the responsible agency's area of statutory responsibility that must be included in the draft SEIR (CEQA Section 15082(b)). Trustee Agencies are listed in the State CEQA Guidelines Section 15386 and defined as a State agency having jurisdiction by law over natural resources affected by a project which are held in trust for the people of California.

The County is the lead agency for this project. The following agencies could be expected to use this document for future permits or other approvals for the project:

- County of San Luis Obispo - Conditional Use Permit approval;
- Central Coast Regional Water Quality Control Board - National Pollution Discharge Elimination System (NPDES) for discharge into Pismo Creek, General construction NPDES, and Clean Water Act Section 401 Water Quality Certification;
- San Luis Obispo Air Pollution Control District - Authority to Construct/Permit to Operate;
- California Department of Fish and Game - Streambed Alteration Agreement;
- U.S. Army Corps of Engineers - Section 404 permit;
- CALFIRE/San Luis Obispo County Fire Department - Fire Protection;
- U.S. Fish and Wildlife Service and NOAA Fisheries - Federal Endangered Species Act consultation (Section 7 Consultation).

1.9 PROJECT APPLICANT AND CONTACTS

The project applicant is Plains Exploration and Production (PXP). Contacts for this SEIR are:

County of San Luis Obispo: Mr. Murry Wilson, SEIR Project Manager
San Luis Obispo County, Department of Planning and Building
County Government Center, Room 310
San Luis Obispo, California 93408-2040

Plains Exploration and Production: Mr. Steve Rusch
Plains Exploration and Production
1821 Price Canyon Rd.
San Luis Obispo, California 93401

SEIR Consultant: Mr. Simon Poulter, Principal - in - Charge
Padre Associates, Inc.
811 El Capitan Way, Suite 130
San Luis Obispo, California 93401

CHAPTER 2.0
SUMMARY OF ENVIRONMENTAL EFFECTS

2.1 PROPOSED PROJECT

The Plains Exploration and Production Company (PXP) is proposing development of a water reclamation facility at their Arroyo Grande Oil Field to facilitate continued operations associated with their approved Phase IV Development Plan (Project). The primary purpose of the proposed project is to enhance the recovery of oil reserves via treatment and reuse of excess produced water. Inherent to this enhanced recovery is dewatering the oil-bearing formation by reducing return water flows from the existing oil-water separation process.

The proposed project involves construction of infrastructure for a 20,000 barrel per day water reclamation facility utilizing primarily reverse osmosis (RO) treatment technology, on an approximately 100-foot by 150-foot to 175-foot by 450-foot building pads. Two 210,000-gallon filtered water tanks, a 420,000-gallon Recovery Water Tank, and two 420,000-gallon day tanks would be designed to contain 12 hours of treated water. Additionally, three air stripping towers (air strippers), two heat exchangers and various other tanks and silos would be constructed on an 175-foot by 450-foot building pad. Pipelines, a tempering pond, and an outfall to Pismo Creek would also be constructed for disposal of the treated water. Please see Chapter 3.0 – Project Description for a detailed explanation of project components.

2.2 AREAS OF CONTROVERSY

Section 15132 of the CEQA Guidelines requires the summary section of an EIR to include "Areas of Controversy known to the Lead Agency." Areas of Controversy identified during preparation of the Draft EIR include:

1) Potential impacts on biological resources, particularly special-status species such as steelhead;
2) Construction will generate construction emissions that contribute to local air quality degradation;
3) Air strippers will require mitigation for release of Volatile Organic Compounds (VOCs) per San Luis Obispo Air Pollution Control District (APCD) regulations; and,
4) Water Quality in Pismo Creek may be adversely affected by the release of treated water into the hydrologic system. Treated water will be required to meet specific criteria and standards as discuss in Section 5.5 – Hydrology and Water Quality.

2.3 ISSUES TO BE RESOLVED

Section 15123 of the CEQA Guidelines requires the summary section of an EIR to identify any "issues to be resolved including the choice among alternatives and how to mitigate significant effects." Summary of the alternative evaluation is presented below.

2.4 SUMMARY OF ALTERNATIVES ANALYSIS

CEQA does not require that the alternatives analysis evaluate modification of internal components or phases of a proposal. However, the County formulated a number of alternatives that would meet objectives of the project, while minimizing impacts to area resources. Four alternatives are examined in this EIR:

- **Alternative 1:** No Project Alternative
- **Alternative 2:** Reduced Project Alternative
- **Alternative 3:** Fully Mitigated Alternative

These alternatives were formulated by Padre to provide a reasonable range of scenarios that could reduce the level of impact from that anticipated with implementation of the proposed project. Eight other alternatives were analyzed by Padre and Entrix, Inc. to determine the feasibility of each alternative in terms of environmental impacts and the ability to meet project objectives. Each of these proposed and dismissed alternatives are described in greater detail in Section 6.0 - Alternatives Analysis.

The No Project alternative would not involve any new construction, nor introduce any new significant environmental effects. It would allow the existing operations of the Phase IV project to continue as it is currently configured but would not allow any expansion of the Arroyo Grande Oil Field to include water treatment facilities. It would avoid all of the impacts of the proposed project; however, the No Project alternative would not achieve the project objectives.

Alternative 2 consists of a reduced project alternative by proposing construction of a 10,000 barrel per day (1.25 acre feet per day or 420,000 gallons per day) water reclamation facility rather than 20,000 barrel per day facility as in the proposed project. For the purposes of this section, Alternative 2 can also be defined as a "reduced project" in terms of total output of treated water into Pismo Creek and overall area of disturbance. More simply, it is the proposed project as intended for implementation, but reduced in overall size and scope with the intention of reducing project-related impacts. In a conceptual sense, this alternative would minimize the footprint of disturbance and the overall daily output of treated water to Pismo Creek by 50 percent (i.e., 0.65 cfs).

Alternative 3 is the applicant-proposed project, which would be implemented with mitigation measures discussed in Chapter 5.0 in its entirety. Elements of this alternative include construction of a 20,000 BPD water reclamation facility and air strippers, along with construction of other supporting infrastructure for water reclamation. See Chapter 3.0 – Project Description for a detailed listing and discussion of the proposed project elements.

2.5 MITIGATION MONITORING PLAN

Section 21081.6 of the Public Resources Code requires the adoption of a "reporting or monitoring plan" for the changes to the project, which the agency has adopted, or for the mitigation measures adopted as conditions of approval. The Mitigation Monitoring Plan will be prepared in conjunction with the Final EIR.

2.6 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Table 2-1 provides a summary of the level of significance for each impact discussed in this EIR. Project level impacts are categorized as Significant and Unavoidable (Class 1), Significant but Mitigable (Class 2), Less than Significant (Class 3), and Beneficial (Class 4). In addition, instances where project level impacts would contribute to a cumulative regional impact are identified as Significant Cumulative (SC).

Significant Unavoidable (Class 1) impacts are those impacts that would be significant at the project level. The project may propose mitigation, or recommended measures may be identified in the EIR, but despite the implementation of such measures, the impact is suggested to be significant and unavoidable. Mitigation has not been identified that could reduce these impacts to a less than significant level and still achieve the project objectives.

Significant but Mitigable (Class 2) impacts are those impacts that would be significant if allowed to occur as proposed. However, mitigation measures have been recommended that would reduce these impacts to less than significant if implemented. Recommended mitigation measures are not considered part of the project, and consequently the level of impact reflects the significance without implementation of the Recommended Measure(s).

Less than Significant (Class 3) impacts are those impacts that would be less than significant without mitigation or less than significant after the application of Proposed Mitigation. Proposed mitigation includes measures that have been incorporated into project design or that the applicant has agreed to implement as part of the project.

Beneficial Impacts (Class 4) would result in net positive affects to a given resource category.

THIS PAGE LEFT INTENTIONALLY BLANK

Table 2-1. Summary of Impacts and Mitigation Measures
PXP Produced Water Reclamation Facility

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
4.0	*Land Use Policy Consistency*				
LND-1	Physically divide an established community.	3	No mitigation is required.	3	3
LND-2	Compatibility with San Luis Obispo County Land Use Categories	3	No mitigation is required.	3	3
LND-3	Consistency with the County of San Luis Obispo General Plan Land Use Element, San Luis Bay Inland Area Plan.	3	No mitigation is required.	3	3
LND-4	Consistency with the County of San Luis Obispo Land Use Ordinance	3	No mitigation is required.	3	3
LND-5	Consistency with the County of San Luis Obispo Energy Element	3	No mitigation is required.	3	3
LND-6	Consistency with the County of San Luis Obispo Agriculture and Open Space Element	3	No mitigation is required.	3	3
5.1	*Issues Previously Addressed*				
CUL-1	Standard cultural resources mitigation	2	In the event that unknown cultural remains are encountered anywhere within the project area during construction, activities shall be terminated or redirected to another area until a qualified archaeologist can be retained to evaluate the potential significance of the finds in a Phase 2 archaeological significance investigation or PXP shall have the option to relocate work permanently without need to conduct further studies at that location. Relocation of work and any subsequent archaeological investigation would be done in consultation with the County of San Luis Obispo. If they are significant and cannot be feasibly avoided, then a Phase 3 data recovery mitigation program shall be performed by a qualified archaeologist, and all construction activity within the site and 150-foot buffer area shall be monitored by a qualified archaeologist and Native American monitor. All Phase 3	3	3

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			significance assessments and Phase 3 mitigation activities shall be funded by the applicant.		
PAL-1	Mitigation for paleontological resources mitigation carried over from Phase IV EIR	2	Prior to ~~approval of the project~~construction, the applicant shall retain a qualified paleontologist to implement the paleontological mitigation monitoring plan developed for the Phase IV EIR that includes the following: 1. Prior to construction, the applicant will retain a qualified paleontologist to implement the mitigation plan and maintain professional standards of work; 2. A qualified monitor will perform full-time monitoring of all grading, enlargement of pads and all other open excavation work in native sediments. Monitoring will include inspection of exposed surfaces and micro-scopic examination of matrix. The monitor will have authority to divert grading away from exposed resources temporarily in order to recover the specimens and contextual data. PXP shall have the option to relocate work permanently without need to conduct further studies at that location. Relocation of work and any subsequent paleontological investigation would be done in consultation with the County of San Luis Obispo. Cooperation and assistance from on-site personnel will greatly assist timely resumption of work in the area of the discovery; 3. If the discovery meets the criteria for a fossil locality, formal locality documentation activities will be performed; 4. If microfossil localities are discovered, locality documentation activities shall include the collection of matrix material for processing. These activities may include use of equipment to excavate fossil-containing soils, and establishment of stockpiles away from the construction area. Testing of stockpiles shall consist of screen washing small samples (200 pounds) to determine if fossils are present. Productive tests shall result in screen washing of additional matrix from the	3	3

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			stockpiles to a maximum of 6000 pounds per locality; 5. Fossils recovered shall be prepared, identified and cataloged, and donated to an accredited repository approved by the County of San Luis Obispo. Any resources determined not to meet significance criteria shall be offered to local schools for use in educational programs; and, 6. The principal investigator shall prepare monthly progress reports to be filed with the applicant and the County of San Luis Obispo. The principal investigator shall prepare a final report to be filed with the applicant and the County of San Luis Obispo. The report shall include a list of resources recovered; documentation of each site/locality, interpretation of resources recovered and shall include all specialists' reports as appendices.		
NOI-1	Standard noise mitigation measure.	2	No use of heavy equipment or vehicles for the purpose of construction activities shall occur between the hours of 7 p.m. and 7 a.m., to the extent feasible.	3	3
TRA-1	Mitigation for traffic impacts carried over from Phase IV EIR.	2	• Trucks (delivery, hauling and transportation trucks) should be scheduled outside the a.m. and p.m. peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.) to the extent feasible (no increase in trucks trips will occur during the a.m. and p.m. peak periods) ; • Construction related traffic shall use on-site roads wherever possible; and, • Warning signs should be placed on Price Canyon Road prior to construction to notify through traffic of trucks entering and exiting the site.	3	3

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
5.2	**Air Quality**				
AQ-1	Construction activity would generate air emissions that may adversely impact local and regional air quality.	2	A. Equipment Emission Control Measures. According to Rule 402204 of the APCD Handbook of Rules and Regulations, an Authority to Construct permit shall require the use of BACT where emissions of subject air contaminants would be 25 poundstons per dayyear or more (which is applicable to NOx). Prior to construction, a Nitrogen Oxide Emissions Reduction and Monitoring Plan shall be developed using the previously implemented Monitoring Plan for the Phase IV EIR, approved by the County and fully implemented. The Plan shall specify the emissions control measures to be implemented on each emission source, the expected reduction for each criteria pollutant, the period the emissions control measures are to be in place, and a quarterly summary of the emissions reductions. The summary shall include sufficient information for the APCD to verify the emissions reductions have occurred. Potential emission reduction measures shall include a combination of the following: • All mobile construction equipment shall use engines certified by the EPA and ARB to meet Tier 2 emission standards as listed in Title 40 Part 89 of the Code of Federal Regulations and employ Currently Verified Technologies per the ARB; • All portable equipment shall be registered under the Statewide Portable Equipment Registration Program and implement all emissions and reporting requirements. If a piece of equipment is 50 horsepower or greater, and is not registered under the ARB state program, it will need an APCD permit; • Installation of diesel reduction catalyst/catalyzed diesel particulate filter system (25 to 40 percent	2	3

Impact	Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
		NOx reduction); and, • Use of PuriNOx fuel by Lubrizol (15 percent NOx reduction). B. Dust Control Measures. Dust generated by construction activities shall be kept to a minimum by full implementation of the following measures. • During clearing, grading, earth moving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems shall be used to prevent dust from leaving the site and to create a crust after each day's activities cease; • During construction, water trucks or sprinkler systems shall be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this would include wetting down such areas in the morning and after work is completed for the day. Watering frequency may need to be increased ~~and~~whenever wind exceeds 15 miles per hour; • Stockpiled earth material shall be sprayed or covered as needed to minimize dust generation; • During construction, the amount of disturbed area shall be minimized, and onsite vehicle speeds should be reduced to 15 mph or less; • Consistent to the County Land Use Ordinance and SWPPP, all ~~E~~exposed ground areas that are planned to be reworked at dates more than one month after initial grading during the rainy season (i.e., Oct. 15 to April 15) shall be sown with a fast-germinating native grass seed and watered until vegetation is established; • After clearing, grading, earth moving, or excavation is completed, the entire area of disturbed soil shall be treated immediately by watering or revegetating or spreading soil binders to		

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			minimize dust generation until the area is paved or otherwise compacted so that dust generation is minimized; • Grading and scraping operations shall be suspended when wind speeds exceed 20 mph (one hour average); • Rumble pads (minor road obstructions designed to dislodge accumulated earth material from trucks) with spray washers shall be installed and maintained at all construction entrances; ~~and.~~ • All roadways associated with construction activities ~~should be paved as efficiently as possible.~~ shall be paved or utilize some other technique to control dust (i.e. water or APCD-approved soil stabilizer); and, • The contractor or builder shall designate a person or person to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the APCD prior to land use clearance for map recordation and finished grading of the area. C. ~~Offsite Emissions Mitigations~~CEQA Off-site Mitigation. Project emissions remaining following implementation of the above mitigation measures shall be offset through contribution to an off-site mitigation fund. The fund is managed by the APCD and used to finance regional emission reduction projects such as bikeways, vehicle scrapping programs, diesel bus conversions, agricultural engine replacements and similar activities. Therefore, project emissions would be offset on a regional basis through PXP-funded off-site projects		

	Impact	Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			that would result in emissions reductions. Based on past experience, the APCD has determined that $8,500 is required per ton NOx reduced. These funds would be used by the APCD to purchase clean-burning engines and other equipment/facilities that would result in a decrease in emissions in the County. The financial contribution shall be based on offsetting excess emissions (greater than 2.5 tons NOx per quarter) at $8,500 per ton.		
AQ-2	Diesel fuel combustion associated with project construction activity would generate emissions of toxic air contaminants (TACs).	3	No mitigation is required.	3	3
AQ-3	Fugitive dust generated by construction or relocation/demolition activity may contain asbestos and/or lead and result in exposure of the public to these ~~is~~ TACs ~~Fugitive dust generated by construction activity may contain asbestos and result in exposure of the public to this TAC.~~	2~~3~~	~~No mitigation is required.~~A. If utility pipelines are scheduled for removal or relocation, or building(s) are removed or renovated, the project may be subject to various regulatory jurisdictions, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M – asbestos NESHAP). These requirements include, but are not limited to: 1) notification requirements to the District, 2) asbestos survey conducted by a Certified Asbestos Inspector, and, 3) applicable removal and disposal requirements of identified ACM. ~~Please contact Tim Fuhs of the Enforcement Division for further information.~~ B. In the event demolition activities are required as part of project construction, ~~approval of~~ a lead work plan shall be prepared and submitted to ~~by~~ the APCD ~~shall required and must be submitted~~ for review and approval ten days prior to the start of demolition. Depending on the lead-removal method, an APCD permit may be required. Proof of APCD approval and/or authorization shall be submitted to the County prior to start of demolition.	3	3

	Impact	Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
AQ-4	Operation of the proposed water reclamation facility would increase the number of heavy truck trips to and from the proposed project site.	3	No mitigation is required.	3	3
AQ-5	Operation of the proposed water treatment facility would result in emissions of contaminants into the atmosphere which may result in a health risk to local residents.~~Operation of the proposed water treatment facility would result in emissions of ROGs, ammonia, and other TACs from air strippers~~.	~~2~~3	No mitigation is required. ~~A. As part of permitting for the proposed air strippers (New Source Review), the APCD would require PXP to include provisions for meeting the permit requirements concerning sampling and testing protocol for air stripper emissions per Rule 204; and.~~ ~~B. PXP shall apply Toxics BACTs such as carbon canisters or toxics scrubbers, depending on what is reasonably available at the time of permit application. As part of the permit application, PXP shall state what they intend to implement in terms of BACTs to the satisfaction of the APCD.~~	3	3
AQ-6	Due to the high levels of ammonia emissions (see Table 5.2-4) from the air strippers, the impact of related odors is considered an air quality issue.	2	PXP shall incorporate the issue of ammonia odors into the existing Odor Monitoring and Complaint Response Plan referenced above.	3	3
5.3	**Biological Resources**				
BIO-1	Construction activities could result in the disturbance of wildlife occupying adjacent habitats.	3	No mitigation is required.	3	3
BIO-2	Construction activities could adversely affect nesting activities of protected migratory birds.	2	Construction operations shall be conducted prior to the initiation of nesting, or after the completion of nesting to avoid any potential impact to migratory birds. Specifically, the following measures should be implemented: A. Construction operations shall be conducted prior to the initiation of nesting, or after the completion of nesting to avoid any potential impact to migratory birds. Therefore, all clearing, grading, and general construction operations should be conducted between the months of August and March. B. If Measure A is infeasible, pre-construction surveys	3	3

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			shall be conducted between February 15 and August 15 to identify potential bird and raptor nesting sites: • If active nest sites of common bird species protected under the Migratory Bird Treaty Act (e.g., northern mockingbird, house finch, etc.) are observed within the vicinity of the project site, then the project shall be modified and/or delayed as necessary to avoid direct take of the identified nests, eggs, and/or young; and, • If active nest sites of raptors and/or species of special concern (e.g., golden eagle, northern harrier, horned lark, etc.) are observed within the vicinity of proposed construction operations, then CDFG shall be contacted to establish the appropriate buffer around the nest site. Construction activities in the buffer zone shall be prohibited until the young have fledged the nest. C. The proposed tempering pond shall be designed and constructed with ~~protective nettinga~~ low permeability material to prevent the growth of vegetation and ~~to~~ discourage the use and potential nesting by waterfowl and other bird species protected under the MBTA. This shall include construction of permanent fencing (i.e., chain-link) around the pond perimeter to prevent debris accumulation and general wildlife use of the structure. In addition, a Tempering Pond Maintenance and Monitoring Plan shall be prepared to ensure that the pond ~~netted area~~is inspected and ~~is~~ maintained ~~in perpetuity with the~~for the life of the Produced Water Reclamation F~~f~~acility. This shall include provisions for periodic maintenance and ~~monthly~~ monitoring of the ~~netted~~ structure by ~~a qualified biologist~~facility staff to ensure that the pond is free of vegetation and miscellaneous debris that may attract ~~no~~ birds and wildlife ~~are trapped and to~~		

	Impact	Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			~~capture and release any entangled birds~~ as necessary through the life of the project.		
BIO-3	Construction activities could adversely affect special-status plant and terrestrial animal species potentially occurring in the project area.	2, 3	The following mitigation measures are recommended to avoid and/or minimize impacts to special-status species known to occur or with the potential to occur within the proposed building envelope for the water reclamation facility, tempering pond, and associated pipeline routes during construction. This includes protective measures to avoid and/or minimize impacts to Pismo clarkia and Well's manzanita during the construction phase of the project: **General Measures:** A. All equipment staging areas, construction-crew parking areas, and construction access routes shall be established in previously disturbed or developed areas; B. Exclusionary fencing will be erected at the boundaries of construction areas to avoid equipment and human intrusion into adjacent habitats with emphasis on protection of areas containing special-status species. The exact location of exclusionary fencing for each construction area shall be determined by a County-approved biological monitor. The fencing shall remain in place throughout the construction phase for each individual project component; C. A County-approved biological monitor shall conduct a worker orientation for all construction contractors (site supervisors, equipment operators and laborers) which emphasizes the presence of special-status species within the project site, identification, their habitat requirements, and applicable regulatory policies and provisions regarding their protection, and measures being implemented to avoid and/or minimize impacts; D. If nighttime construction activities are warranted, all	3	3

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			equipment lighting shall be shielded away from adjacent wildlife habitat areas and sky, to the extent feasible while still providing safe working conditions for construction personnel, to minimize lighting/glare impacts of wildlife; and, E. Mitigation Measure AQ-1 (a dust control program during the construction phase of the project shall be implemented to minimize dust impacts to adjacent vegetation communities and special-status plant species). **Protective Measures for Special-Status Plants:** F. Due to the fluctuation in annual plant populations (i.e., Pismo clarkia), spring botanical surveys shall be conducted annually by a County-approved biologist to update the location of special-status plant species populations on project plans until project construction is complete (as illustrated on Figure 5.3-2 and 5.3-3). Annual botanical survey results and documented fluctuations in populations shall be added cumulatively to the project plans (i.e., all newly discovered populations shall be added to existing populations documented in previous years). All mapped populations shall be clearly fenced off with exclusionary fencing prior to construction in those areas. If areas supporting Pismo clarkia and/or other sensitive plant species are determined by the County to be unavoidable then seed shall be collected from selected plants in impact areas and utilized to restore habitat within the pre-designated PXP Open Space Easement ~~on-site~~located on-site. The designated Open Space Easement is currently being utilized as a receiver site for mitigation plantings from Phase IV expansion operations (i.e., oak tree, Well's manzanita, and Pismo clarkia restoration efforts). The Open Space Easement should be sufficiently sized to handle the additional Pismo clarkia restoration efforts outlined above.		

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			However, in the event the existing easement is determined to be insufficiently sized to handle the additional restoration plantings, then an additional Open Space Easement shall be dedicated by PXP for these purposes; and, G. The final project plans shall clearly illustrate the location of Well's manzanita to remain within 25 feet of construction activities. Prior to any construction, grubbing or tree removal, each manzanita within the vicinity of the work areas shall be clearly marked for protection. To further avoid impacts to Well's manzanita located adjacent to proposed pipeline routes and the proposed construction staging area(s), boundaries of all work areas shall be clearly defined and marked with visible flagging and/or orange protective fencing. All construction activities shall remain in existing roadways and pipeline routes. If Well's manzanita is deemed unavoidable during project implementation, then the same measures outlined in BIO-6B of the Phase IV EIR (incorporated here by reference), would be implemented within the designated Open Space Easement to offset manzanita impacts. **Protective Measures for Special-Status Wildlife:** H. A County-approved biologist shall conduct pre-construction surveys to determine presence/absence of California horned lizard within and adjacent to project components containing suitable chaparral and/or scrub habitat (i.e., proposed equipment staging area and pipeline routes). Surveys shall only be required during the active period of California horned lizards (generally April through September). If California horned lizards are identified adjacent to and/or within work areas, then hand rakes or an equivalent shall be utilized by biological monitors to scarify the ground surface and encourage the horned lizards (and other		

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			wildlife) to vacate the immediate area prior to construction. Alternatively, sampling composed of drift fences shall be used to capture horned lizards. As necessary, the County-approved biological monitor shall physically relocate California horned lizards to suitable habitat located outside the construction zone. Exact procedures and protocols for relocation shall be based upon pre-project consultation with CDFG; I. A County-approved biological monitor shall be on-site during all vegetation clearing and shall periodically monitor the project site during construction activities to inspect protective fencing, equipment staging areas, and physically relocate/ remove any special-status wildlife species entering the construction zone (i.e., California horned lizard, etc.). All special-status species shall be relocated to suitable habitat located outside the construction zone by a qualified biologist. Exact procedures and protocols for relocation shall be based upon pre-project consultation with CDFG; and, J. Mitigation Measure BIO-2 (nesting bird surveys shall be conducted between February 15 and August 15 to identify nest sites of special-status bird species including golden eagle, American peregrine falcon, horned lark, northern harrier, and Cooper's hawk).		

	Impact	Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
BIO-4	Construction activities could result in direct and indirect impacts to special-status species potentially occurring within the proposed tempering pond and Pismo Creek and associated tributaries.	2, 3	The following mitigation measures are recommended to avoid and/or minimize impacts to special-status species known to occur or with the potential to occur within the Pismo Creek watershed: A. Construction of the proposed tempering pong and outfall at Pismo Creek including clearing and grubbing of vegetation shall be limited to the dry season (i.e., April 15 to Oct. 15); B. The proposed outfall structure shall be designed to minimize impacts to the existing willow scrub habitat of Pismo Creek to the greatest extent feasible. Specifically, this shall include placement of the structure within a pre-disturbed area (i.e., existing rip-rap bank) located downstream of the "Hyla Crossing" near an existing pipe bridge. Additionally, the final design of the outfall shall include a series of 20- to 30-foot long discharge pipes positioned at appropriate intervals along the creek bank to further minimize the footprint of impact to habitat along the creek bank; C. All existing downed woody debris and willow cuttings removed during construction of the outfall shall be placed and/or stockpiled in natural clumps on nearby creek banks to ensure no net loss of habitat for wildlife including special-status species; D. PXP shall prepare and implement a Spill Contingency Plan that includes provisions for avoiding and/or minimizing impacts to Pismo Creek due to spills during construction of the proposed outfall. Specifically, the plan shall include an overview of the secondary containment structures to be installed along the toe of the creek bank to prevent discharge of concrete and gunite into the stream channel during construction operations. Further, the plan shall outline the response equipment that will be on-site during construction and procedures for responding to any inadvertent	3	3

	Impact	Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			spills within the creek or surrounding areas including miscellaneous fuel and/or lubricant spills from construction equipment and vehicles during operations. Final specifications of the Spill Contingency Plan shall be reviewed and approved by the County and CDFG prior to project implementation; E. All construction activities within a 100-foot buffer of Pismo Creek shall be monitored by a qualified biologist on a full-time basis or at a frequency deemed necessary by a qualified biologist in consultation with the appropriate regulatory agencies. The biological monitor shall conducted pre-construction surveys for special-status wildlife species (e.g., southwestern pond turtle, two-striped garter snake, Calif. red-legged frog, etc.), maintain protective fencing, inspect equipment staging areas, and, as necessary, physically relocate/remove any special-status wildlife species entering the construction zone; and, F. Mitigation Measures BIO-3A-E (General Protective Measures for Biological Resources); and, G. Mitigation Measure BIO-2 (nesting bird surveys shall be conducted between February 15 and August 15 to identify nest sites of special-status bird species including yellow warbler, southern willow flycatcher, and Cooper's hawk).		
BIO-5	Development of the produced water reclamation facility will result in the removal of up to 26 coast live oak trees and an additional six oak trees could be impacted by proposed activities.	2	The following mitigation measures are recommended to mitigate impacts to oak trees due to project implementation. This includes protective measures to avoid and/or minimize impacts to oak trees designated for long-term preservation: A. Mitigation Measures BIO-3A-E (General Protective Measures for Biological Resources); B. Prior to construction, a Supplemental Habitat Enhancement Plan containing site-specific oak tree	3	3

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			protection and replacement procedures shall be prepared for the project. The Supplemental Habitat Enhancement Plan shall clearly outline the procedures for protecting oak trees to remain in place during construction and provide details for replacing oak trees that are removed at a 4:1 ratio and those impacted at a 2:1 ratio. Final specifications of the Supplemental Habitat Enhancement Plan shall be approved by the County and CDFG prior to construction. At a minimum, the plan shall contain the following provisions: • Utilizing the oak tree survey data collected in 2007, final project plans shall clearly illustrate the size and location of all oak trees to be removed as part of the project and all oak trees to remain within 25 feet of construction activities. Prior to any construction, grubbing or tree removal, each mature coast live oak tree within the vicinity of the proposed impact area shall be clearly marked for removal or protection; • Protective fencing shall be installed around each oak tree to remain in place. The fencing shall be installed prior to grubbing/construction and provide protection of the root zone of oak trees (the outer edge of the tree root zone is 1-1/2 times the distance from the trunk to the drip line of the tree); • To further protect oak trees to remain in place, a certified arborist shall be retained by the applicant to perform any necessary trimming of oak tree limbs overhanging equipment access routes. This shall be conducted prior to allowing construction equipment to enter the proposed impact area to avoid and/or minimize the potential for inadvertent damage to oak trees limbs (i.e., equipment, vehicles, etc.);		

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			• Replacement oak trees shall be from vertical tubes or deep, one-gallon container stock. The 1-gallon stock shall be evenly placed within the designated restoration area; • Replanting shall be completed in the fall season upon completion of grading within a given area and by a qualified individual familiar with native vegetation; • Location of newly planted oak trees shall adhere to the following whenever possible: on the north side of and at the canopy/dripline edge of existing mature native trees; north-facing slopes; within drainages swales; where topsoil is present; and if clustered, at least 10' "on-center" separation between each tree. Tree spacing will average approximately 15 feet on-center. Some clustering is acceptable to maintain a more natural appearance; and, • Newly planted trees shall be maintained until successfully established. This shall include protection (e.g., caging, tree shelters) from burrowing and browsing animals (e.g., deer, rodents), regular weeding (minimum of once early fall and once early spring) of at least a 3-foot radius around the plant base and adequate watering (i.e., drip irrigation system). Heavy mulching consisting of local oak leaf litter/mulch so seedlings are exposed to local mycorrhizal fungi to enhance survivability and growth is also recommended. Irrigation shall be slowly terminated over a 3-year period. If possible, planting during the warmest, driest months (June through September) shall be avoided. Replacement oak trees identified as dead and/or diseased during the monitoring period shall be replaced accordingly. C. Mitigation Measure BIO-2 (the tree removals shall be		

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			conducted as to avoid a take of raptors or migratory birds).		
BIO-6	The proposed Produced Water Reclamation Facility will result in the permanent loss and/or long-term degradation and fragmentation of natural habitats, which provide forage, cover, and breeding elements for a wide variety of wildlife species, including several special-status species.	2, 3	The following measures shall be implemented to compensate for the actual permanent loss of vegetation resulting from project implementation and potential long-term degradation of adjacent habitat areas from projected long-term utilization of the site: A. Prior to construction, an area within the previously dedicated PXP Open Space Easement shall be set aside to accommodate the required oak replacement (estimated at 104 total) and Pismo clarkia plantings (BIO-3 and BIO-5). If the available area within the existing open space easement is not sufficient to accommodate all of the required oak tree and Pismo clarkia plantings additional mitigation areas containing suitable habitat shall be identified by the applicant and dedicated as supplemental open space easement areas. These areas should contain a representative mixture of oak woodland and annual grassland with known populations of Pismo clarkia. Final specifications of any additional dedicated easement areas (size and location) shall be reviewed and approved by the County and CDFG prior to construction. In addition, future equipment staging areas, access routes, and additional well pads shall be prohibited in the dedicated easement areas; B. Provision B of Mitigation Measure BIO-5 (Supplemental Habitat Enhancement Plan) shall also contain measures to offset additional impacts to Pismo clarkia and oak woodland within the dedicated easement area. Specifically, the Supplemental Habitat Enhancement Plan shall include species lists, installation and maintenance methods, performance criteria, and monitoring protocols for enhancing existing habitats within the dedicated easement area. At a minimum, the plan shall	3	3

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			contain the following additional provisions: • Procedures to further mitigate permanent loss of California live oak woodland by augmenting existing oak woodland habitat within the dedicated easement with a portion of the required 4:1 ratio oak tree plantings; • Planting of Pismo clarkia as required by Mitigation Measure BIO-3 shall occur within selected areas (if loss is deemed unavoidable by the County) of the dedicated easement to augment existing populations, concentrating the majority of seed dispersal along the northeastern perimeter of the existing oak woodland habitat; • Installation of all replacement planting and/or seed dispersal shall be conducted within the appropriate season to promote survivability (i.e., fall/winter). If possible, planting during the warmest, driest months (June through September) shall be avoided; • Shall provide procedures to ensure eradication of exotic plant species (i.e., pampus grass, tree tobacco, etc.) within the dedicated easement. This shall include provisions for controlling the spread of exotic species throughout the project area; and, • Shall provide an implementation schedule which emphasizes initiation of the Habitat Enhancement Plan within the 1st year of improvements authorized under this approval. The schedule shall outline the sequencing of all mitigation planting and timing for long-term monitoring and maintenance of the dedicated open space easement through the life of the project. C. To offset approximately 0.62-acre of state wetland impacts due to construction of the proposed tempering pond, PXP shall either develop a		

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			compensatory wetland mitigation plan which outlines procedures for restoring wetland habitat on-site in-kind (i.e., bulrush-cattail series) or pay an in-lieu fee as directed by the County into a designated wetland restoration fund. D. To avoid further impacts to state-designated wetland habitat areas, the proposed water reclamation facility and tempering pond shall be modified to avoid impacts to the wetland features mapped on Figure 5.3.-3 and discussed in Appendix E - Wetland Assessment. This shall include the following provisions: • 10-foot buffer measured outward from the edge of the seasonal wetland swale and riparian woodland (i.e., willows) should be preserved in a natural vegetation state. This includes the seasonal freshwater wetland, riparian woodland, and roadside drainage located along the southeastern corner of the currently proposed water reclamation facility site plan as well as the riparian woodland habitat located along the southeastern corner of the proposed tempering pond. This measure shall not apply to the three man-made storm water conveyance structures/ ponds (0.07-acre) located along the southeastern corner of the proposed reclamation facility, and; • Wetlands and setback areas shall be temporarily fenced with silt fencing and other appropriate measures, and orange protective fencing during construction to minimize and/or avoid inadvertent impacts due to temporary construction related erosion and sedimentation. E. To offset approximately 0.01-acre of riparian woodland impacts due to installation of the proposed outfall structure, PXP shall prepare a Compensatory Mitigation Plan which outlines the procedures for restoring willow habitat removed due to project		

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			implementation at a 3:1 ratio with emphasis on habitat enhancement. The plan shall clearly identify planting areas within and adjacent to the proposed impact area in addition to the performance criteria for re-establishing willow habitat within Pismo Creek. The plan shall be approved by the County, CDFG, RWQCB, and Corps prior to project implementation. F. Mitigation Measure AQ-1 (a dust control program during the construction phase of the project shall be implemented to minimize dust impacts to adjacent wetland communities); G. Mitigation Measure HYD-1 (in compliance with the Land Use Ordinance, the applicant will prepare and implement a Sediment and Erosion Control Plan (SECP) which will outline procedures for stabilizing the site and minimizing sedimentation and erosion impacts to adjacent wetland habitat areas);		
BIO-7	Development of the proposed the Produced Water Reclamation Facility could result in the permanent loss of wetlands regulated by the Corps under Section 404 of the Clean Water Act.	2	The following measures shall be implemented to avoid impacts to Pismo Creek tributaries, compensate for the permanent loss of waters of the U.S. resulting from installation of the proposed outfall structure and potential long-term degradation of adjacent federal wetland habitat areas from projected long-term utilization of the site: A. In the event that no pipe racks exist along the existing roadways at tributary crossings and excavation of the roadway base material would require removal and/or replacement of existing road culvert(s), then a jack-and-bore technique would implemented for pipeline installation to ensure that no impacts occur to the subject drainages; B. Mitigation Measure BIO-6 (avoidance and minimization measures for protection of wetland habitat features and development of Compensatory Mitigation Plan for Pismo Creek [BIO-6E]); and, C. The applicant shall obtain a permit from the U.S.	3	3

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			Army Corps of Engineers pursuant to 404 of the Clean Water Act, Water Quality Certification from the Regional Water Quality Control Board pursuant to 401 of Clean Water Act and a Streambed Alteration Agreement or waiver from the California Department of Fish and Game pursuant to Section 1600 et seq. of the California Fish and Game Code for placement of permanent structures along Pismo Creek (i.e., fill activities) including trimming/removal of riparian vegetation. As part of the permitting process, PXP shall be required to provide the Compensatory Mitigation Plan (Mitigation Measure BIO-6E) to the Corps and the RWQCB for review and approval prior to permit issuance. As part of this process, the ~~Corps~~ agencies may require a higher mitigation ratio and/or include additional performance criteria in the form of special permit conditions. All agency permits and the Final Compensatory Mitigation Plan shall be submitted to the County prior to ~~project implementation~~issuance of grading permit.		
BIO-8	Operation of the proposed Produced Water Reclamation Facility could result in long-term direct and indirect impacts to special-status species potentially occurring within Pismo Creek and the Pismo Creek Estuary.	2	The following measures shall be implemented to offset potential impacts to special-status species potentially occurring within Pismo Creek and the Pismo Creek Estuary associated due to operation of the proposed Produced Water Reclamation Facility: A. PXP shall obtain appropriate approvals and/or authorizations from the NMFS and USFWS to discharge treated water into Pismo Creek per Section 7 of the ESA. If deemed necessary by NMFS, ~~T~~this shall include preparation of an Essential Fish Habitat Analysis per the Magnuson-Stevens Fishery Conservation and Management Act. All conditions and/or specified recommendations from these agencies to afford maximum protection of special-status species known to occur in Pismo Creek including temperature requirements (e.g., steelhead, tidewater goby, California red-legged frog) shall be adhered to and	4	4

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			implemented as part of the project. Approvals and/or authorizations from these agencies shall be provided to the County for review prior to ~~project implementation~~issuance of grading permit; B. Mitigation Measure HYD 4A and 4B (PXP shall obtain an NPDES permit from the RWQCB the requirements of which shall be fully implemented including waste discharge limitations, and monitoring and reporting requirements. During plant operations, the applicant shall report phenol concentrations in effluent samples indicated above the method detection limits but less than quantitation limits. At such a time that laboratory analytical methods allow for lower quantitation limits, the applicant shall report phenol concentrations to the RWQCB to ensure compliance with the RWQCB's water quality standards)~~During operation, the applicant shall utilize granular activate carbon as a polishing unit to ensure that treated water does not contain phenol or other organic compounds that are present in concentrations in excess of RWQCB water quality standards but less than the contract laboratory's analytical method detection limit)~~; C. Mitigation Measure HYD 5 (water treatment system shall be constructed with sufficient holding capacity to contain water that fails to meet water quality per the NPDES permit or other agency permit conditions so that water not meeting specifications is not released to Pismo Creek); D. To mitigate potentially significant impacts to steelhead and other special-status species due to increased water temperatures within Pismo Creek, PXP shall prepare a Stream Monitoring Plan for the proposed water reclamation facility. The Plan shall be prepared for County and NMFS review and approval prior to project implementation and shall contain at a minimum the following provisions:		

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			• Identification of permanent temperature monitoring stations within Pismo Creek both upstream and immediately downstream of the proposed discharge location. The upstream location shall be utilized to determine baseline stream temperature conditions of Pismo Creek; • The monitoring stations shall consist of HOBO continuous temperature recorders or an equivalent to allow automatic stream temperature measurements at approximate 2-hour intervals; • DO levels shall also be monitored at the designated stations on a periodic basis (to be defined in the Plan) utilizing appropriate water quality sampling equipment. If deemed necessary, additional features shall be installed to the treatment system and/or along the splash pad to increase oxygenation of the discharge water; • The Plan shall identify the procedures and schedule for stream temperature data collection and reporting requirements which will be utilized to determine the maximum discharge water temperature from the water reclamation facility to ensure compliance with the RWQCB Basin Plan and NMFS requirements throughout the life of the project (i.e., at no time shall the temperature of receiving waters be increased by more than 5°F). This shall include modifying water temperatures accordingly throughout the year to coincide with seasonal fluctuations of Pismo Creek ~~with a maximum discharge temperature not to exceed 20°C (68°F); and,~~ • The Plan shall include maintenance and inspection procedures to ensure that the temperature monitoring stations are periodically serviced and/or replaced, as necessary		

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			throughout the life of the project. This shall include inspections after significant storm events to ensure that the stations are not dislodged and/or damaged by storm flows and debris; and,~~.~~ • The Plan shall include a reporting schedule that provides quarterly monitoring reports to the County and the RWQCB. The Plan shall also contain provisions for the immediate reporting of upset conditions to the County and RWQCB. E. To mitigate potentially significant impacts to steelhead due to stranding during periodic maintenance events, emergency shut-downs, and transfer of water to adjacent landowners, PXP shall prepare a Steelhead Stranding Plan for the proposed water reclamation facility. Per NMFS requirements, the Plan shall clearly outline a series of steelhead stranding avoidance measures that shall be adhered to for the life of the facility. The Plan shall be prepared for County and NMFS ~~for~~ review and approval prior to project implementation and shall contain at a minimum the following provisions: • An analysis of the expected flow fluctuations of Pismo Creek in conjunction with the Water Reclamation Facility; • Development and implementation of a steelhead monitoring program with emphasis on habitat areas downstream of the facility to provide ~~"real time"~~baseline estimates of steelhead populations within the vicinity of the facility and periodically thereafter as deemed necessary by the NMFS; • Identification of all factors affecting steelhead stranding potential including but not limited to changes in wetted width with modifications in stream flows and stranding potential in side channels;		

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			• Recommendations for appropriate ramping rates to ensure that the water discharge rate is decreased slowly over a long-duration to prevent to the extent feasible steelhead stranding with emphasis on fry and juveniles; • Monitoring program during extended temporary shut-downs and emergencies which outlines procedures for qualified biologists to monitor pools and stream channels downstream of the facility and relocate stranded steelhead to suitable habitat areas. Information on relocation sites and estimated steelhead mortalities shall be provided to NMFS and the County in comprehensive monitoring reports; and, • To mitigate potential impacts to steelhead due to stranding and/or relocation through the life of the project (i.e., worst case scenario), the Plan shall include several mitigation options such as implementation of creek habitat restoration projects within the PXP facility and/or Pprovisions for monetary compensation to fund high priority projects identified within the Pismo Creek Watershed Plan and adjacent watersheds. Mitigation options, if required, would be commensurate to the level of impact (i.e., installation of a series of root wads to enhance steelhead production). Maximum monetary compensation amounts shall be provided in the Plan and agreed upon by all parties prior to Plan approval~~to mitigate potential impacts to steelhead mortalities due to stranding and/or relocation through the life of the project~~.		
BIO-9	Termination of the PXP Arroyo Grande oil field and eventual decommissioning of the proposed Produced Water Reclamation Facility could result in significant impacts to steelhead populations potentially occurring within Pismo Creek.	2	The following measures shall be implemented to offset potential impacts to steelhead populations established within Pismo Creek due to decommissioning of the Produced Water Reclamation Facility:	3	3

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			A. ~~Prior~~ At the time PXP determines to decommission~~ing of~~ the Produced Water Reclamation Facility, PXP shall be required to obtain formal approval and/or authorization from the County and NMFS. As part of the decommissioning request, PXP shall conduct a complete assessment of all baseline parameters for the existing steelhead population and their associated habitat within Pismo Creek. This shall include a detailed summary of the ~~annual~~ steelhead monitoring data required as part of BIO-8E and development of a Habitat Suitability Index (HIS) for the lower 4 miles of Pismo Creek which would be potentially impacted by removal of the artificial water supply from the creek system; B. In the event it is determined by NMFS and the County after review of the data that removal of the facility would result in a significant impact to the existing Pismo Creek steelhead population, then PXP shall submit a ~~Pismo Creek~~Steelhead Habitat Mitigation Plan (Plan) to the County and NMFS for review and approval prior to approval of facility decommissioning. The Plan shall be prepared in accordance with the most current California salmonid habitat restoration techniques and identify a series of creek habitat restoration projects that will be completed by PXP over a specified time period to enhance the existing breeding and over-summering habitat within Pismo Creek (i.e., creation of pools, etc.) and/or an adjacent watershed, such as Arroyo Grande Creek. The Plan shall focus on restoration of the portion of Pismo Creek located within the PXP Arroyo Grande oil field or within a comparable section of Arroyo Grande Creek and include, as necessary, ~~including~~ replacement of any dilapidated road crossings and associated culverts that may be acting as fish barriers. Again, mitigation options, if required, would be commensurate to the level of impact. Alternatively,~~As necessary,~~ the Plan ~~shall~~		

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			~~also~~can include provisions for monetary compensation to fund high priority projects identified within other portions of the Pismo Creek and/or Arroyo Grande Watershed ~~Plans~~. Maximum monetary compensation amounts shall be provided in the Plan and agreed upon by all parties prior to Plan approval. Monetary compensation can be provided as mitigation anytime prior to decommissioning of the facility at the discretion of PXP.		
5.4	**Geology/Soils**				
GEO-1	Construction of the proposed project may result in a substantial, or potentially substantial, adverse change in the physical condition of the land.	3	No mitigation required.	3	3
GEO-2	Construction of new graded pads and proposed detention pond modifications could result in unstable slopes prone to failure during a seismic event.	2	The applicant shall provide the County with a geotechnical engineering report prepared and certified by a State of California licensed geotechnical engineer which addresses slope stability, landslides, liquefaction, settlement, seismic hazards, and expansive soils at the area of proposed facilities. The applicant shall implement the recommendations contained in the geotechnical engineer's report in preparation of grading plans and during construction.	3	3
GEO-3	The treatment and discharge of produced water could result in decreased oil production due to the loss of reservoir pressures.	3	No mitigation is required.	3	3
GEO-4	The removal of water from the oil reservoir could result in land subsidence within the oil field area.	3	No mitigation is required.	3	3
5.5	**Hydrology and Water Quality**				
HYD-1	Construction of the proposed project could result in short-term increases in erosion and sedimentation resulting from earth-moving operations and exposed soils.	2	A. In compliance with the Land Use Ordinance, the applicant will prepare and implement a Sediment and Erosion Control Plan (SECP) for the proposed project. The SECP will include: • Slope surface stabilization measures, such as temporary mulching, seeding, and other suitable	3	3

	Impact	Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			stabilization measures to protect exposed erodible areas during construction, and installation of earthen or paved interceptors and diversion at the top of cut of fill slopes where there is a potential for erosive surface runoff; • Erosion and sedimentation control devices, such as energy absorbing structures or devices, will be used, as necessary, to reduce the velocity of runoff water to prevent polluting sedimentation discharges; • Installation of mechanical and/or vegetative final erosion control measures within 30 days after completion of grading; • Confining land clearing and grading operations to the period between April 15 and October 15 to avoid the rainy season consistent with the County Land Use Ordinance and SWPPP requirements; • Minimizing the land area disturbed and the period of exposure to the shortest feasible time; • The SECP will be prepared in accordance with the Land Use Ordinance; and, • Install long-term drainage devices at new/ modified pads, including headwalls, basins, culverts with down-drains and energy dissipating devices (riprap or diffusers). B. In compliance with Section 23.05.020 - Grading, the applicant will prepare a grading plan for the project. C. PXP will comply with the requirements under a general stormwater construction permit. Such requirements will include preparation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP shall include provisions for the installation and maintenance of Best Management Practices to reduce the potential for erosion of disturbed soils at		

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			the Project site.		
HYD-2	Discharge of treated water to Pismo Creek would affect stream geomorphology due to higher dry-season flows.	3	No mitigation is required.	3	3
HYD-3	Groundwater quality may be impacted by the project.	4	With either disposal method, the treatment and re-use or discharge of produced water would have a beneficial impact on the shallow alluvial aquifer along Pismo Creek down-stream of the oil field. This is considered a beneficial impact.	4	4
HYD-4	The proposed project could result in water discharges that may result in exceedences of the water quality objectives of the Central Coast Water Quality Control Plan or the California Toxics Rule.	2	A. Prior to operation, the applicant shall obtain an NPDES permit from the RWQCB. The requirements of the Permit shall be fully implemented including waste discharge limitations, and monitoring and reporting requirements. B. During plant operations, the applicant shall report phenol concentrations in effluent samples indicated above the method detection limits but less than quantitation limits. At such a time that laboratory analytical methods allow for lower quantitation limits, the applicant shall report phenol concentrations to the RWQCB to ensure compliance with the RWQCB's water quality standards. ~~During operation, the applicant shall utilize granular activate carbon as a polishing unit to ensure that treated water does not contain phenol or other organic compounds that are present in concentrations in excess of RWQCB water quality standards but less than the contract laboratory's analytical method detection limit. The need for GAC treatment may be eliminated by the County in consultation with the RWQCB, CDFG, and NMFS, at such a time that analytical laboratory method limits can detect organic compounds at or below the RWQCB water quality standards.~~	3	3

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
HYD-5	An upset condition at the water treatment facility could result in the release of water not meeting water quality standards into Pismo Creek.	2	The proposed water treatment system shall be constructed with sufficient holding capacity to contain water that fails to meet water quality per the NPDES permit or other agency permit conditions so that water not meeting specifications is not released to Pismo Creek.	3	3
5.6	**Hazards**				
HAZ-1	The construction of the proposed water treatment facilities would include the use of containing hazardous chemicals which could potentially impact the project site, Price Canyon Road, and potentially Pismo Creek if ruptured during an upset condition.	2	Prior to system start-up, the applicant shall submit an amended Hazardous Materials Business Plan to the San Luis Obispo Division of Environmental Health for review and approval.	3	3
HAZ-2	Petroleum hydrocarbon-containing soil may be encountered during project construction activities.	2	A. PXP shall complete an environmental site assessment of areas to be utilized for the proposed project to determine whether the project site has been impacted with petroleum or hazardous substances. The site assessment work plan shall be prepared by a registered professional and submitted to the County of San Luis Obispo Division of Environmental Health (SLODEH) for review and approval prior to implementation. The site assessment activities shall include the advancement of drill holes and collection of soil and, if contamination is present, groundwater samples for chemical analyses. A site assessment report shall be submitted to SLODEH for review and approval. If necessary, a corrective action plan shall be submitted to SLODEH for the proper management of contaminated soil and groundwater that may be disturbed as part of the proposed project grading activities. Corrective actions shall be completed at the project site to the satisfaction of SLODEH prior to implementation of the proposed grading activities. Corrective actions, other than compliance with the RWQCB's beneficial reuse provisions for crude oil-containing soil excavated during the course of project construction activities, shall not be required	3	3

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			for naturally-occurring petroleum hydrocarbon containing soils present at the project site. B. Should hydrocarbon contaminated soil be encountered during construction activities, the APCD must be notified as soon as possible and no later than 48 hours after affected material is discovered to determine if an APCD Permit will be required. In addition, the following measures shall be implemented immediately after contaminated soil is discovered: • Covers on storage piles shall be maintained in place at all times in areas not actively involved in soil addition or removal; • Contaminated soil shall be covered with at least six inches of packed uncontaminated soil or other TPH -non-permeable barrier such as plastic tarp. No headspace shall be allowed where vapors could accumulate; • Covered piles shall be designed in such a way to eliminate erosion due to wind or water. No openings in the covers are permitted; • During soil excavation, odors shall not be evident to such a degree as to cause a public nuisance; and, • Clean soil must be segregated from contaminated soil. Crude oil-containing soil excavated during the course of project construction activities shall be handled and reused on-site in accordance with the RWQCB's Beneficial Reuse Order #R3-2005-005. The notification and permitting determination requirements shall be directed to Karen Brooks of the APCD Enforcement Division at (805) 781-5912.		
HAZ-3	Location of the project within a high fire hazard could result in additional fire risk for the project area.	2	A. The applicant shall produce CALFIRE/County Fire a Fire Hydrant System plan for approval prior to	3	3

Impact		Impact Category Before Mitigation	Mitigation Measures	Impact Category After Mitigation	Cumulative Impact
			construction. This plan shall be implemented before construction commences. B. PXP shall submit a vegetation management plan to CALFIRE/County Fire for approval prior to issuance of construction permits. This will identify measures to minimize the risk of wildfires due to operation of existing and proposed new pipelines and power-lines. It will also make recommendations for protection of such facilities from a wildfire.		

THIS PAGE LEFT INTENTIONALLY BLANK

CHAPTER 3.0
PROJECT DESCRIPTION

3.1 INTRODUCTION

PXP is proposing development of a water reclamation facility at their Arroyo Grande Oil Field to facilitate continued operations associated with their approved Phase IV Development Plan. The proposed Project involves the following components:

- Construction of infrastructure for water reclamation on five combined building pads ranging in sizes from approximately 100-foot by 150-foot to 175-foot by 450-foot (refer to Figure 3-8);
- Construction of a 20,000 barrel per day (2.5 acre feet per day or 840,000 gallons per day) water reclamation facility (utilizing primarily reverse osmosis treatment technology), on an approximately 150-foot by 125-foot building pad (refer to Figure 3-5);
- Construction of two 210,000 gallon filtered water tanks and two day tanks sized at 420,000 gallons each designed to contain 12 hours of treated water production (see Figure 3-5);
- Construction of a 420,000 gallon Recovery Water Tank (see Figure 3-5);
- Other appurtenances and tanks for storage and conveyance of treatment materials and ancillary equipment as needed (see Figure 3-5);
- Construction of three air stripping towers (air strippers) 70 feet in height to remove organics and heat from the water, two heat exchangers (fin-fan followed by a wet surface heat exchanger); and various tanks and silos on an 175-foot by 450-foot building pad (see Figure 3-5);
- Proposed facility structures including all air stripping towers would be painted a non-reflective gray/green, which best blends with the existing and proposed vegetation, to mitigate any potential aesthetic impacts resulting from the addition of the towers. Final color selection may be negotiated with the County prior to the construction phase of the project;
- New onsite lighting would be low intensity and shielded in a manner that is consistent with County standards;
- Construction of water transmission pipelines within existing facility roadways and piping routes including stub-out pipelines for re-use on / or off-site (see Figure 3-5);
- Creation of a smooth-bottomed tempering pond lined with low-permeability material within an existing dry pond (more detail provided in Section 3.4.3.3) (see Figure 3-4);

- Relocation of existing pipelines within the proposed footprint of the water treatment/reclamation facility, including an existing flare. Relocated pipelines would be placed in existing, above-ground pipe racks (see Section 3.4.3.3);
- Placement of a reclaimed water outfall structure for release of the treated water on an existing rip-rap bank along Pismo Creek (see Figure 3-7);
- Temporary use of two staging areas in idle and abandoned well locations, one being approximately 75-foot by 100-foot and the other approximately 100-foot by 150-foot, located outside of the Phase III/IV project boundary within previously disturbed areas (see Figure 3-4);
- Operation of the proposed project (water reclamation facility) including discharge and potential re-use;
- Discharge of the treated produced water into Pismo Creek (see Figure 3-3); and,
- Potential re-use of the treated produced water (i.e., agriculture) by adjoining property owners in the vicinity of the project site, as well as re-use in the oil field. Re-use pipelines are located outside of the existing Phase III/IV project boundary and proceed to the north and south toward adjacent properties.

3.2 PROJECT LOCATION

The Arroyo Grande Oil Field is located in Price Canyon about three miles northeast of the City of Pismo Beach in San Luis Obispo County, California. The project site is located east and west of Price Canyon Road near its intersection with Ormonde Road, between Highway 101 and Highway 227. Refer to Figure 3-1 for a site vicinity map. The majority of the proposed project lies within the 264-acre Phase III development project approved by the San Luis Obispo Planning Commission (SLOPC) in Resolution 94-49, Development Permit No. D910026D, which was delineated in the 1994 Shell Western Development Plan EIR [Phase IV Development Plan (County, 2005)]. However, portions of the re-use pipelines and the proposed reclamation facility lie outside this boundary. The facility site lies primarily within the 320-acre Arroyo Grande Oil Field, which is within the larger 1,480-acre Price Canyon Unit as defined by the California Division of Oil, Gas & Geothermal Resources (DOGGR). Refer to Figure 3-2.

3.3 PROJECT OBJECTIVES

The primary purpose of the proposed project is to enhance the recovery of oil reserves via treatment and reuse of excess produced water. Inherent to this enhanced recovery is dewatering the oil-bearing formation by reducing return water flows from the existing oil-water separation process.

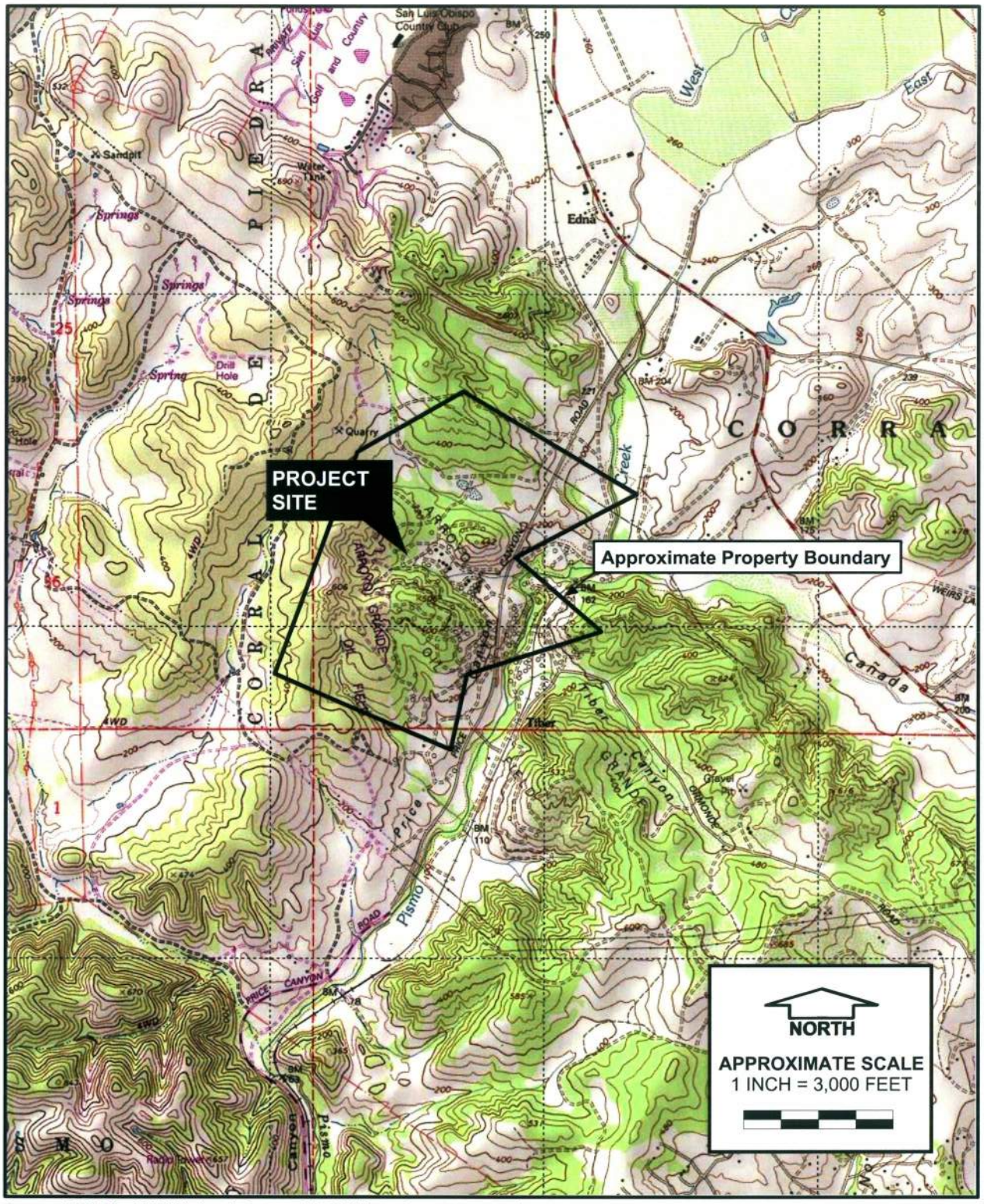


Source: TOPO! c 2001 National Geographic Holdings (www.topo.com)

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

SITE VICINITY MAP

FIGURE 3-1



Source: TOPO! c 2001 National Geographic Holdings (www.topo.com)

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

SITE LOCATION MAP

FIGURE 3-2

3.4 PROJECT DESCRIPTION

3.4.1 Background

PXP currently produces approximately 1,600 BOPD from about 125 producing wells in the 320-acre Arroyo Grande Oil Field, whose boundary is defined by the DOGGR. Produced water volume has also risen as a result of the Phase III drilling program. The Arroyo Grande Oil Field and the Price Canyon Unit are shown in Figure 3-2. Many of the existing wells on the property are co-located with steam injection wells, which provide steam for enhanced oil recovery. Other existing production facilities include above-ground pipelines, six steam generators (four west of Price Canyon Road; two east of the road), "steam headers" (which distribute steam to the steam injection wells), a dehydration facility for the entire field and a gas plant. The dehydration and gas plants are located on the west side of Price Canyon Road. The dehydration plant has several associated facilities, including heater treaters, oil storage tanks, vapor recovery compression, water softening equipment, and sand filters. The gas plant processes about 1.5 million standard cubic feet per day of associated gas ("casing gas") that contains in excess of 50% CO_2, and 40,000 ppm hydrogen sulfide (H_2S), which is removed using a patented absorption process. The resulting waste stream is re-injected into CDOGGR approved injection wells. All hydrocarbon pipelines crossing underneath Price Canyon Road and above Pismo Creek are contained within "conductor pipelines," which are intended to contain any fluid release that could occur from these pipelines.

In 2005, PXP received approval from the County of San Luis Obispo for issuance of a Conditional Use Permit for:

- Grading of 4 new well pads (total disturbance of about 2.68 acres);
- Grading on 18 existing well pads (total disturbance of about 4.22 acres);
- Construction of 95 new production wells;
- Construction of 30 new injection wells;
- Construction of 5 wastewater disposal wells within the Arroyo Grande Field boundaries;
- Construction of 3 new steam generators (previously approved in the 1994 Phase III Development Plan); and,
- Increasing production of marketable quality crude oil from 1,800 - 1,900 BPD to 5,000 BPD (1,825,000 barrels of oil annually).

3.4.1.1 Existing Produced Water Management Practices

Producing wells currently pump (water in emulsion with oil) at a ratio of eight barrels of water to one barrel of oil (water output to oil output)[1]. Approximately three barrels of steam are

[1] This ratio is the difference of the oil to steam ratio (OSR), which is the ratio of oil output to steam or water input. The OSR for current operations is 0.32.

required to produce one barrel of oil. Water recovered per barrel is a combination of the condensed steam pumped into the ground and water located naturally in the reservoir rock with the oil such that the volume of water recovered is greater than three times the oil recovered. This recovered water is called "produced water" and when separated from the oil, the produced water is used in the steam generators to produce steam for thermal injection or disposal to approved subsurface disposal zones via water injection wells.

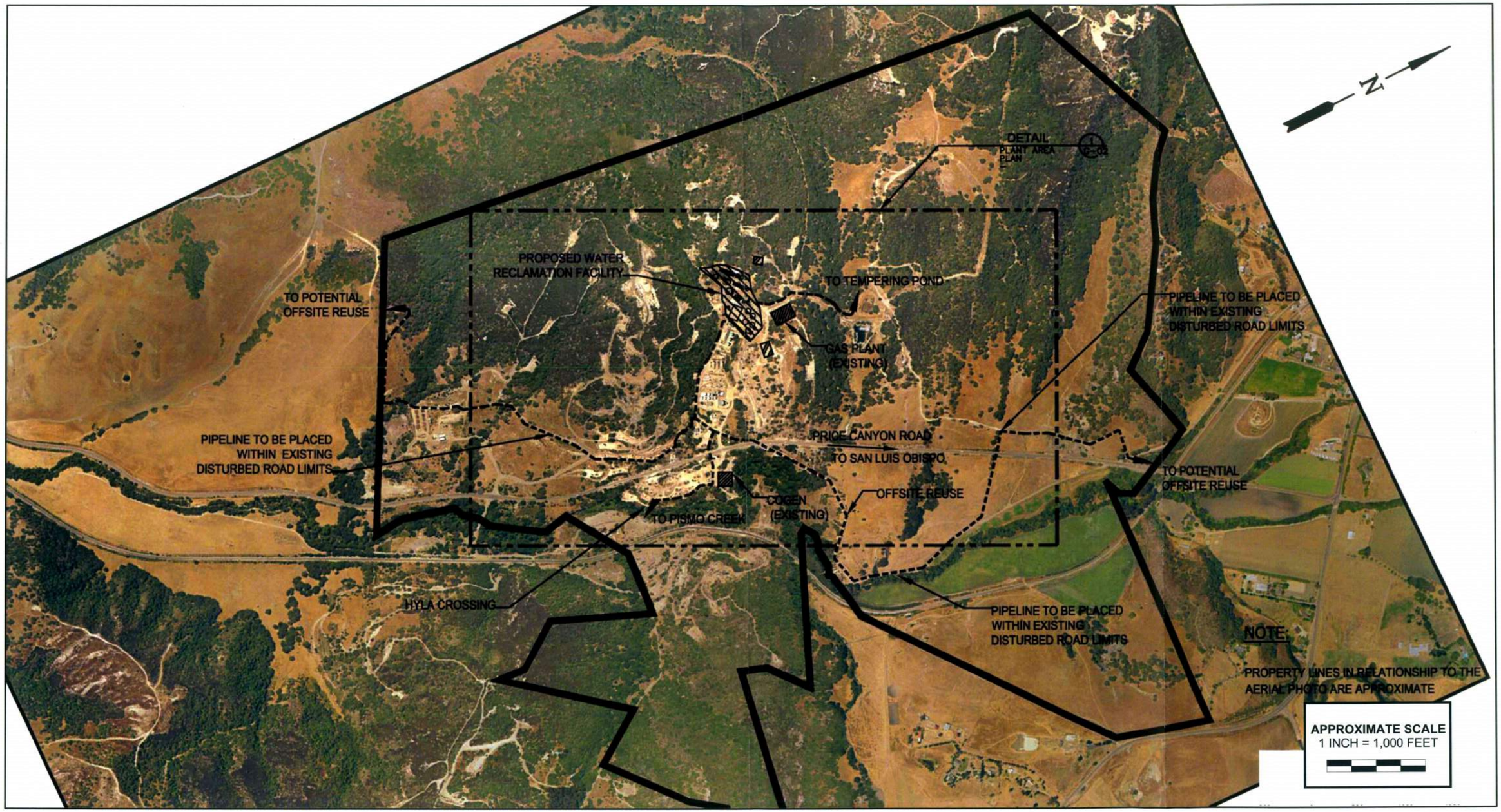
The produced water must undergo filtration and processing prior to use in the steam generators. The existing water treatment system utilized to accomplish this task is located as shown in Figure 3-4. The system includes a water holding tank, flotation cells, sand filters and water softening units. Water entering the treatment system comes principally from the free water knockout vessels and the heater treaters. Small volumes of water may enter from other process sources. The water first passes through the wash tanks and then enters a flotation cell where entrained oil is removed from the produced water. The oil is then returned to the tank battery system and then sent to storage. The water passes through a series of sand filter vessels to remove particulate matter. After the sand filtering, the water passes through an ion exchange water softening unit and then is pumped to the steam generators.

Produced water is sent to the flotation cell, then that portion not used for steam generators is sent to the sand filters to remove entrained oil, and then reinjected through waste water injection wells to approved subsurface disposal zones as per DOGGR requirements. This water is currently not treated to a point where it is suitable for irrigation or creek discharge.

3.4.1.2 Pilot Project

The applicant (PXP) conducted an extensive pilot testing program during a seven-month period between 2005 and 2006. The pilot testing was used to validate the design concept of the proposed Project as well as demonstrate consistent performance results of various treatment plant components. The pilot plant tested each of the processes sequentially as seen in the block flow diagram (Figure 3-6) (Entrix, 2007).

A seven month pilot period was selected to allow enough time to observe performance of the pretreatment and treatment steps and to observe chemical and power consumption levels over a variety of operational conditions. Key findings of the pilot operations were 1) that the proposed water treatment process consistently achieves the quality needed to comply with the California Regional Water Quality Control Board - Central Coast Region Basin Plan (which includes Maximum Contaminant Levels (MCLs) for organic and inorganic contaminants in drinking water), the California Code of Regulations Title 22 water quality for crop irrigation, and the California Toxics Rule standards for protection of human health and the environment; 2) provided pilot scale operational data to generate the power and chemical consumption levels stated herein, and; 3) provided data upon which to estimate waste stream composition and volumes (Entrix, 2006). The produced water would not be treated to drinking water standards (i.e. disinfection standards), and no additional treatment system for disinfection, required for residential re-use, is currently proposed.



Source: ADAIR

PROPERTY PLAN

FIGURE 3-3

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

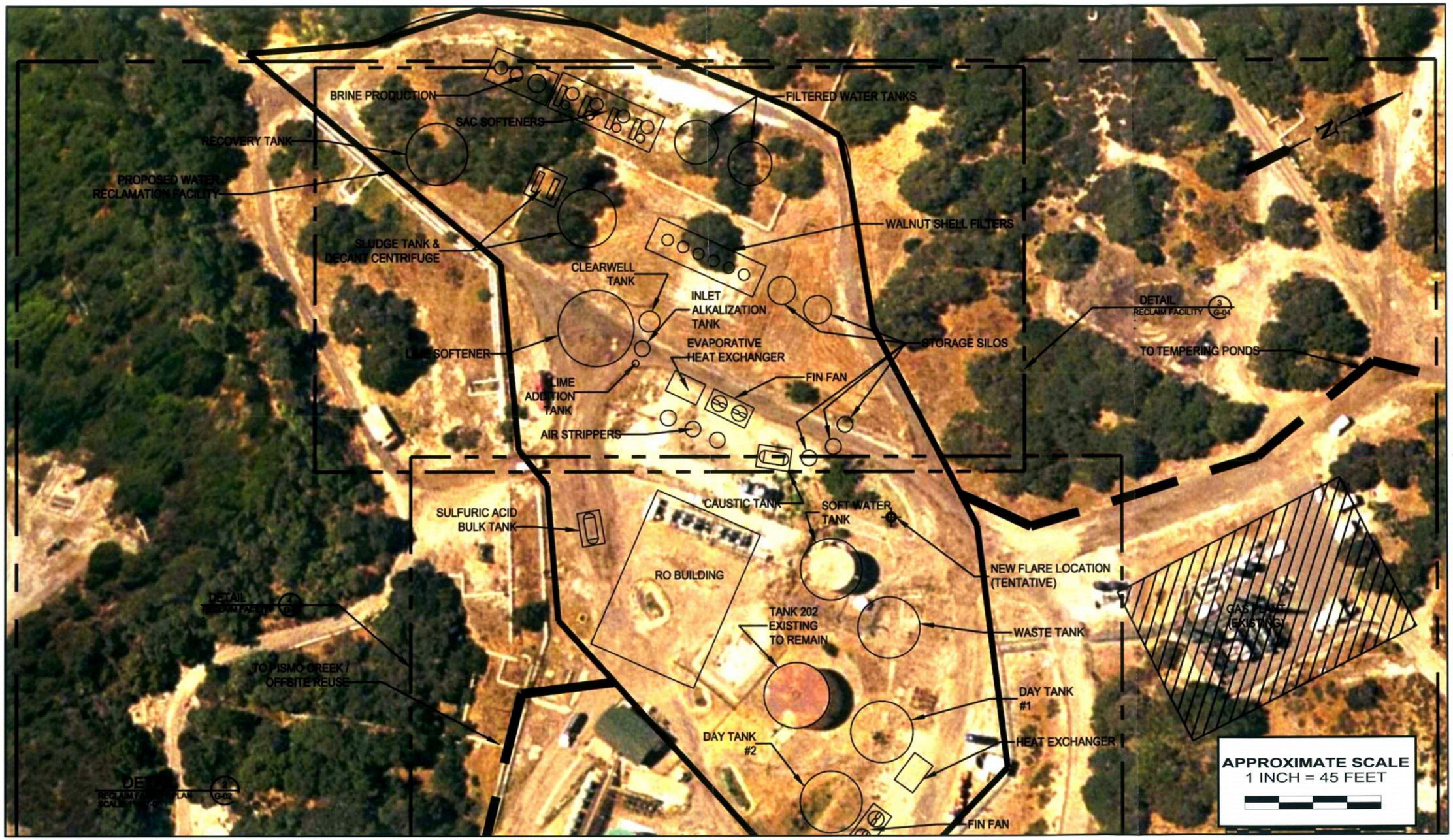


Source: ADAIR

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

FACILITY AREA PLAN

FIGURE 3-4

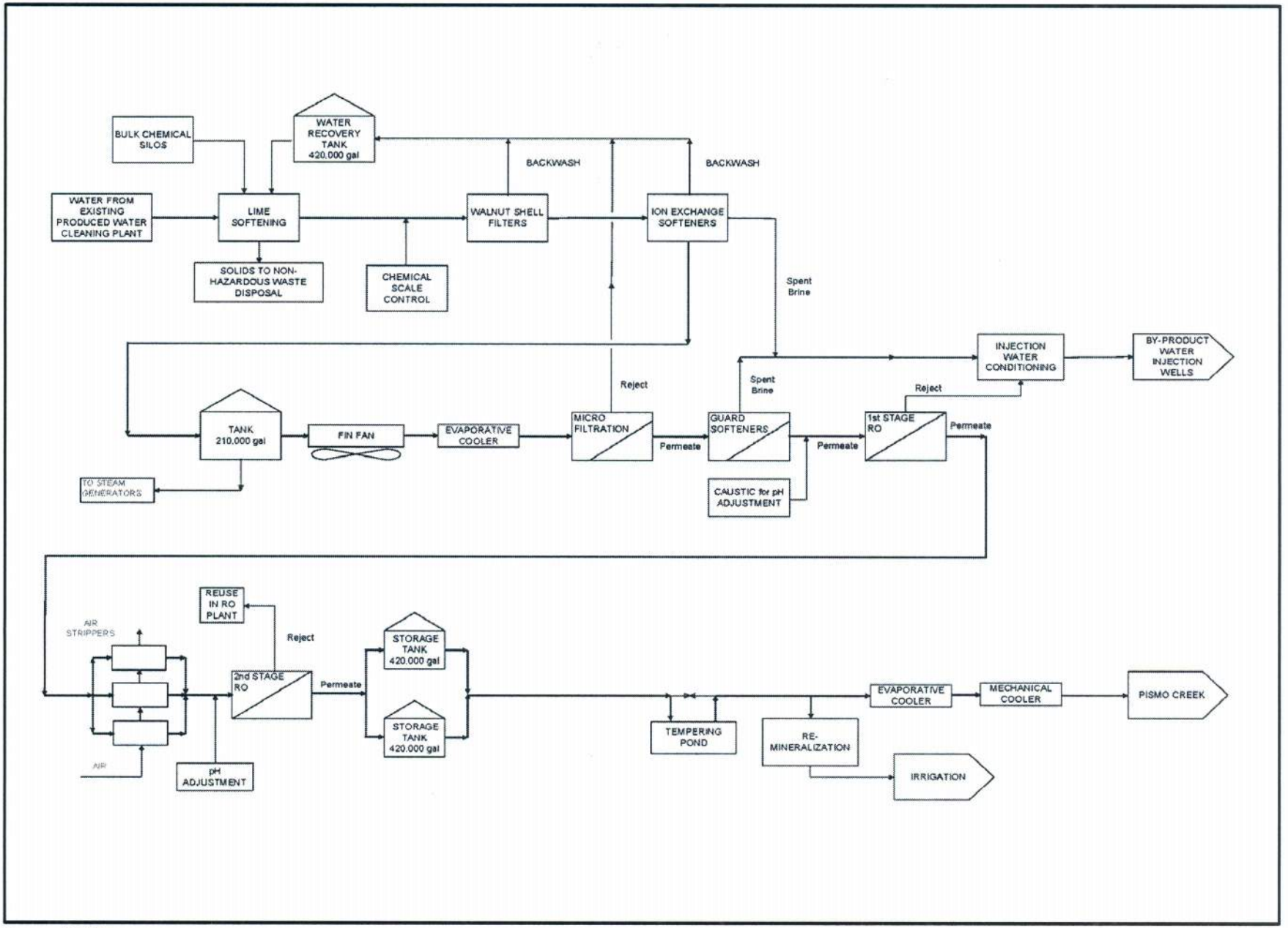


Source: ADAIR

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

FACILITY SITE PLAN

FIGURE 3-5



Source: ADAIR

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

BLOCK FLOW DIAGRAM

FIGURE 3-6

THIS PAGE LEFT BLANK INTENTIONALLY

3.4.2 Proposed Project

The proposed Project consists of development of a treatment facility for the produced water resulting from oil recovery activities, including delivery systems and a discharge outfall. Disposal routes would include an outfall to Pismo Creek (primary disposal option) and re-use disposal routes to the north and south of the project site. Project specific details are provided in subsequent subsections. Figure 3-3 shows the layout of the PXP property; Figures 3-4 and 3-5 show the layout of the project area and proposed facility site plan, respectively. Characteristics of each proposed Project component are described in the following section. This includes a discussion of the proposed treatment facility, waste streams, delivery systems, and a description of the treatment process and predictability. A process diagram provides a summary (see Figure 3-6, Block Flow Diagram). Implementation of the proposed produced water reclamation facility would not increase the number of production wells, as permitted under the Phase IV project discussed above, but is intended to increase the ratio of oil to water produced at individual wells, thereby allowing for increased rates of production as allowable under the Phase IV Expansion.

The air stripping towers discussed above would be painted a non-reflective gray/green, which best blends with the existing and proposed vegetation, to mitigate any potential aesthetic impacts resulting from the addition of the towers. Final color selection may be negotiated with the County prior to the construction phase of the project. Additionally, new onsite lighting would be low intensity and shielded in a manner that is consistent with County standards.

3.4.2.1 Treatment Facility

The treatment facility would be sized to produce an estimated 20,000 barrels of water per day (2.5 acre feet per day or 0.84 million gallons per day) of treated water at a fairly constant daily and yearly flow pattern, with flow interruptions associated with maintenance and un-scheduled events. The design of the water reclamation facility is based on extensive field pilot testing from October 10, 2005 to April 24, 2006.

The treatment facility would consist of lime-softening for silica removal, water softening using ion exchange softeners, and reverse osmosis (RO) membranes to produce the treated water. Chemical and power requirements are summarized in Table 3-2. Water would be directed from the existing water handling system (i.e., discharge from the existing sand filters) through the following process (see Figure 3-6):

- Lime softener and solids removal system;
- Walnut shell filters;
- Ion Exchange softener;
- Heat exchangers;
- Microfiltration;
- pH caustic adjustment;
- RO filtration; and,

- Air cooling/refrigeration;
- Permeate storage tank and cooling.

The solids produced from the pilot plant have been tested and meet the non-hazardous criteria for disposal at a Class II Disposal Facility (Entrix, 2006). The reject water from the plant also meets the criteria for Class II Injection wells per DOGGR requirements (Entrix, 2006).

The permeate storage tanks are planned to be 420,000 gallons each and sized to contain the volume produced during 12 hours of operation. From the permeate tank, water would pass through additional cooling steps as-needed to further reduce water temperature. The three air strippers would be located within the RO plant area and would be 14 feet in diameter and 70 feet in height.

Anticipated chemical and power requirements associated with the proposed treatment process are shown in Table 3-1. The facility would be designed to store approximately two weeks worth of each chemical at chemical tanks located south of the treatment facility and inline with the existing salt tanks.

Table 3-1. Chemical and Power Requirements

Chemical/Constituent	Purpose	Estimated Requirements[2]
Lime	Lime softening for silica and hardness removal	12.3 tons per day
Salt	For regeneration of Salt Softeners	2 ton per day
Caustic soda (Sodium Hydroxide) at 50% by weight	To adjust pH from 6.3 to 11.5	4.6 tons per day
Soda Ash	Provide for Lime Softener	4.4 tons per day
Sulfuric Acid at 93% by weight	pH adjustment of water for discharge to Pismo Creek	4.8 tons per day
Soda Ash	Water conditioning of permeate for sodium adsorption ration and other prior to delivery for irrigation	Included above
Magnesium oxide	Aid in solids precipitation	3 tons per day
Anionic and cationic polymers	Aid in flocculation	0.04 tons per day
Liquid antiscalant	Dispersant aid	0.1 tons per day
Electrical power	Power supply to various chemical pumps, monitoring equipment, lighting, and permeate/reject water pumps.	~2,000 Hp; 2 megawatts

[2] The adopted PXP Arroyo Grande Field AB-2185 Business Plan dated November 21, 2005, includes caustic soda, HCL, and sodium hypochlorite (NaOCl). Volumes noted above are incremental amounts above that currently used on site.

3.4.2.2 Waste Streams

Wastes that would result from the proposed project are characterized in the following Table 3-2.

Table 3-2. Waste Streams

Waste Stream	Composition	Volume and Plan for Disposal
Solids resulting from lime softening step	Analyzed during pilot plant and found to qualify for non-hazardous waste disposal	21.6 ton per day solids containing 25% bound water for transport to properly licensed landfill
Reject water off of RO membranes	Meets DOGGR criteria for class II disposal wells	7,500 barrels (315,000 gallons) per day for disposal at existing DOGGR permitted injection wells
Air emissions	Low levels of organic material	Would be emitted under air discharge permit with SLO APCD

3.4.2.3 Delivery Systems

Treated water would be piped from the treatment facility described above, exiting the final cooling step, and flowing either north in a 10-inch pipeline to the existing storage pond(s) as a final cooling and polishing step, or flowing southeast to Pismo Creek. Refer to Figure 3-4 for a layout of the proposed delivery system.

A range of operational patterns would be followed during the life of the proposed water reclamation facility, ranging from year-round discharge to Pismo Creek to seasonal delivery of treated water to potential re-use combined with winter flows to Pismo Creek. Well field operations and varying water-to-oil ratios experienced in operating wells would result in varying flow rates at the treatment plant.

Tempering Pond. The existing pond proposed for use as a tempering pond does not lie on a natural waterway and is currently dry (refer to Figure 3-4). Prior to use as a tempering pond, the bottom would be smoothed and lined with a low-permeability material to minimize the potential for releases of the highly-treated water to groundwater.

The treatment plant is being designed to comply with specific water quality parameters such that treated water may be delivered directly from the proposed day tanks to Pismo Creek and for potential reuse (please refer to Section 5.5.2.2 for a discussion of water quality requirements). The tempering pond is intended for additional operational flexibility particularly for temperature control such that mechanical cooling requirements may be minimized prior to creek disposal. In the event that the mechanical cooling system is down for routine maintenance, the tempering pond would be utilized as an alternative water storage and cooling area. The tempering pond would also be needed to allow any trapped air in the water from the stripping process to dissipate prior to creek disposal and in the event one of the 10,000-gallon day-tanks was out of service for maintenance or repair. In general, construction of the

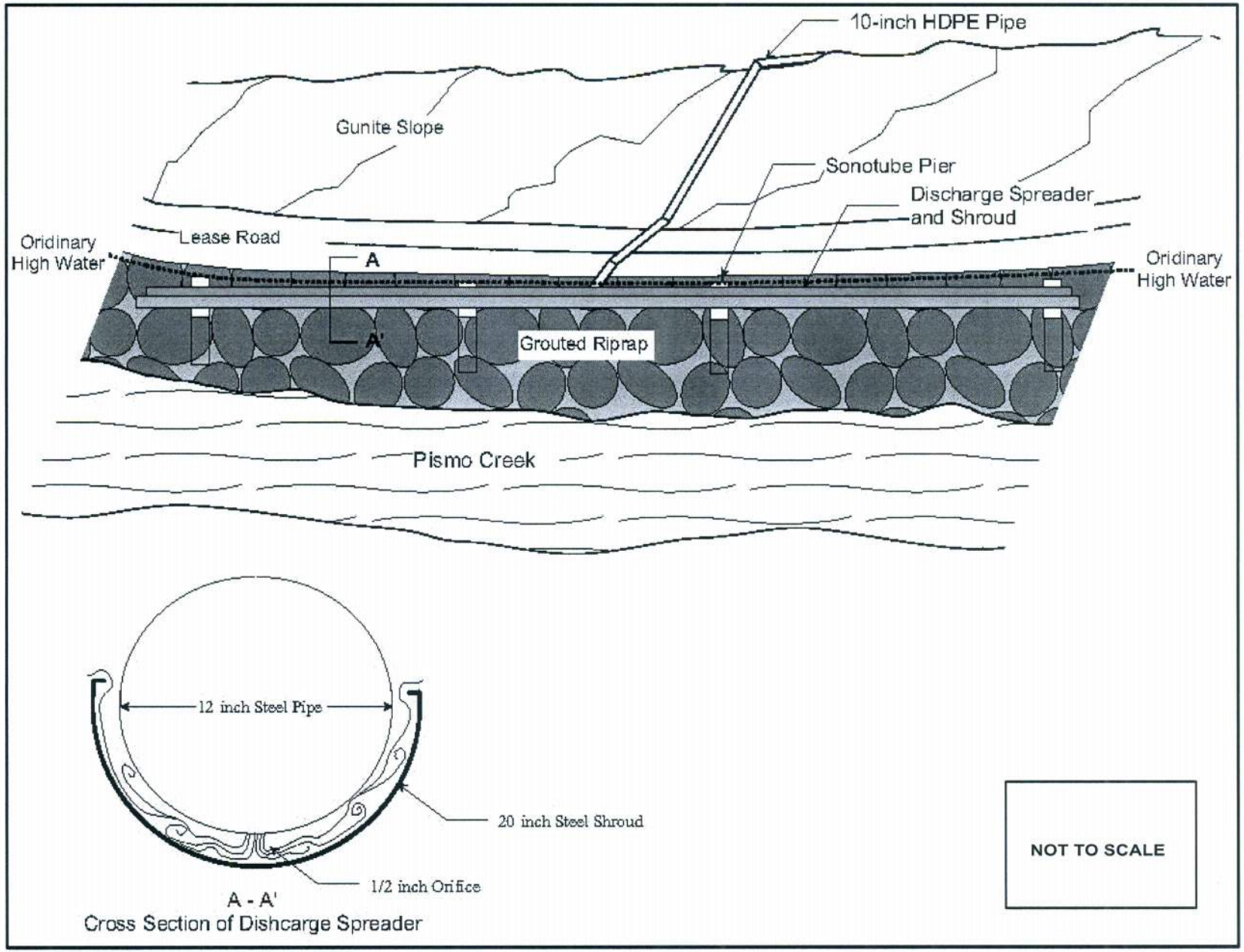
tempering pond would provide additional flexibility in the operation of the produced water reclamation facility.

When in use, water levels within the tempering pond would vary daily to take advantage of high radiant cooling (i.e., higher levels during clear, cool nights, etc.). Maintenance of the tempering pond would likely occur during turnarounds for the treatment plant, which would consist of the pond being emptied, cleaned of debris and vegetation, and inspection. Any required repairs would be completed prior to putting the pond back into service.

Pismo Creek Discharge Outfall. The portion of Pismo Creek within the vicinity of the PXP property is comprised of a densely wooded riparian corridor with steep banks typical along this reach of the creek. Bedrock is evident at regular intervals along the creek, indicative of the shallow alluvium in this area. The Pismo Creek outfall structure would consist of pipe laid onto existing reinforced creek bank comprised of rip-rap. The pipe would be approximately 10 feet long and contain slots to allow discharge. The discharge rate would vary with operational scenarios and seasonal reuse demands similar to natural flow variations in the creek. At times when full treatment plant production is discharged to the creek, the flow rate would average 1.3 cubic feet per second. The pipe is anticipated to be a low-carbon steel, and anchored to the existing rip rap to prevent damage, removal, or entrainment of flood flows in Pismo Creek. Refer to Figure 3-7 - Discharge Schematic.

The proposed discharge location is downstream of the PXP "Hyla Crossing" near an existing pipe bridge as shown in Figure 3-4. This site is readily accessible and the creek channel has rip-rap in place to protect the banks from erosion. The banks are steep such that the discharge pipes may be laid above-grade on this already disturbed area (refer to Figure 3-7). The outfall pipes would be spread over an area long enough to minimize water velocity and erosion of channel banks and the creek bed. The existing rip-rap bank armors this location of the stream, and no additional modifications to the channel are required. Specifically, the outfall pipes would be anchored with a series of Sonotube concrete columns. Additionally, the existing rip-rap beneath the outfall pipes would be coated with gunite to allow flow of treated water directly into Pismo Creek, thereby reducing the potential for erosion.

Re-Use Disposal Options. A portion of the treated water would be used to displace groundwater use on the Arroyo Grande Oilfield. In addition to the discharge of treated water to Pismo Creek, the proposed project would also include a treated water re-use option. This would consist of the placement of two pipelines that would run from the proposed treatment facility to both the northern and southern project boundaries, respectively, for the purpose of supplying treated water for reclamation, such as landscape irrigation or for non-edible crops. However, it should be noted that no reclamation re-use options have been identified at this time. Additionally, the produced water would not be treated to drinking water standards (i.e. disinfection standards), and therefore would not be available to residential users. An additional treatment system for disinfection, such as a chlorination system would be required for residential re-use, which is not proposed as part of the project.



Source: Entrix

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

DISCHARGE SCHEMATIC

FIGURE 3-7

THIS PAGE LEFT BLANK INTENTIONALLY

Delivery to any future reclamation use would be dictated by the locations of the irrigation system connection points within the vicinity of the proposed northern and southern pipeline routes illustrated on Figure 3-3. Lastly, the northern re-use pipeline route is located along both the west and east sides of Price Canyon Road. At this time, no partners have formally committed to accepting the water.

Pipeline(s). The pipeline(s) to be constructed in support of the potential re-use options located north and south of the facility would be placed on pipe racks (if available), or within existing facility roadways (see Figure 3-3). All pipelines to be constructed from the water plant to the Pismo Creek discharge outfall and potential re-use options would be eight- to ten-inches in diameter and placed in trenches approximately four feet wide by three feet in depth. Similar to the potential re-use pipelines discussed above, the treatment facility/outfall pipelines are expected to be buried; however, at some locations the pipelines may be placed in existing pipe racks along the road system (i.e., within existing disturbed areas). A four-foot wide buffer alongside the roadside shoulders may also be used as necessary for staging purposes and to avoid buried existing pipelines in the roadway. A jack-and-bore technique would be utilized to place proposed outfall pipeline(s) beneath Price Canyon Road. Please refer to Figure 3-3 for an illustration of the proposed pipeline routes.

Existing facility pipelines would be relocated to facilitate the project, including both in-service and out-of-service pipelines. They include various water lines to and from existing infrastructure (i.e., softeners and tanks), and out-of-service distribution, gathering, and production lines. If any pipelines need to be relocated, they would either be placed on pipe racks (if available), or within existing facility roadways.

3.4.2.4 Treatment Process Description

The water plant can be divided into two parts (see Figure 3-6). The first part would consist of pretreatment to soften, filter, and cool the produced water. The second part of the process would consist of RO and air stripping to remove the regulated constituents prior to discharge. The following describes the treatment plant, the removal of constituents of concern, process predictability and process reliability.

The water plant would consist of a series of processes starting with warm-lime softening, walnut shell filtration, strong-acid cation softening (ion exchange) and cooling. The warm-lime softener would remove most of the scale-forming minerals in the produced water (i.e., calcium, magnesium, alkalinity, silica, etc.) The walnut shell filters would remove residual particulate matter from the water. Each of the filters would be operated at a flow rate to optimize particulate removal. The cation softeners would remove residual hardness. At this point in the process, the water is of a quality to be used for high-pressure steam generation (i.e., free of hardness and highly filtered). The balance of the water would then be cooled to 80 °F to 90 °F prior to the introduction into the membrane processes.

Pretreated water would then pass through microfilters to remove any residual/fine particulate matter. Microfiltration is a membrane process, similar to RO. In the Price Canyon

Unit, it would be used to protect the RO from fouling. Microfilters would remove sub-micron particulate matter a hundredfold smaller than the walnut shell filters' capability, or other types of media filtration (e.g., sand filters or carbonized zeolite filters). After the microfilters, the water would pass through another set of ion exchange softeners. These are considered guard softeners and would capture any trace levels of hardness that might pass in pretreatment.

At this point in the process, the water is ready to be introduced into the RO system (i.e., highly filtered and free of mineral-scale constituents).

The remainder of the treatment system would consist of two stages of RO and air stripping (i.e., 1st Pass RO followed by air stripping followed by a 2nd Pass RO). These processes would treat the water to meet the discharge criteria for Pismo Creek (as required by RWQCB). Target parameters and constituents of concern are turbidity, pH, temperature, dissolved oxygen, sodium, chloride, sulfate, boron, non-ionic ammonia, acetone and 2-butanone. Occasionally, there are also trace levels of benzene, toluene, ethylbenzene, and xylenes (collectively referred to as BTEX).

To meet discharge requirements, the plant would be designed with a two-pass RO system. The 1st Pass RO would be operated at high pH (11.5) and would remove soluble species of minerals salts, (e.g. sodium, chloride, sulfate and boron). Reject (wastewater) from the 1st Pass RO would be injected back into the oil-producing formation. Permeate (treated water) from the 1st Pass RO would be sent to air strippers. The air strippers would remove some non-ionic ammonia and most of the acetone and 2-butanone. At high pH, 99.5% of the ammonia is in the non-ionic form and is easily stripped. Occasional levels of BTEX would be easily removed to non-detectable levels, because the air strippers are sized to remove acetone and 2-butanone (which are significantly less volatile than BTEX). Additionally, the strippers would cool the water and completely oxygenate it.

The pH of the water from the strippers would be lowered to neutral through the addition of sulfuric acid and fed to the 2nd Pass RO. At neutral pH, 99.0% of the ammonia (not removed by the stripper) would be converted to ionic ammonia. The 2nd Pass RO would readily remove ionic ammonia as well as further reduce the levels of sodium, chloride, sulfate and boron. The permeate from the 2nd Pass RO would have no measurable turbidity. Rejected water from the 2nd Pass RO would be recycled for other uses in the plant. 2nd Pass RO permeate would be discharged to Pismo Creek, delivered for agricultural reuse, or cycled through the tempering pond prior to creek discharge/reuse.

All of the processes described above were part of the pilot testing conducted by PXP.

3.4.2.5 Process Predictability

During pilot testing, a significant amount of data was collected to monitor constituent removal. These data were routinely compared to well established RO and air stripping models which predict performance. RO is a mature technology and has been commercially available for over 30 years. As such, RO membrane manufacturers have developed models that are used to predict permeate quality for a range of waters from low-total dissolved solids to tap water to

brackish water to seawater. Prior to pilot testing, several membrane manufacturers were consulted and predictions were developed for the RO components of the treatment plant. These were used to develop the proof-of-concept testing parameters (Entrix, 2007).

Likewise, air stripping is a very common treatment technology used throughout the United States to treat groundwater containing volatile constituents. Air stripper packing manufacturers were consulted to determine the operating requirements for the strippers which were tested in the field.

Pilot test data was validated by manufacturer predictions of performance. The percent removals of the key ionic constituents listed in Section 3.4.3.5, fourth paragraph, are never more than three percent below manufacturer predictions, and in some cases the removals are much greater than these predictions. Pilot test results for the air stripper predict the same removal efficiencies for the volatile compounds.

Based on results of the sampling and analysis of produced (i.e., untreated) water, two Priority Toxic Pollutants Effluent Limits were exceeded for Benzene and Phenol. Benzene in the produced water prior to treatment exceeded the recommended effluent criteria during the January 4 and 18, 2007 sampling events. Phenol exceeded criteria during all three sampling events conducted. As such, PXP chose a treatment process that lowers concentrations of these constituents and recommends implementing a water quality monitoring and reporting program that would monitor effluent from the produced water reclamation facility for both of these constituents at a frequency that is consistent with the *Policy for Implementation of Toxics Standards for inland Surface Waters, Enclosed Bays, and Estuaries of California* (Entrix, 2007).

Features are proposed to protect Pismo Creek and future potential reuse partners from treated water that fails to meet quality requirements. First, numerous in-line monitors, gauges, and meters would be installed and tied to an alarm system. Response to alarms would include operator response and, in some cases, diversion of flow to storage tanks proposed throughout the treatment process. For example, sufficient permeate storage volume is proposed to contain up to 12 hours of permeate at full treatment plant production.

3.5 CONSTRUCTION CONSIDERATIONS

The water reclamation facility would be installed in modules, supported with storage tanks for water treatment chemicals, heat exchangers, and water storage tanks. New facilities would be constructed within the existing disturbed plant area, plus a two- to three-acre area west of the plant that would require minimal grading. Maximum site disturbance would consist of approximately 13,610 cubic yards of cut and approximately 12,280 cubic yards of fill (with a balance of approximately 1,330 cubic yards), resulting in a total disturbed area of approximately 5.6 acres. Figure 3-8 depicts the grading plan with infrastructure footprints.

The construction force is expected to be six to ten people normally, with a peak of ten to 15 people. Construction would require welding trucks, cranes, backhoes, loaders, dozers, and various vehicles currently used at the existing oil field.

Most of the equipment proposed to be used for construction is already in use at the Arroyo Grande Oilfield. Truck trips associated with the construction phase are estimated as follows:

- Three trucks per day for three days for compaction material for the building pads. Soil borings would be taken during final design, and the determination of whether imported fill would be required to provide adequate compactions characteristics for the pads would be made at that time. Imported fill for base material would represent no more than 10% of the overall fill. Soil testing would require one small drill rig and a crew truck for two to three days;

- Cement trucks: two to three trucks per day for four to six weeks is projected;

- RO equipment deliveries: The exact number of vehicles is not known at this time, but based on similar construction of RO systems or other on-site activities. PXP anticipates two trucks a day for one week;

- Laborer and construction oversight vehicles such as pickup trucks, passenger vans, and utility trucks; and,

- Materials deliveries: three trucks per week for six weeks.

- The construction phase would take approximately six to nine months to complete.

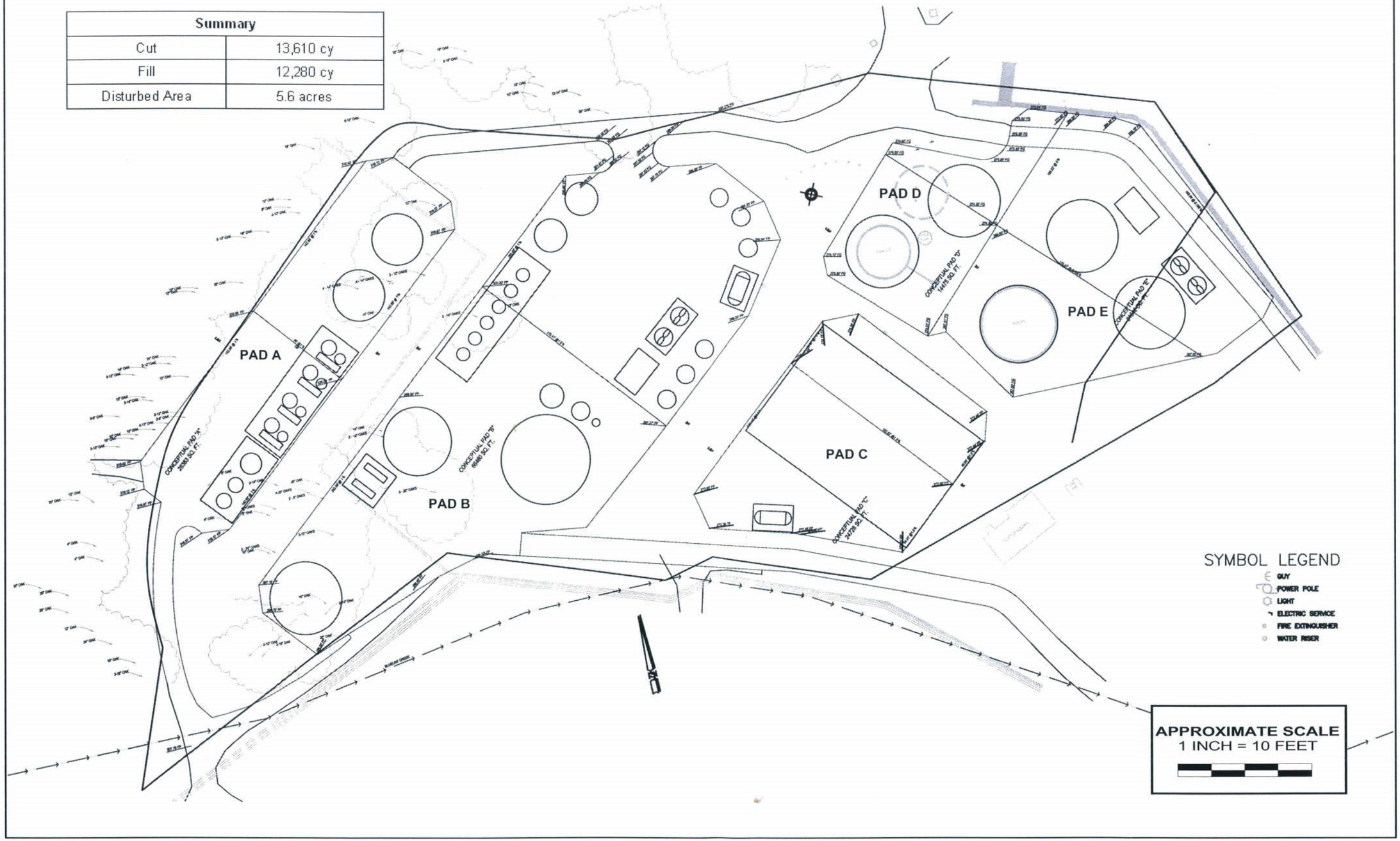
3.6 OPERATIONS

It is anticipated that the water treatment unit may require six or seven additional full time employees during operations. Based on a 25-ton per truck hauling and delivery capacity, liquid chemical deliveries are anticipated at two per week, plus one to two truck trips per week for solid chemical deliveries and three to four truck trips per week to haul waste to a Class II disposal site. All chemicals required for operation and removal of waste from the produced water process are listed in Tables 3-2 and 3-3.

3.6.1 Monitoring

Numerous water quality monitors, gauges, and instruments would be installed throughout the proposed treatment plant to provide and closely monitor data regarding treatment performance. This instrumentation would be tied into a supervisory control and data acquisition system to be used by operators to ensure proper and efficient performance of the plant. The control system would have an alarming function to alert operators to quality excursions, hydraulic events, and other operational issues.

Summary	
Cut	13,610 cy
Fill	12,280 cy
Disturbed Area	5.6 acres



Source: ADAIR

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

GRADING AND EQUIPMENT OVERLAY PLAN

FIGURE 3-8

In the event of an equipment malfunction or other event that causes treated water to deviate from the quality specification, operators would be alerted and one of two options would occur. Depending on the severity of the event, either the control system would trigger a shut-down, or the operator would proceed with manual adjustments. In either case, the two proposed day tanks are sized to contain 12 hours of plant production to store water while the issue is addressed (see Figure 3-5). The day tanks are sized to address such emergency events.

A water quality monitoring program would be implemented as required by the Regional Water Quality Control Board's permit requirements for both creek discharge and reuse for irrigation. Constituents such as temperature, pH, chloride, total dissolved solids, dissolved oxygen, and others would be regularly monitored and reported.

The water quality monitoring program would track Benzene and Phenol at a frequency that is consistent with the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.* Water samples would be collected in a manner that is consistent with Environmental Protection Agency (EPA) Methods 624 and 625 pursuant to 40 CFR 136.4 (a)-(c) and 40 CFR 136.5 (a)-(d) at the point of discharge. All water samples would be analyzed at a laboratory that is certified by the California Department of Health Services, in accordance with the provision of Water Code Section 13176 and would be accompanied by the laboratory QA/QC reports. The results from the water sampled would be submitted to the RWQCB with the required analytical reporting limits and method detection limits at a frequency determined by the RWQCB.

An air quality monitoring program would be implemented as dictated by Air Pollution Control Board requirements.

THIS PAGE LEFT INTENTIONALLY BLANK

CHAPTER 4.0
LAND USE POLICY CONSISTENCY

This chapter is intended to provide the reader with background information regarding the general community setting of the proposed project, as well as information concerning the current land uses, proposed land uses, and land use policies in the vicinity of the project site. Section 15125 of the CEQA Guidelines states that "the EIR shall discuss any inconsistencies between the proposed project and applicable general plans and regional plans."

To analyze land use consistency and land use impacts, the following approach was employed: (1) the proposed project was reviewed relative to the land use assumptions, policies and designations of the San Luis Bay Inland Area Plan Land Use Element and Circulation Element, San Luis Obispo County Framework for Planning (Inland), San Luis Obispo Energy Element, San Luis Obispo Agriculture & Open Space Element, and the San Luis Obispo County Land Use Ordinance (LUO), and (2) the proposed uses of the plan and alternatives were reviewed to identify any potential conflicts between the planned project and existing and proposed land uses in the vicinity. In some instances, a plan or land use inconsistency also poses environmental consequences, such as impacts on sensitive habitats. In these cases, the environmental consequences of the proposed project are identified in this chapter, but discussed in greater detail in the specific chapter of this EIR that focuses on that issue.

4.1 PHYSICAL SETTING

4.1.1 Regional Setting

The project vicinity is Price Canyon, which is a rural area located approximately 2.5 miles northeast of the City of Pismo Beach. Price Canyon is located in the San Luis Bay Inland Planning Area, which encompasses the south central coastal portion of San Luis Obispo County, extending from and including most of Montana de Oro on the north to the Nipomo Mesa on the south, inland as far as Highway 227 and Orcutt Road northeast of Arroyo Grande. This includes the non-coastal zone portions of the "Five Cities" urban areas of Pismo Beach, Grover Beach, Arroyo Grande, Oceano and Halcyon, the Avila Beach area outside of the coastal zone, as well as remaining agricultural and rural lands. This planning area encompasses 61,018 acres or 95 square miles.

4.1.2 Project Location

The project is located in the Arroyo Grande Oil Field in Price Canyon. Specifically, the proposed activities will affect areas within the existing Phase IV Development Area. The project site is located outside of an urban or village reserve line (approximately ¼ mile).

4.1.3 Site Characteristics

This project area is approximately bisected by Pismo Creek, which occupies the floor of Price Canyon. This area is characterized by rolling terrain with a pronounced ridge to the west, Tiber Hill to the east, and a cliff-lie ridge to the northwest. The elevations of these geographic features are 607, 506 and 442 feet above seas level, respectively, and are separated by valleys at elevations of approximately 200 feet above sea level. Vegetation includes grasses, forbs, chaparral, oak woodland, Edna manzanita, and non-native vegetation. Elevations on the site range from a high of 607 feet above sea level in the northern segment of the site to

approximately 100 feet above sea level on the east side of the site within the Pismo Creek drainage. Geologic hazards include a moderate landslide potential.

The fire hazard rating is "high". Water is provided by three onsite wells and sewage disposal by an onsite septic system. Existing oil field equipment is present over the entire project site. Surrounding land uses include grazing and scattered residential development.

4.2 LAND USES IN THE AFFECTED AREA

The proposed water reclamation facility is located within PXP's 1,450-acre Price Canyon Unit. The existing use of the project area is crude oil production field, and the only land use immediately surrounding the area is grazing. Cold Canyon Landfill is in the vicinity of the project, approximately one mile to the east. The preferred alternative would involve the construction of a water reclamation facility and numerous supporting infrastructure elements including various tanks, pipelines, aerial cooling towers, and a tempering pond.

4.3 ADOPTED PLANS AND POLICIES GOVERNING THE AREA

The 320-acre Arroyo Grande Oil Field area, which is within the larger Price Canyon Unit (approximately 1,480 acres), is contained within the San Luis Obispo County General Plan and the associated LUO. The land use impacts of the project are evaluated in terms of the project's consistency with five county planning documents: (1) the *San Luis Obispo County General Plan*, (2) the *Land Use Element* of the *San Luis Obispo County General Plan* (General Plan), (3) the accompanying *LUO, (4) the San Luis Obispo County Energy Element, and (5) San Luis Obispo County Agriculture and Open Space Element*.

4.3.1 San Luis Obispo County General Plan

State law requires that the County have a General Plan with goals, policies, and programs that regulate the use of land in the unincorporated areas of the County. The San Luis Obispo County General Plan governs land use within unincorporated communities and surrounding areas. The elements followed by a "*" are those required by state law. The plan is composed of several parts or elements:

- Land Use*
- Circulation* (sometimes combined with land use)
- Housing*
- Conservation*
- Agriculture and Open Space*
- Safety*
- Noise*
- Historic
- Recreation
- Energy
- Offshore Energy

The law also allows the adoption of optional elements of the general plan to address specific issues that may not be covered in sufficient detail by the other elements. The Historic, Recreation, Offshore Energy, Energy, and Agriculture & Open Space Elements are optional. The Energy Element and Agriculture & Open Space Element of the San Luis Obispo County General Plan are discussed in more detail in Section 4.3.4 and 4.3.5, respectively.

Land Use Element and Local Coastal Plan. The Land Use Element (LUE) and Local Coastal Plan (LCP) establish the overall policies for land use in the unincorporated county for both inland and coastal areas. The LUE is composed of four sections:

framework for planning, the area plans, the coastal program policy document, and the official maps.

Framework for Planning. This section of the land use element contains policies, programs and procedures that apply countywide, and it explains how the LUE is to be used with other adopted plans. The framework section also describes the various land use categories that apply to the unincorporated county, the allowable land uses within each category, and typical building intensities (parcel sizes, population, and building densities). There is also a coastal framework for planning that describes the policies, programs and land use categories that apply to lands within the coastal zone.

Area Plans. The land use element includes 15 area plans that address specific land use issues affecting the unincorporated communities and regions within the county. The area plans supplement and refine the general goals, policies and programs contained in the framework section and help to make the planning process more localized. The area plans describe where the land use categories are to be applied and discuss population growth and economic conditions, public services, and circulation. Since the project site is located in the planning area called San Luis Bay Inland, the area plan for the project area is the San Luis Bay Inland Area Plan.

Official Maps. The official land use maps illustrate where the various land use categories are to be applied in the unincorporated county. Each area plan contains land use maps that provide more detailed illustrations of where the land use designations are applied.

The LUE of the General Plan describes County policy on the location, distribution, and extent of land use throughout the County. It consists of two volumes: (a) Framework for Planning, and (b) Area Plans. The area plans refine the general policies in the Framework for Planning into separate land use issues and policies for each community. The LUO is a regulatory tool for implementing policies for each community. Thus, it helps guide land use in manner that supports orderly development. The Energy Element and Agriculture and Open Space Element are components of the County General Plan.

4.3.2 San Luis Bay Inland Planning Area Plan

Adopted in 1994, the plan contains both a land use element and circulation element, which have a number of policies and standards for the planning area. It prescribes land use policies for the San Luis Planning Area, including regulations that are also adopted as part of the LUO. This area plan allocated land use throughout the planning area by land use categories (zoning) that determine what kinds of uses of land can be established. There are 11 land use categories:

- AG – Agriculture
- RL – Rural Lands
- RR – Residential Rural
- RS – Residential Suburban
- RSF – Residential Single Family
- RMF – Residential Multi-Family
- CR – Commercial Retail
- CS – Commercial Service
- IND – Industrial
- REC – Recreation
- OS – Open Space

The land use designations within the PXP Price Canyon Unit are Agriculture and Rural Lands. These designations determine the variety of land uses that may be established on a parcel of land, as well as defining their allowable density and intensity.

The diverse environmental and built features of San Luis Obispo County create a need for more careful review of development projects in areas where new development could adversely affect sensitive resources or result in the exposure of people or property to natural hazards. For this reason, the land use element contains combining designations that identify areas with characteristics that are either of public value or are natural hazards. The combining designations are applied to the basic land use designations in the unincorporated county as described in each area plan.

Specific development "standards" are also defined by the plan to address special problems and conditions in individual communities. Applicable to this project, as an oil development project, are the policies relating to "Combining Designations", which are special overlay land use categories applied to areas with potentially hazardous conditions or significant natural resources. The two combining designations applicable to the project include FH – Flood Hazard, and EX – Energy/Extractive Area.

4.3.3 County of San Luis Obispo Land Use Ordinance

County of San Luis Obispo LUO lists standards (requirements) and permit procedures for developing land. These standards include features of site design, such as minimum parcel size, the required width of yards (setbacks), the height of buildings, and the number and design of parking spaces, as well as standards for grading, drainage, curb and gutter improvements, and tree removal.

4.3.4 County of San Luis Obispo Energy Element

The purpose of the Energy Element is to: (1) increase energy efficiency in the County, (2) provide policy guidance regarding the implications of energy use, (3) document the County's energy resources, (4) determine land use and environmental criteria for evaluating future energy projects, and (5) provide alternatives which encourage exceeding the State's energy regulations for new construction. It contains specifics policies regarding fossil fuel production, including pumps, wells, refineries, pipelines, and marine terminals.

4.3.5 County of San Luis Obispo Agriculture & Open Space Element

The purpose of the Agriculture & Open Space Element is to: (1) identify those areas of the county with productive farms, ranches and soils, and to establish goals, policies and implementation measures that will enable their long-range stability and productivity, and (2) identify open space lands that are worthy of protection for their intrinsic value, and establish goals, policies and implementation measures that will enable the long-term protection of those resources.

4.4 ANALYSIS OF IMPACTS RELATED TO LAND USE AND PLAN CONSISTENCY

4.4.1 Thresholds of Significance

Based on the mandatory findings of significance criteria of Section 15065 and Appendix G of the State CEQA Guidelines (Governor's Office of Planning and Research, 1999), an impact would

be significant if any of the following conditions, or potential thereof, would result with implementation of the proposed projects:

1. Physically divide an established community;
2. Conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.
3. Conflict with any applicable habitat conservation plan or natural community conservation plan;
4. Have a substantial impact on a scenic vista;
5. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings and historic buildings within a state scenic highway;
6. Substantially degrade the existing visual character or quality of the site and surroundings; and,
7. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

4.4.2 Project Impacts

Impact LND-1. Physically divide an established community.

Discussion: The proposed project will take place within an existing oil field development area that has been in operation for nearly 100 years. The project area is located outside of an urban or village reserve line in a rural area. The nearest community is the City of Pismo Beach, which is located at least three miles from the project site. The proposed activities are consistent with current uses and will not physically divide an established community. This impact is considered less than significant.

Impact Category: Class 3

Threshold of Significance: 1

Mitigation Measure: None required

Impact LND-2. Compatibility with San Luis Obispo County Land Use Categories

Discussion. The project is located in the San Luis Bay Inland Planning Area. The applicable land use categories for the project site are Agriculture and Rural Lands, and the combining designations for the area are Energy and Extractive Uses and Flood Hazard (Pismo Creek). The land use categories are discussed below, while the requirements of the combining designation (since they are expressed in the form of policies) are discussed in the following section.

The project site includes two land use categories: Agriculture and Rural Lands. Petroleum extraction, the land use approved under the Phase IV expansion, is allowed in both of these land use categories according to the Framework for Planning. The proposed water reclamation facility is an accessory use to petroleum extraction and is

consistent with the land use designation. Such use is subject to special standards or permit procedures described in the LUO section 22.08.170 (Resource Extraction).

The Area Plan states under the description of the land use category Rural Lands (Chapter 6, Section A, page 6-2) that:

> *Extraction operations must be performed in a manner that will stress re-use of the land, and protect the visual quality to the maximum extent possible. Development proposals for open pit mining to extract oil from the surface geology would not be appropriate.*

Since the only surrounding land use is grazing, re-use of the project site would most likely comprise grazing. The project would not preclude eventual re-use of the area for grazing.

The visual quality of the site is already disturbed from existing Oil Field operations. Adding a water reclamation facility, two filtered water tanks, two day tanks, a recovery water tank three air-strippers, and other related infrastructure would result in less than significant visual impacts (see Section 5.3 - Aesthetics). Mitigation measures provided for biological impacts would minimize visual impacts as well (see Section 5.3 and 5.5).

Unlike the above policies for Rural Lands in the project area, the Area Plan includes no policies that apply specifically to the land use category Agriculture in the project area.

Impact Category: Class 3

Threshold of Significance: 2

Mitigation Measure: None required.

Impact LND-3. Consistency with the County of San Luis Obispo General Plan Land Use Element and San Luis Bay Inland Area Plan.

Discussion: The principal policies to which the project is subject are described in the Land Use Element of the County's General Plan. These are contained in the San Luis Bay Inland Area Plan, which covers the project area. The applicable policies from this document include the requirements of the combining designations, and planning area standards. The project's consistency with these requirements is discussed below.

Requirements of the Combining Designation Energy and Extractive Uses

The San Luis Bay Inland Area Plan notes that the Price Canyon/Ormonde Road Oilfield has the combining designation of Energy and Extractive Uses (sometimes called Energy and Extractive Areas), and states (Chapter 7, Section A, page 7-2):

> *This designation includes those areas shown as Rural Lands. These operations should not be expanded into adjacent land use categories or existing operations intensified without full review through a public hearing process. The scenic value of Price Canyon should also be protected as an entry to the City of Pismo Beach.*

The area of the proposed RO Produced Water reclamation facility is contained entirely within PXP's Price Canyon Unit, which, as noted above, includes the Rural Lands and Agricultural land use categories. Since associated petroleum extraction is allowed within these two land use categories and since the

proposed project area would not encroach upon any other land use categories, it is compatible with existing land uses and is, therefore, consistent with this portion of the objective noted above. This project would require a Conditional Use Permit from the County, as Section 22.34.040(B)(1) of the *LUO* states that a grading permit may be required for site preparation as determined by *Ordinance* 22.52.070 (Grading).

The project is also potentially consistent with the objective of preserving the scenic value of Price Canyon. The project represents only an incremental expansion of the existing oilfield operation. As such, the project is consistent with the existing development of the site. Also, much of the project would not be visible because of the rolling terrain of the area; however, mitigation measures would be applied to the air-stripper towers (please refer to Section 5.1.1) in order to ensure that they are not highly visible from public viewpoints. For these reasons, the project would not noticeably detract from the existing scenic quality of Price Canyon. The project site is not located in the Pismo Beach Hillsides Sensitive Resource Area (SRA)[1].

Requirements of the Combining Designation Flood Hazard

The San Luis Bay Inland Area Plan also notes that Pismo Creek, which runs through the middle of the Phase IV area, is subject the combining designation of Flood Hazard, and states (Chapter 7, Section B, page 7-2):

These drainage courses should be maintained in their natural state and native vegetation and habitats retained.

The proposed project activities will occur entirely within the Phase IV project boundary. As shown in Figure 4-4, Pismo Creek runs directly through the middle of the project area. Pismo Creek will be directly affected by the proposed project two-fold: 1) through release of treated water directly into the waterway, and 2) by construction of the conveyance pipeline through the 100-foot buffer to an area of rip-rap alongside the creekbank. The proposed release of up to 1.3 cfs to Pismo Creek would not be sufficient to raise significant concerns attributed to flooding.

The Framework for Planning discusses (Chapter 7, Section A, page 7-9 and 7-10) the general objectives for the combining designation called Energy and Extractive Area (designated "EX").

1. *Following approval of an energy or resource extraction project, the County should initiate an amendment to the Land Use Element to apply this combining designation to the property to ensure compliance with the applicable standards of the Land Use Ordinance (Ord. 2498, Amended 1991).*

   The appropriate combining designation (Energy and Extractive Uses) has already been applied to the project area.

[1] This combining designation imposes specific requirements for oil and gas production facilities, including a visual analysis demonstrating that the project complies with site development standards.

2. *Extraction operations and energy facilities should be provided with adequate buffering and screening from adjacent land uses.*

   The proposed project would help facilitate and allow for increased intensity of oil development already approved under the Phase IV Expansion Plan; as part of this plan and previous phases, buffering and screening from adjacent land uses is already present to a degree. However, as discussed under aesthetics (Section 5.3), some elements (e.g. air-stripping towers) of the proposed project may be visible from both Price Canyon Road and several residences on a bluff top about three-quarters of a mile to the northwest (areas which were identified as potentially affected by Phase IV implementation in the Phase IV EIR). Due to intervening topography and existing vegetation and applied mitigation, adequate buffering and screening would be present.

3. *Applications for proposed extraction operations should include plans for preserving the long-term productivity of the site as well as site restoration after termination of extraction operations.*

   Oil development has occurred on this site for nearly one hundred years. The project application does not include plans to preserve this long-term productivity or to eventually restore the site. This is probably because the applicant plans to continue oil development on the site for many years to come. Although the proposed project covered by this SEIR does not specifically involve extraction, it would facilitate the continued oil extraction activities approved as part of the Phase IV Expansion project, and thus, the two are inextricably linked. The project is, therefore, potentially inconsistent with this objective.

4. *Extraction site access routes should not create nuisances or hazards for adjacent properties.*

   Access roads into the site from Price Canyon Road and Ormonde Road appear to be well maintained. As with the Phase IV EIR, the traffic and circulation discussion in this SEIR (Section 5.1.6) recommends that warning signs be provided on Price Canyon Road prior to the construction phase to notify through traffic of large, slow-moving truck traffic entering and exiting the site. Since no other access hazards associated with the project have been identified, the adoption of this mitigation measure would make the project consistent with this objective.

5. *Wherever possible, oil and gas drilling production, and processing should be in consolidated locations, rather than spread out over numerous sites.*

   The project would serve to directly facilitate previously-approved increased oil development activities within an existing oil development area. The proposed project would not be allowed to expand oil development into other areas. Furthermore, oil produced under the Phase IV expanded operations (and facilitated by the water reclamation facility) would be processed at the existing oil processing facilities. Therefore, the project is consistent with this objective.

6. *Exploratory gas and oil wells should be subject to review procedures separate from those for development/production operations.*

No exploratory wells are proposed as part of the project.

The San Luis Bay Inland Area Plan includes planning area standards. These standards are mandatory requirements for new developments in the San Luis Bay Inland Planning Area. The area plan states (Chapter 8, page 8-7) that, for Energy and Extractive Resource Areas, the planning area standard is:

> *Development Plan approval is required for any expansion of existing oilfield operations in Price Canyon, Tiber Canyon, and in the hills of Ormonde Road into adjacent land use categories.*
>
> The project would not expand oilfield operations into any adjacent land use categories, so this objective is not pertinent to the project.

The Area Plan includes two other planning area standards that, while not specific to Energy and Extractive Resource Areas, could still apply to the project:

1. *Sloping Sites. Except for lands in the Agriculture category east of Montana de Oro, Development Plan proposals for sites with varied terrain are to include design provisions for concentrating developments on moderate slopes, retaining steeper slopes visible from public roads undeveloped.*

2. *Undergrounding – Development Plan Projects. All projects requiring Development Plan approval are to provide for underground utilities unless the Planning Commission determines either that: the proposed development will be of low intensity or in an isolated location; or that supporting overhead utilities will not be visible from public roads; or that overriding operational, economic, or site conditions of the project warrant waiver of this requirement.*

   The proposed project would not require any new utility lines; the existing lines, which are above ground, would serve the water reclamation facility. Since no new utility lines are proposed, this standard would not apply to the project.

Impact Category: Class 3

Threshold of Significance: 2

Impact LND-4. Consistency with the County of San Luis Obispo Land Use Ordinance.

Discussion: Specific policies pertinent to onshore oil extraction are described in the *Land Use Ordinance* under Section 22.34.010, titled Petroleum Resource Development (last revised January 1, 2003). Subsections 22.34.030 (Drilling Permit Requirements), and 22.34.040 (Oil and Gas Well Development Standards) apply to the proposed project.

Per the San Luis Bay Inland Area Plan, operations at the Arroyo Grande Oil Field should not be expanded into adjacent land use categories or existing operations intensified without full review through a public hearing process; therefore, the project would not conflict with the LUO.

Required Permits. The principal land use permit for the proposed project is a Conditional Use Permit. Section 22.34.040(B)(1) of the LUO states that a grading permit may be required for site preparation and access roads to the water reclamation facility, as determined by *Ordinance* 22.52.070 (Grading). Minor Use Permits shall be submitted

for activities in the "high" environmentally sensitive areas, grading permits shall be permitted for activities outside these areas, but still requiring some grading. The project would have to comply with all applicable ordinances described above, as interpreted by the County of San Luis Obispo.

Impact Category: Class 3

Threshold of Significance: 2

Mitigation Measures: None required.

Impact LND-5. Consistency with the County of San Luis Obispo Energy Element.

Discussion: Specific policies pertinent to fossil fuel production are described in the *Energy Element* under Chapter 5, titled Fossil Fuel Production (adopted April 25, 1995) apply to the proposed project. Table 4.4-1 lists the *applicable* polices contained with the Energy Element and provides a discussion of how the proposed project is consistent with each of these policies. Overall, the project, as identified in the Phase IV EIR, is consistent with the Energy Element. No additional oil extraction activities are proposed that have not already been approved under the previous EIR. Therefore, no significant impacts will occur. The project would have to comply with all applicable policies described above, as interpreted by the County of San Luis Obispo.

Impact Category: Class 3

Threshold of Significance: 2

Mitigation Measures: No significant impacts were identified; therefore, no mitigation is necessary.

Table 4.4-1
San Luis Obispo County Energy Element

Policy Statement	Project Consistency Discussion
Policy 52. Proposed new or major additions to fossil fuel facilities must provide a sufficient buffer zone from existing or proposed human population, with special consideration given to those who cannot be quickly evacuated to safety, such as the disabled and elderly. To establish a buffer zone, a comprehensive risk analysis should be completed.	The proposed project will be within an existing oil producing area that is located approximately 2 miles from Pismo Beach.
Policy 55. Guideline 55.1. A system safety review report shall be completed prior to approval of a proposed facility, or major addition to an existing facility. This report shall be completed by an objective third party, with all costs borne by the applicant. The report shall be reviewed by the safety review committee. The purpose is to	Section 5.10 – Hazards/Risk of Upset contains a review of the existing safety measures implemented at the project site.

Policy Statement	Project Consistency Discussion
evaluate the overall safety of the proposed facility and should include, but is not limited to, a review of past safety records, evaluation of current safety practices, analysis of maintenance and repair procedures and system testing procedures.	
Policy 55. Guideline 55.2. Regular monitoring and inspection of facilities shall be documented to ensure compliance with standards established as part of conditions of approval or an environmental quality assurance program. Project related conditions of approval shall be conspicuously posted and available at all times.	The applicant conducts routine monitoring and testing programs as part of regular operations of the facility. Copies of the results of these efforts have been submitted as part of this project.
Policy 55. Guideline 55.3. As part of the land use permit application, existing and proposed facilities should submit to the county monitoring and testing programs relevant to the project and the region being implemented, or proposed by the operator. The most recent test results for existing facilities shall also be submitted.	The applicant conducts routine monitoring and testing programs as part of regular operations of the facility. Copies of the results of these efforts have been submitted as part of this project.
Policy 56. Encourage existing and proposed facilities to focus on measures and procedures that prevent oil, gas, and other toxic releases into the environment. This policy is to ensure that facilities: (1) take measures to prevent releases and spills, (2) prepare for responding to a spill or release, and 3) provide for the protection of sensitive resources. A review of a facilities spill response plan, or reports from other agencies, should be completed to monitor compliance.	Section 5.10 – Hazards/Risk of Upset contains a review of the existing facilities spill response plans and related reports. Findings for this review indicate that the existing and proposed facilities contain measures and procedures that prevent oil, gas, and other toxic releases into the environment.
Policy 58. When new sites are needed for industrial or energy-related development, expansion of facilities on existing sites (or on land adjacent to existing sites) shall take priority over opening up additional areas or the construction of new facilities. Exceptions will only be allowed when it can be shown that (1) alternative locations) are infeasible and that the environmental impacts of opening up new sites are less than the impacts of expansion on or adjacent to	The project involves the addition of accessory facilities within an area that is already used for oil production. No new areas outside of the existing project area will be impacted. Mitigation measures have been proposed to mitigate adverse environmental impacts to the maximum extent feasible.

Policy Statement	Project Consistency Discussion
existing sites, (2) to do otherwise would adversely affect the public welfare, and (3) adverse environmental impacts are mitigated to the maximum extent feasible. Adverse environmental impacts from the siting or expansion of existing industrial or energy developments shall be mitigated to the maximum extent feasible.	
Policy 58. Guideline 58.1. An adequate source of water for use by the facility shall be identified in the project application. The application shall include information about the amount and source of water used by the facility. The types of activities the water will be used for shall also be described.	The proposed project will utilize produced water. The amount, source, and application of this water is described in Chapter 3.0 - Project Description.
Policy 58. Guideline 58.2. Site specific surveys, including inventorying of rare plants, should be completed at the appropriate time of the year, as part of preliminary work for any proposed facility. Consideration shall be given to the various seasons of migratory or transitory species. Further study may be required as part of the environmental review process.	As described in Section 5.3 - Biological Resources, site-specific surveys, including inventorying rare plants, were completed for this project in Spring 2007.
Policy 58. Guideline 58.3. Site specific mitigation measures should be proposed with the application to mitigate construction and long-term impacts on terrestrial biota. The applicant shall submit a restoration, erosion control, and revegetation plan that is consistent with the results of the environmental review process. The plan must be approved by the County Planning and Building Department.	Site-specific measures are included in Section 5.3 - Biological Resources to mitigate construction and long-term impacts on terrestrial biota.
Policy 58. Guideline 58.4. To enhance compatibility with surrounding areas, no direct beams of exterior lighting should be visible beyond the boundaries of the parcel. Low intensity, shielded, and highly efficient fixtures are preferred for outdoor lighting at a facility.	Low intensity, shielded, and highly efficient fixtures would be utilized for outdoor lighting and no direct beams to nearby residences will occur.
Policy 58. Guideline 58.5. Proposed facilities shall be screened or fenced from view to reduce visual impacts identified	Proposed facilities would be screened from view to the extent feasible to reduce visual impacts. Such screening includes existing berms and vegetation and

Policy Statement	Project Consistency Discussion
during the environmental review process. Requirements for screening are included in the land use ordinances.	additional plantings. See Section 5.1.1 - Aesthetics.
Policy 58. Guideline 58.6. Facilities should be sited in swales or other natural depressions where appropriate and should not be profiled against horizons.	Proposed facilities would be located to the extent feasible in swales and other natural depressions. Specifically, the proposed new air stripper towers would be located in an area that will not create silhouetting or other significant impacts to the visual character of the area as seen by motorists traveling along Price Canyon Road. See Section 5.1.1 - Aesthetics for more discussion.
Policy 58. Guideline 58.7. Screen facilities from public view through height limitation, careful site design, artificial contoured banks and mounding, extensive landscaping, and decorative walls and fences.	Proposed facilities would be screened to the extent feasible from public view by existing vegetation and topography. The proposed air strippers will be painted to reduce visibility. See Section 5.1.1 - Aesthetics.
Policy 58. Guideline 58.8. Any part of the facilities that cannot be effectively screened shall be painted with non-reflective paint and with colors which blend with the surrounding natural landscape.	Proposed facilities would be painted with a flat green, non-reflective paint that blends with the surrounding natural landscape of the project site. See Section 5.1.1 – Aesthetics.
Policy 62. Consolidate new pipeline corridors within existing pipeline or electrical transmission corridors to the maximum extent technically and environmentally feasible.	Any required re-use pipelines would be installed above ground along existing pipe corridors to minimize environmental disturbances.
Policy 63. If new pipelines are necessary, encourage common carrier or multiple-user pipeline construction and use.	Any required re-use pipelines would be installed above ground along existing pipe corridors to minimize environmental disturbances.
Policy 64. Guideline 64.1. To reduce the possibility of injury to the public, facility employees, or the environment, the applicant shall submit an emergency response plan, as part of the Hazardous Materials Business Plan which details response procedures for incidents that may affect human health and safety or the environment. The plan shall be based on the results of the comprehensive risk analysis. In the case of a facility modification, the existing response plan shall be evaluated by the safety review committee and revisions made as recommended.	The applicant has prepared an emergency response plan for existing and proposed operations. Section 5.6 – Hazards/Risk of Upset contains a review of this plan.

Policy Statement	Project Consistency Discussion
Policy 64. Guideline 64.2. Major new facilities shall be sited within five minutes response time of an adequately staffed and equipped fire/emergency response station. A fire protection system and response plan shall be approved by the governing authority.	The project involves the addition of an accessory facility to the existing oil production operation. The City of Pismo Beach operates a fire station within city limits, near Price Canyon Road, about 2 miles from the project site and within 5 minutes response time.
Policy 65. In the event of a petroleum or hydrocarbon release, implement the following policies: • Emergency response and initial clean up of the spill site shall be completed as soon as possible. An emergency permit shall be granted as appropriate. A state of emergency as defined in the general plan must exist for a permit to be granted. • Environmental impacts caused by response and clean up activities shall be minimized. Environmental monitors(s) shall be onsite to reduce possible impacts. • A post-spill environmental assessment of the site shall be performed to evaluate and quantify the damage to resources. • Remediation and restoration of the site to pre-spill conditions shall be completed. • If the site cannot be restored to its pre-spill condition, the responsible party shall contribute to an environmental enhancement fund to be used for on or off-site mitigation projects.	The project does not involve any additional oil production or treatment facilities. Therefore, the potential for hydrocarbon release would not increase. Section 5.6 – Hazards/Risk of Upset contains measures to minimize impacts in the event of a petroleum or hydrocarbon release.

Impact LND-6. Consistency with the County of San Luis Obispo Agriculture and Open Space Element.

Discussion: Specific policies regarding the protection of agricultural lands are contained in the Agriculture & Open Space Element under Chapter 2, entitled Agricultural Element (adopted December 15, 1998). Table 4.4-2 lists the *applicable* polices contained with this element and provides a discussion of how the proposed project is consistent with each of these policies. Overall, the project is consistent with the Agriculture & Open Space Element.

Impact Category: Class 3

Threshold of Significance: 2

Mitigation Measures: No significant impacts were identified; therefore, no mitigation is necessary. The project would have to comply with all applicable policies described above, as interpreted by the County of San Luis Obispo.

Table 4.4-2
San Luis Obispo County Agriculture & Open Space Element

Policy Statement	Project Consistency Discussion
AGP25: Unique or Sensitive Habitat a) Encourage private landowners to protect and preserve unique or sensitive habitat. b) For new development requiring a discretionary permit and for proposed land divisions, protect unique or sensitive habitat affected by the proposal through the following measures: 1. Site the proposed development so as to avoid significant impacts on the habitat to significant impacts on the agricultural operations. Provide for adjustments in project design where alternatives are infeasible, more environmental damaging, or have significant negative impact on agriculture. 2. When significant impacts are identified, the landowner shall implement county-approved mitigation measures consistent with the existing requirements of CEQA.	Construction (e.g., clearing and grubbing of vegetation, rough grading, etc.) has the potential to impact both seasonal and perennial wetland habitat areas located along the southeastern corner of the proposed water reclamation facility site. In addition, the proposed project will include the permanent loss of a CDFG-defined state wetland due to installation of a tempering pond. Lastly, the proposed project will result in the removal of coast live oak woodland habitat (i.e., 26 mature oak trees) due to construction of the water reclamation facility. However, impacts to existing wetland habitat areas will be avoided through project design and permanent loss of the state wetland will be mitigated through preparation and implementation of a Compensatory Mitigation Plan or funding of a County wetland mitigation bank. Lastly, all oak tree impacts will be mitigated by replanting oak trees at a 4:1 ratio for those oak trees removed during project implementation and a 2:1 ratio for those oak trees impacted during project implementation.
AGP26: Streams and Riparian Corridors. The following policies apply to watercourses shown by a solid or broken blue line ("blue line" streams) on the latest U.S. Geological Survey (USGS) quadrangle maps and their associated riparian vegetation. a) Encourage private landowners to protect and preserve steam corridors in their natural state and to restore stream corridors that have been degraded. Provide information and incentives to eliminate overgrazing in stream corridors.	Construction (e.g., clearing and grubbing of vegetation, rough grading, etc.) within the buffer zone of 100 feet from both sides of Pismo Creek's banks (San Luis Obispo County Land Use Ordinance 22.07.166) will be limited to the discharge pipeline and proposed outfall structure. The new structures will be located within a previously disturbed area and the actual outfall pipe(s) will be anchored upon existing rip-rap on the creek bank. Further, impacts to existing riparian habitat (i.e., willows) will be minimized to the extent feasible. All unavoidable impacts to willows will be mitigated through preparation and

Policy Statement	Project Consistency Discussion
Encourage off-stream livestock watering sources. b) For new development requiring a discretionary permit and for land division, protect streams and riparian habitat affected by the proposal through the following measures: 1. Consistent with the requirements of the Regional Water Control Board's Basin Plan, establish a grading and building setback of 30 feet from the top of the steam bank. Locate buildings and structures outside the setback. Do not remove riparian vegetation within 30 feet of the top of the stream bank. Provide for adjustments when the applicant demonstrates that such setbacks would have a significant negative impact on the agricultural viability of the site, or where alternatives are infeasible or more environmentally damaging, and the adjustments are acceptable to the Regional Board. 2. Require appropriate erosion control measures during and following construction. 3. Consistent with state and federal requirements, allow stream alterations for water supply and flood control projects, road maintenance, maintenance of existing channels, or improvement of fish and wildlife habitat if there are no practical alternatives. 4. Consistence with state and federal requirements, assure that stream diversion structures project habitats. 5. When significant impacts to stream or riparian resources are identified, the landowner shall implement county-approved	implementation of a Compensatory Mitigation Plan which will include replacement of willow habitat removed during projects operations at a 5:1 ratio. In addition, an Erosion Control Plan and Spill Contingency Plan will be required for the project. Lastly, all other blue-line streams of the project site (tributaries to Pismo Creek) will be avoided during project implementation.

Policy Statement	Project Consistency Discussion
mitigation measures consistent with the existing requirements of CEQA.	
AGP33: Archaeological and Cultural Sites. a) When reviewing discretionary development, protect sensitive archaeological and cultural sites by avoiding disturbance where feasible. b) If sensitive sites cannot be avoided, mitigate the impact of development to the maximum extent feasible.	Section 5.6 Cultural Resources of the Phase IV EIR contains a discussion of the archaeological and cultural resources at the project site as well as mitigation measures to avoid or minimize impacts to such resources. Prescriptive mitigation measures from the Phase IV EIR will be carried over for incorporation into this SEIR. No significant impacts to archaeological resources will occur, therefore, the project is consistent with this policy.
AGP34: Historical Resources. a) When initiated by landowners, protect the character of significant historical features and settings by implementing the recommendation for historical resources found in the Historic Element of the Environment Plan	Section 5.1.3 Cultural Resources in this SEIR contains a brief discussion of the historical resources at the project site as well as mitigation measures to avoid or minimize impacts to such resources. No significant impacts to historical resources will occur, therefore, the project is consistent with this policy.

THIS PAGE LEFT BLANK INTENTIONALLY

5.1 ISSUES PREVIOUSLY ADDRESSED / CONSIDERED LESS THAN SIGNIFICANT

This section summarizes the issues that were either previously addressed in the PXP Phase IV Development Plan EIR (Phase IV EIR) and/or do not warrant further analysis as these impacts are considered less than significant.. As necessary, appropriate mitigation measures for Aesthetics, Cultural Resources, Paleontological Resources, Noise, and Traffic/Circulation have been carried over from the Phase IV EIR and would be incorporated into this SEIR accordingly. All impacts and mitigation measures associated with resource issue areas are discussed in further detail.

5.1.1 Aesthetics

The project is located in the Arroyo Grande Oil Field in Price Canyon, approximately three miles northeast of the City of Pismo Beach. Price Canyon is a scenic, rural valley amid rolling hills dotted with scattered oak trees. However, Price Canyon Road is not officially a designated as a scenic highway. The Union Pacific Railroad and Pismo Creek both parallel Price Canyon Road and the proposed project area to the east. Land uses in the vicinity of the project are primarily livestock grazing.

Price Canyon provides considerable scenic value due to the combination of grazing pastures, stands of mature oaks, the Pismo Creek watershed, rolling hills, and steep cliffs that are complimented by varying shades of brown, green, and gray. Although the existing oilfield interrupts the scenic value of this canyon, the overall aesthetic quality of the area is relatively high.

The Phase IV EIR analyzed Key Viewing Areas in association with implementation of that project. These represented views of operations existing at the time from different vantage points along Price Canyon Road.

The primary County policy documents that govern aesthetic issues in the project areas are the Inland Area Framework for Planning, the Agriculture and Open Space Element, and the County General Plan. The Energy and Extractive Areas Combining designation, which covers the project area, includes those areas designated as Rural Lands (i.e. Price Canyon/Ormonde Road Oilfield (EX)). These operations should not be expanded into adjacent land use categories or existing operations intensified without full review through a public hearing process. The scenic value of the Price Canyon should also be protected as an entry to the City of Pismo Beach.

Price Canyon Road is a north-south improved two-lane County road which extends from the City of Pismo Beach to State Route 227. Price Canyon Road bisects the Arroyo Grande Oil Field site and provides direct access to the site at the entrance located opposite Ormonde Road. The key viewing area in question is located several hundred yards further north and opposite an existing entrance to the site.

Construction of the new water reclamation facility and related structures would remove existing vegetation (including large oaks) and result in exposed soils during grading. Minor

slumping of cut slopes could also occur during construction. Grading and removal of existing vegetation would represent a short-term change and would require approximately 5.6 acres of ground disturbance and minimal to moderate grading. Furthermore, presence of construction equipment would also result in short-term minor aesthetic impacts. Construction-related equipment and associated activities would be most visible during construction of proposed pipeline routes to Pismo Creek and to proposed offsite re-use areas. As such, construction of the proposed project may result in temporary visual impacts to motorists traveling along Price Canyon Road, nearby residences, and passengers on Amtrak passenger trains traveling along the Union Pacific Railroad tracks through Price Canyon.

Because construction of the proposed project would take place within the previously analyzed project area, no mitigation of construction-related impacts to visual resources is necessary; however, implementation of the proposed project would require removal of 26 coast live oaks, which could reduce the visual quality of the area. As similar long-term impacts were identified in the Phase IV EIR, mitigation measures identified in that document's Biological Resources section would be similarly employed for the proposed project. In addition, Mitigation Measure BIO-6 (Section 5.3 - Biological Resources) from this SEIR would be implemented to reduce long-term impacts from removal of vegetation to the visual quality of the project area.

In addition, the project would introduce new facilities (e.g. air strippers) which may be visible from Price Canyon Road. The area of the water reclamation facility would generally be hidden by the existing topography.

On-site analysis determined that only the air strippers, which would be 14 feet in diameter and 70 feet in height, may be visible from Price Canyon Road; however, the proposed towers are not expected be silhouetted against the sky. This conclusion is based on the fact that the elevation of the building pad with existing and higher 85-foot towers, which would be in close proximity to the air strippers, is not silhouetted. Due to the potential visibility of these proposed towers to travelers on Price Canyon Road and associated potential impacts to the visual quality of surrounding slopes containing native vegetation (i.e. oak woodland), a painting color scheme would be incorporated into the project description (see Section 3.4.2), intended to blend in with the natural landscape. Additionally a lighting plan consistent with the existing use, including height limits and shielding requirements would also be incorporated into the project description to minimize any new aesthetic impacts due to lighting.

In summary, the new structures would generally not be highly visible either from Price Canyon Road or from nearby residences. The window of visual opportunity to the water reclamation facility would be several seconds or less based on typical motorist speeds along Price Canyon. Additionally, Price Canyon would be the only roadway in the area which could offer a view of the affected area and this view would last approximately three seconds at typical roadway speeds. Furthermore, new facilities associated with the proposed project would be constructed in an industrial area that is already heavily developed in oil-field operations. The new structures would not silhouette against the skyline, would be partially obscured by intervening topography and vegetation and would be considered consistent with the surrounding site. Given the short viewing frequency, intervening topography and vegetation, and plans for a

painting (color) and lighting scheme designed to blend into the surrounding site, aesthetic impacts are considered less than significant.

5.1.2 Agricultural Resources

The project area is located within the County's "Energy and Extractive Resource" area and does not include any agricultural operations. Properties adjacent to the project area support agricultural uses, and may potentially use the treated water produced by the proposed project for irrigation of non-edible crops; however, at this time, no formal agreements for re-use have been made concerning production of treated water. As such, the proposed project would not adversely affect agricultural resources in the area. Rather, for the purposes of this analysis, it is assumed that re-use of treated water for agricultural irrigation would occur in the future. Re-use of treated water may potentially represent a beneficial impact to agricultural resources outside of the PXP property, as well as to groundwater resources, as re-use would result in an overall reduction to the drawdown of local groundwater supply for the life of the project. The produced water would not be treated to drinking water standards; therefore, water re-use would be limited to only agricultural users. Additionally, no significant impacts were identified in the Phase IV EIR.

5.1.3 Cultural Resources

Two cultural resources reports were prepared for the Phase IV EIR. These were entitled "Phase One Archaeological Surface Survey for the Shell Western E&P Project, Price Canyon Oil Field, San Luis Obispo, CA and "Results of Addendum Archaeological Surface Survey for a 65 Acre Area of the Plains Exploration and Production Phase IV Project, Price Canyon, San Luis Obispo County, CA, conducted by Robert O. Gibson, (1992, 2003), and review conducted by Mr. Gibson of the proposed project. The first survey conducted in 1992 included about 200 acres and the second survey performed in 2003 included 65 acres. Additionally, a Heritage Study was prepared as an addendum for the Phase IV area itself. Various recorded prehistoric sites in the project area were discussed and mapped.

The Information Center reported that since 1977, three previous surveys had been conducted, Robert Hoover (1977, 1978) and W.B. Sawyer (1989) and had identified three prehistoric archaeological sites (SLO-353, SLO-652, and SLO-1266) and one historic archaeological site, the Corral de Piedra (Stone Corral). Site records were updated for the Hoover sites: SLO-353 and SLO 652. These two sites are part of the same site that has been divided by Price Canyon Road. The construction of this road, done prior to 1964, also unearthed three Chumash burials.

SLO-353. SLO-353 is a prehistoric site, located east of Price Canyon Road and first recorded in 1963 by H.L. and L.D. Wadhams. It was re-recorded in 1969 by Charles Dills and again in 1977 by Robert Hoover. The site measures about 200 meters east-west and 150 meters north-south. The site contains a concentration of weathered small shellfish fragments consisting of at least nine species from both sandy beach and rocky coast environments (probably Pismo Beach and Shell Beach areas). Ground stone and chipped stone tools and debitage (by-products from stone tool manufacture) were present in low to medium densities.

One projectile point (arrowhead) may be stemmed form suggesting a Middle period occupation perhaps 1,000 to 2,500 years ago.

At the eastern part of the site is a 15 by 20 meter sandstone outcrop that contains at least 18 bedrock mortars. A second small outcrop has two additional mortars.

SLO-652. SLO-652 is located west of Price Canyon Road and would have originally been connected to SLO-353 before the road was cut. This site was first recorded by Charles Dills in 1972 and measures about 150 meters east-west and 200 meters north-south. The northern 1/3 of the site contains a concentration of weathered shellfish fragments (same species as SLO-353) in a dark gray to black sandy soil. The other 2/3 of the site consists of trace to low densities of chipped stone materials with rare shell fragments.

One larger and three smaller low bedrock outcrops contain mortar depressions that are, overall, deeper than the outcrop at SLO-353 but fewer in number. The main shell concentration is located just north of the larger rock outcrop.

In 1977 Robert Hoover directed subsurface testing at SLO-652. Two 1 by 1 meter test units were excavated and 200 soil samples were collected for pH analysis. The test units recovered burnt rock, chert flakes and cores, boiling stones, small shell fragments and bone. Projectile and biface knife fragments suggest Middle period of occupation for both sites (1,000 to 3,000 years old).

SLO-1266. SLO-1266 is a small prehistoric site recorded in 1989 by W. B. Sawyer. It is located just north of Tiber Canyon Road and consists of a gentle sloping terrace measuring 50 by 100 meters. Noted were a concentration of chert flakes with rare shell fragments (same at the other two sites), burnt rock and some bedrock mortars. No new information was gathered in the 1992 survey.

5.1.3.1 Impacts and Mitigation from the Original Phase IV EIR

As the proposed project would take place entirely within the Phase IV project area, no new impacts to cultural resources, including archaeological sites, are anticipated. The pipelines are located above ground and the route would be designed to avoid existing resources. Under the Phase IV EIR, significant impacts were identified if construction activities were to disturb any of the above-listed archaeological sites. The proposed Pismo Creek outfall and optional re-use pipelines would not intersect archaeological resource sites previously identified under the Phase IV EIR. However, in the event construction of the proposed project results in inadvertent damage to historic, cultural, archaeological, and/or human remains, Mitigation Measure CUL-1 shall be carried over and incorporated into the proposed project. Impacts are considered less than significant after implementation of this mitigation.

Mitigation Measure CUL-1: In the event that unknown cultural remains are encountered anywhere within the project area during construction, activities shall be terminated or redirected to another area until a qualified archaeologist can be retained to evaluate the potential significance of the finds in a Phase 2 archaeological significance investigation or PXP shall have

the option to relocate work permanently without need to conduct further studies at that location. Relocation of work and any subsequent archaeological investigation would be done in consultation with the County of San Luis Obispo. If the remains are significant and cannot be feasibly avoided, then a Phase 3 data recovery mitigation program shall be performed by a qualified archaeologist, and all construction activity within the site and 150-foot buffer area shall be monitored by a qualified archaeologist and Native American monitor. All Phase 3 significance assessments and Phase 3 mitigation activities shall be funded by the applicant.

5.1.4 Paleontological Resources

For the Phase IV EIR, Cogstone Resource Management conducted paleontological reconnaissance surveys over ten days from July 17 to August 28, 2003. The survey was conducted on foot and both samples and representative fossils were collected. The survey covered all of the proposed Phase IV project area plus a large portion of the PXP lease holding in the Arroyo Grande Oilfield.

The field surveys of the PXP holdings within the Arroyo Grande Oil Field identified five fossil-bearing sites. Fossils found during these surveys were whales (mandible, bone fragments), seal/sea lion (fibula), shrimp (burrows), shark (tooth) and bony fish (tooth). The shark tooth may represent an unnamed species. Only one of these five sites is located within the Phase IV project area, near well pad Maino 18J, where fossil whale and seal/sea lion bones were found.

5.1.4.1 Impacts and Mitigation from the Original Phase IV EIR

The presence of both vertebrate and invertebrate fossils in the major submembers of the Edna Member of the Pismo Formation indicates that these entire geological units have the potential to contain scientifically important vertebrate and invertebrate fossils. A paleontological mitigation monitoring plan addressing the potential for grading and excavation activities to uncover and adversely affect paleontological resources was developed and implemented for the Phase IV project (see Mitigation Measure PAL-1). Although the proposed project is highly disturbed by oil field operations for the Phase IV project, the mitigation monitoring plan would also apply to the SEIR as potential adverse affects on paleontological resources are highly site-specific. The most likely potential impact that could occur would be from accidental discovery of fossils; however, due to the level of disturbance at the project site (including roadways), this is considered unlikely. Mitigation measure PAL-1 would be applied in the event paleontological resources are discovered during land-disturbing activities. Impacts are considered less than significant after implementation of this mitigation.

Mitigation Measure PAL-1: Prior to ~~approval of the project~~construction, the applicant shall retain a qualified paleontologist to implement the paleontological mitigation monitoring plan developed for the Phase IV EIR that includes the following:

1. Prior to construction, the applicant would retain a qualified paleontologist to implement the mitigation plan and maintain professional standards of work;

2. A qualified monitor would perform full-time monitoring of all grading, enlargement of pads and all other open excavation work in native sediments. Monitoring would include inspection of exposed surfaces and microscopic examination of matrix. The monitor would have authority to divert grading away from exposed resources temporarily in order to recover the specimens and contextual data. PXP shall have the option to relocate work permanently without need to conduct further studies at that location. Relocation of work and any subsequent paleontological investigation would be done in consultation with the County of San Luis Obispo. Cooperation and assistance from on-site personnel would greatly assist timely resumption of work in the area of the discovery;

3. If the discovery meets the criteria for a fossil locality, formal locality documentation activities would be performed;

4. If microfossil localities are discovered, locality documentation activities shall include the collection of matrix material for processing. These activities may include use of equipment to excavate fossil-containing soils, and establishment of stockpiles away from the construction area. Testing of stockpiles shall consist of screen washing small samples (200 pounds) to determine if fossils are present. Productive tests shall result in screen washing of additional matrix from the stockpiles to a maximum of 6000 pounds per locality;

5. Fossils recovered shall be prepared, identified and cataloged, and donated to an accredited repository approved by the County of San Luis Obispo. Any resources determined not to meet significance criteria shall be offered to local schools for use in educational programs; and,

6. The principal investigator shall prepare monthly progress reports to be filed with the applicant and the County of San Luis Obispo. The principal investigator shall prepare a final report to be filed with the applicant and the County of San Luis Obispo. The report shall include a list of resources recovered; documentation of each site/locality, interpretation of resources recovered and shall include all specialists' reports as appendices.

5.1.5 Noise

The noise generation at the proposed project site consists of existing oil field facilities and operations. Noise-sensitive receptors within the region of influence of the proposed project include scattered single-family residences located north of the proposed project near Corral de Piedra Road, houses to the northwest located along State Route 227, and homes to the south of the project site in Pismo Beach located along ridge tops with a view to the north. These scattered residential areas are generally a mile or more away from the project area and tend to be located within moderate to steeply sloping topography.

5.1.5.1 Impacts and Mitigation from the Original Phase IV EIR

Short-term impacts from the proposed project would consist of noise generated by construction equipment, vehicles associated with grading, excavation/trenching, and erection of structures. Long-term impacts are generally not anticipated as operations associated with production of treated water would be introduced into an area of existing oil field operations. No substantial increase in truck trips per day would occur as a result of the project. Per the Initial Study prepared for the water reclamation facility, there are no project facilities that would substantially increase noise levels over current levels in the project area. Noise impacts that may be generated during construction and operation of the proposed project would be consistent with the existing industrial noise environment in the area. Standard construction noise mitigation would apply. Impacts are considered less than significant after implementation of this mitigation.

Mitigation Measure NOI-1: No use of heavy equipment or vehicles for the purpose of construction activities shall occur between the hours of 7 p.m. and 7 a.m., to the extent feasible.

5.1.6 Traffic and Circulation

The analysis procedures used in this study to determine roadway operational levels are based on information previously documented in the 2001 Traffic and Circulation Study for the Stocker Resources Arroyo Grande Oil Field Phase IV Project, prepared by Associated Transportation Engineers (ATE). The report provides information relative to existing and future traffic conditions within the study area adjacent to the project site, and evaluates impacts related to both the construction and ongoing operations phases of the proposed project.

ATE analyzed the operational characteristics of the roadway segments within the study area based on standard engineering roadway design capacities. ATE identified construction-related traffic as a less than significant impact, using an estimate of 138 total daily trips at worst-case. Existing volumes for the street segments in the study area were obtained from machine counts completed in August 2001 by ATE and from Caltrans (Caltrans, 2000). Cumulative effects of the project with 2021 forecasts were shown to be less than significant. Comparison of the existing ADT volumes and the corresponding design capacity for each roadway segment shows that all of the study-area roadways currently operate acceptably in the LOS A-C range. Considering the conclusions of the Phase IV EIR, the relatively small increase in the ADT beyond what was analyzed by ATE, traffic impacts are considered less than significant.

5.1.6.1 Impacts and Mitigation from the Original Phase IV EIR

Based on the traffic analysis prepared for the Phase IV EIR, the LOS for the project area roadway segments analyzed would not be degraded. Truck trips are discussed in detail in Section 3.4.4. Although specific routes to the project area not yet established, it is expected that trucks would be using Price Canyon Road via U.S. 101, or Highway 227. Entering and exiting of construction vehicles during installation of the proposed water reclamation facility may reduce traffic safety on Price Canyon Road during the A.M. and P.M. peak hour. As such,

Mitigation Measure TRA-1, contained in the Phase IV EIR, shall be carried over and implemented, resulting in less than significant impacts:

Mitigation Measure TRA-1:

- Trucks (delivery, hauling and transportation trucks) should be scheduled outside the a.m. and p.m. peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.) to the extent feasible (no increase in trucks trips would occur during the a.m. and p.m. peak periods)[1];
- Construction related traffic shall use on-site roads wherever possible; and,
- Warning signs shall be placed on Price Canyon Road prior to construction to notify through traffic of trucks entering and exiting the site.

5.1.7 Additional Issues with No Impact

The following issues were deemed to have no impacts during preliminary environmental analysis conducted as part of the initial application phase of the Phase IV Development Plan, which is consistent with the currently proposed project:

- **Population/Housing** - The proposed project would not substantially alter the location, distribution, density, or growth rate of the human population of an area. The proposed project would not adversely affect existing housing, or create a demand for additional housing;
- **Public Services** - The project would not have an effect upon, or result in, a need for new or altered public services;
- **Energy** - The proposed project would not result in the use of substantial amounts of fuel or energy or substantially increase demand upon existing sources of energy above that currently required and proposed by the approved Phase IVE Expansion project, or require the development of new sources of energy;
- **Utilities** - The proposed project would not result in a need for new systems, or substantial alterations to existing utilities; and,
- **Recreation** - The proposed project would not affect the quality or quantity of existing recreational opportunities.

[1] This shall include trucks traveling onto Highway 101 from Price Canyon Road.

5.2 AIR QUALITY

5.2.1 Setting

5.2.1.1 Climate and Meteorology

Coastal San Luis Obispo County is characterized by mild weather throughout the year. Due to its location near the coast, the Pacific Ocean plays a key role in moderating temperatures. Summers are mild and often characterized by early morning and afternoon fogs. Winters are usually cool and wet with the rainy season extending from late November to early April.

The nearest climatic data station to the project site is in the City of San Luis Obispo. The minimum average temperature recorded at the San Luis Obispo station from 1950 to 1980 is 41.7 degrees Fahrenheit in January. The maximum average temperature is 78.7 degrees Fahrenheit in September for the same period. The average annual rainfall, recorded from 1950 to 1980, is 23.00 inches at San Luis Obispo.

Existing air quality data provided in Table 5.2-2 and in this section is from the San Luis Obispo station; however, according to the screening-level HRA provided for the proposed project's air stripper towers (included in Appendix D), the San Luis Obispo Air Pollution Control District (APCD) has indicated that neither this station, nor the station located in Grover Beach accurately represent meteorological conditions at the Arroyo Grande Oil Field, due to differences in wind flow. Although it has been previously recommended that a station be installed at this location to obtain more site-specific air quality data, there is not currently one available for this analysis. Thus, data provided by the San Luis Obispo station represents the best available air quality data at this time.

Airflow plays an important role in the movement and dispersion of air pollutants in the San Luis Obispo region. The speed and direction of local winds are controlled by 1) the location and strength of the Pacific High pressure system and other global patterns, 2) topographical factors, and 3) circulation patterns resulting from temperature differences between the land and sea.

During the spring and summer, when the Pacific High attains its greatest strength, onshore winds from the northwest generally prevail during the day. As evening approaches, onshore winds die down, and the wind direction reverses with weak winds flowing down the coastal mountains and valleys to form light easterly breezes.

In the fall, onshore surface winds decline and the marine layer grows shallow, allowing an occasional reversal to a weak offshore flow. This along with the diurnal alteration of land-sea breeze circulation, can sometimes produce a "sloshing" effect. Under such conditions, pollutants may accumulate over the Pacific Ocean and subsequently be carried back onshore with the return of sea breezes.

In the atmosphere, air temperatures normally decrease as altitude increases. At varying distances above the earth's surface, however, a reversal of this temperature gradient can occur. Such a condition, which is called an inversion, is simply a warm layer of air over a layer of cooler air. Inversions can have the effect of limiting the vertical dispersion of air pollutants, trapping them near the earth's surface.

Several types of inversions are common to the San Luis Obispo area. Weak surface inversions are caused by radiational cooling of air in contact with the cold surface of the earth at night. In valleys and low lying areas, this condition is intensified by the addition of cold air flowing down from hills and pooling on valley floors. Surface inversions are common throughout the County during winter months, particularly on cold mornings. As the morning sun warms the earth and air near the ground, the inversion lifts, gradually dissipating throughout the day.

During the summer, subsidence inversions can occur when the summertime presence of the Pacific high pressure cell can cause the air mass aloft to sink. As the air descends, compressional heating warms the air to a higher temperature than the air below. This highly stable atmospheric conditioning can act as a nearly impenetrable lid to the vertical mixing of pollutants. Subsidence inversions can persist for one or more days, causing air stagnation and the buildup of pollutants.

5.2.1.2 Air Pollution Control

Air pollution control is administered on three governmental levels in the project area. The United States Environmental Protection Agency (EPA) has jurisdiction under the Federal Clean Air Act to develop Federal air quality standards and to require individual states to prepare State Implementation Plans to attain these standards.

The California Environmental Protection Agency, Air Resources Board (ARB) has jurisdiction under the California Health and Safety Code and the California Clean Air Act to develop California air quality standards, to require regional plans to attain these standards, and to coordinate the preparation by local air districts of plans required by both the Federal and State Clean Air Acts. ARB is also responsible for the development of state emission standards for mobile and stationary emission sources.

The Air Pollution Control District (APCD) shares responsibility with the ARB for ensuring that all State and Federal ambient air quality standards are attained within the County. The APCD has jurisdiction under the California Health and Safety Code to develop emission standards (rules) for the County, issue air pollution permits, and require emission controls for stationary sources in the County. The APCD is also responsible for the attainment of State and Federal air quality standards in the County.

5.2.1.3 Air Quality Standards

Air quality standards are specific concentrations of pollutants that are used as thresholds to protect public health and the public welfare. The EPA has developed two sets of standards; one to provide an adequate margin of safety to protect human health and the second to protect

the public welfare from any known or anticipated adverse effects. At this time, sulfur dioxide is the only pollutant for which the two standards differ.

ARB has developed air quality standards for California, which are generally lower in concentration than the Federal standards. California standards exist for ozone, carbon monoxide, nitrogen dioxide, PM_{10}, visibility, sulfates, lead, hydrogen sulfide and vinyl chloride.

In July 1997, EPA finalized new health-based ozone and particulate matter (PM) standards. However, due to several lawsuits the standards were not fully implemented until February 2001. The new Federal ozone standard is based on a longer averaging period (8-hour vs. 1-hour), recognizing that prolonged exposure is more damaging. The new Federal PM standard is based on finer particles (2.5 microns and smaller vs. 10 microns and smaller), recognizing that finer particles may have a higher residence time in the lungs and cause greater respiratory illness. In 2002, the ARB lowered the annual standards for PM_{10} and $PM_{2.5}$ in response to the Children's Environmental Health Protection Act. Table 5.24-1 lists the applicable State and Federal air quality standards.

Table 5.2-1. Ambient Air Quality Standards

Pollutant	Averaging Time	State Standard	Federal Standard
Ozone	1-Hour	0.09 ppm	--
	8-Hour	0.07 ppm	0.08 ppm
Carbon Monoxide (CO)	1-Hour	20 ppm	35 ppm
	8-Hour	9.0 ppm	9.0 ppm
Nitrogen Dioxide (NO_2)	1-Hour	0.1825 ppm	--
	Annual Avg.	0.030 ppm	
Inhalable Particulate Matter ($PM_{2.5}$)	24-Hour	--	35 ug/m3
	Annual Arithmetic Mean	12 ug/m3	15 ug/m3
Inhalable Particulate Matter (PM_{10})	24-Hour	50 ug/m3	150 ug/m3
	Annual Arithmetic Mean	20 ug/m3	50 ug/m3
Sulfur Dioxide (SO_2)	1-hour	0.25 ppm	--
	24-Hour	0.04 ppm	0.14 ppm

Source: California Air Resources Board (www.arb.ca.gov)

5.2.1.4 Effects of Air Pollution

The primary chemical compounds that are considered pollutants emitted into or formed in the atmosphere include ozone, oxides of nitrogen, sulfur dioxide, hydrocarbons, carbon monoxide, and particulate matter.

Ozone is formed in the atmosphere through a complex series of chemical reactions generally requiring light as an energy source. Ozone is a pungent, colorless gas that is a strong irritant and attacks the respiratory system. Respiratory and cardiovascular diseases are

aggravated by exposure to ozone. A healthy person exposed to high concentrations of ozone may experience nausea, dizziness, and burning in the chest. Ozone also damages crops and other vegetation.

Oxides of nitrogen (NO_x) which are considered pollutants include nitric oxide (NO) and nitrogen dioxide (NO_2). NO is colorless and odorless and is generally formed by combustion processes combining atmospheric oxygen and nitrogen. NO_2 is a reddish-brown irritating gas formed by the combination of NO and oxygen in the atmosphere or at the emission source. Both NO and NO_2 are considered ozone precursors because they react with hydrocarbons and oxygen to produce ozone. Exposure to NO_2 may increase the potential for respiratory infections in children and cause difficulty in breathing even among healthy persons and especially among asthmatics.

Sulfur dioxide (SO_2) is a colorless, pungent, irritating gas which affects the upper respiratory tract. Sulfur dioxide may combine with particulate matter and settle in the lungs, causing damage to lung tissues. Sulfur dioxide may combine with water in the atmosphere to form sulfuric acid that may fall as acid rain, damaging vegetation.

Hydrocarbons include a wide variety of compounds containing hydrogen and carbon. Many hydrocarbons (known as reactive organic gases [ROG]) react with NO and NO_2 to form ozone. Generally, ambient hydrocarbon concentrations do not cause adverse health effects directly, but result in ozone formation.

Carbon monoxide (CO) is a colorless, odorless gas generally formed by incomplete combustion of hydrocarbon-containing fuels. Carbon monoxide does not irritate the respiratory tract, but does interfere with the ability of blood to carry oxygen to vital tissues.

Particulate matter consists of a wide variety of particle sizes and composition. Generally, particles less than 10 microns (PM_{10}) are considered to be pollutants because they accumulate in the lung tissues and may contain toxic materials which can be absorbed into the system.

5.2.1.5 Baseline Air Quality

In January 2004, the San Luis Obispo County portion of the SCCAB was designated as an attainment area for the State 1-hour ozone standard (0.09 ppm). However, in 2006, attainment designations became based on the 8-hour State ozone standard (0.07~~007~~ ppm) and the San Luis Obispo portion of the SCCAB was considered a non-attainment area. The area is also designated a non-attainment area for suspended particulate matter less than 10 microns in diameter (PM_{10}). Both of these pollutants are measured at San Luis Obispo monitoring station. The county (primarily the Paso Robles station) typically exceeds the State ozone (O3) standard at least once per year. The San Luis Obispo station, however, has not recorded a violation of the State 1-hour ozone standard since April 8, 1989.

Air quality in San Luis Obispo County is currently monitored at eight public agency and private sector monitoring stations located throughout the County. The nearest station is located

in Grover Beach approximately three miles south of the project site. However, the air quality monitored at the South Higuera Street station in the City of San Luis Obispo is more representative of the project site because the location is more similar than Grover Beach (i.e., inland valley with less cloud cover and higher temperatures). The Higuera Street station is located approximately six miles north of the project site. This station monitors ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and PM_{10} levels. However, monitoring began in 2005, and 2004 data is from the Marsh Street station in San Luis Obispo. Table 5.21-2 presents the maximum pollutant concentrations that were recorded at this station from 2004 through 2006.

High ozone levels in San Luis Obispo County have occasionally been traced to air pollutants transported from other air basins, such as the South Coast Air Basin, the San Francisco Bay Area, and the San Joaquin Valley. The frequency with which long-range transport of pollutants affects local air quality has not been definitively established. However, most exceedances of the State ozone standard measured in the County are the result of local emissions and adverse meteorology.

5.2.1.6 Air Quality Management

The California Clean Air Act (CCAA), adopted in 1988, requires all air pollution control districts and air quality management districts in the state to adopt and enforce regulations to achieve and maintain air quality that is within the State air quality standards. San Luis Obispo County has been declared a "moderate" nonattainment area for the State ozone standard. The County did not meet the December 31, 1997 deadline to attain the State 1-hour ozone standard; therefore, should have been reclassified as a "serious" nonattainment area. However, the ARB determined that a change in classification would not result in a more expeditious attainment of the standard. The County is also considered a nonattainment area for the State PM_{10} standard.

Table 5.2-2. Summary of Air Quality Standard Exceedances

Year	Marsh St. 2004	Higuera St. 2005	Higuera St. 2006
Ozone 1-hour (ppm)			
Worst Hour	0.073	0.072	0.070
Number of State Exceedances (Days > 0.09 ppm)	0	0	0
Ozone 8-hour (ppm)			
Worst 8-hour Period	0.070	0.063	0.059
Number of State Exceedances (Periods > 0.08 ppm)	0	0	0
Carbon Monoxide (ppm)			
Worst 8-Hour Period	1.49	0.071	0.78
Number of State Exceedances (Hours>20 ppm)	0	0	0
Number of State Exceedances (8 hours>9 ppm)	0	0	0

Table 5.2-2. (Continued)

Year	Marsh St. 2004	Higuera St. 2005	Higuera St. 2006
$PM_{2.5}$ (micrograms/cubic meter)			
Worst Sample	19.4	11.4	24.2
Number of Federal Exceedances (Samples>65 ug/m3)	0	0	0
PM_{10} (micrograms/cubic meter)			
Worst Sample	35.0	32.0	72.0
Number of State Exceedances (Samples>50)	0	0	1

Source: California Air Resources Board (www.arb.ca.gov)

In response to the requirements of the CCAA, the San Luis Obispo County APCD prepared the 1991 Clean Air Plan (CAP) to provide a framework for the attainment of State air quality standards by the earliest practicable date. The CAP is a comprehensive planning document intended to facilitate attainment and maintenance of the State ozone standard. The 1995 CAP was developed as a comprehensive update to the 1991 CAP and was expected to bring the County into attainment of the State ozone standard by the end of 1997.

The 1995 CAP described the pollutants that affect County air quality, the sources of those pollutants, and future year emissions that are anticipated under current growth trends. Based on this information, the 1995 CAP also provides a control strategy for reducing emissions of ozone precursors. Included in the 1995 CAP are a number of land use and circulation management policies and programs that have already been implemented to reduce vehicular air emissions. Additional measures recommended for adoption include trip reduction programs and telecommuting.

A second update to the 1991 CAP was developed in 1998, as a continuation of the 1995 CAP and proposes no new control measures for adoption. The 1998 CAP was expected to bring the County into attainment with the State 1-hour ozone standard by 2003.

The CAP was revised again in 2001, but did not include any new emissions control measures. However, emissions of ROG and NOx are expected to decline through the year 2015, and attainment of the State ozone standard should occur in the near term. In January 2004, the San Luis Obispo County portion of the SCCAB was designated as an attainment area for the State 1-hour ozone standard (0.09 ppm). However, in 2006, attainment designations became based on the 8-hour State ozone standard (0.07~~007~~ ppm) and the San Luis Obispo portion of the SCCAB was considered a non-attainment area. Maximum concentrations of other criteria pollutants are currently within Federal and State standards.

5.2.1.7 Global Climate Change

Global climate change (GCC) is a change in the average weather of the earth, which can be measured by wind patterns, storms, precipitation, and temperature. Although the issue of GCC is a widely accepted theory, the extent of the change from anthropogenic (human activity related) sources remains in debate.

Gases that trap heat in the atmosphere are often called greenhouse gases (GHG), analogous to the way in which a greenhouse retains heat. Common GHG include water vapor, carbon dioxide, methane, nitrous oxides, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, ozone, and aerosols. GHG are emitted by both natural processes and human activities. The accumulation of GHG in the atmosphere regulates the earth's temperature. Without the natural heat trapping effect of GHG, the earth's surface would be about 34 degrees Centigrade (°C) cooler (CAT 2006). However, it is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

In 2006, the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing GHG in California. GHG as defined under AB 32 include: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. AB 32 requires the ARB, the State agency charged with regulating statewide air quality, to adopt rules and regulations that would achieve greenhouse gas emissions equivalent to statewide levels in 1990 by 2020. On or before June 30, 2007, ARB is required to publish a list of discrete early action greenhouse gas emission reduction measures that can be implemented by 2010.

The ARB, the California Environmental Protection Agency, and other governmental agencies with jurisdiction have not yet developed guidelines on how to prepare a CEQA impact assessment for a project's Greenhouse gas (GHG) contribution to GCC. The State Legislature enacted and the Governor signed Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, which charged ARB to develop regulations on how the state would address GCC.

At this time, CEQA does not provide any regulatory guidance on how to address potential impacts of global climate change, and AB32 defers CEQA consideration of GHG as a subsequent phase of this legislation. AB32 also directs the ARB as the agency to determine appropriate measures to mitigate for GHG, which may or may not include measures directed at new land use development subject to CEQA. At this time, further analysis of this project's impacts is considered speculative given that there is no empirical evidence available at the present to evaluate this issue further under CEQA for individual or cumulative impacts. While project impacts on GCC are not considered significant, mitigation measures have been included per recommendations from the APCD to address both short-term and long-term air quality impacts (see Sections 5.3.1.2 and 5.3.1.3). Using emissions factors from "California's Greenhouse Gas Inventory" and EMFAC2007, GHG emissions were estimated and included in Table 5.2-3 for informational purposes. GHG emissions have not been added to the impact

analysis as they do not have adopted CEQA impact thresholds. For detailed GHG emissions per specific piece of equipment, refer to Appendix D.

Table 5.2-3. GHG Emissions Inventory

GHG	Lbs./day	Tons/Quarter	Total Tons
CO2	16,818.3	551.9	1513.7
CH4 (methane)	0.9	0.02135	0.0854
N2O (Nitrous oxide)	0.1235	0.0029	0.0115

Source: EMFAC2007 and California 's Greenhouse Gas Inventory

5.2.1.8 Existing Facilities

PXP currently operates approximately 130 production wells, 40 steam injections wells, an oil dehydrations plant, gas processing plant, produced water disposal and softening plant, a casing vent recovery flare, two casing vapor recovery compressors, two truck loading racks, four 2,000 barrel storage tanks, one Co-Generation plant, and four steam generators.

Based on the 2005 emission inventory prepared for the APCD, these facilities emit 15.3 tons per year NOx and 10.8 tons per year ROG. For the year 2006, annual compliance testing of PXP's gas turbine cogeneration plant reports 2.4 pounds per day NOx and 3.6 pounds per day ROG emissions. This facility produces 1.4 megawatts of electricity and 950 barrels of steam. The gas turbine is fired on purchased natural gas and utilizes Xonon catalytic combustor to minimize NOx emissions (PXP, 2007).

5.2.1.9 Proposed Facilities

The proposed project would include new air strippers that would generate operational emissions for the life of the proposed project (see Impacts AQ-5 and AQ-6). These proposed facilities are discussed in more detail in Chapter 3.0 – Project Description.

5.3.1 Impact Analysis

5.3.1.1 Thresholds of Significance

Significance thresholds have been developed by the San Luis Obispo County APCD and contained within the *CEQA Air Quality Handbook* (San Luis Obispo County APCD, 2003). Specifically, project emissions are considered potentially significant impacts if any of the following thresholds are exceeded:

1. Operational Impacts:

Reactive Organic Gases (ROG), NO_x, SO_2, PM_{10}	10 lbs/day
CO	550 lbs/day

The APCD considers impacts significant and requires more stringent environmental review for projects exceeding 25 lbs/day of ROG, NO_x, SO_2 and PM_{10} emissions, or 550 lbs/day CO emissions.

2. Construction Impacts:

ROG and NO_x	185 lbs/day or 2.5 tons/quarter
PM_{10}	2.5 tons/quarter

The APCD requires Best Available Control Technology (BACT) for construction equipment for projects with ROG or NOx emissions between 2.5 and 6.0 tons per quarter and requires BACT plus further mitigation for projects with emissions exceeding 6.0 tons per quarter.

3. Consistency:

Large projects must be found to be consistent with the District's CAP. The APCD notes that a consistency analysis is required for the following types of projects: general plan updates and amendments, specific plans, area plans, large residential subdivisions and large commercial/industrial developments. The proposed project is not one of the types listed; therefore, a CAP consistency analysis is not required.

4. Health Risk:

The APCD has established health risk threshold values under the Air Toxics "Hot Spots" Information and Assessment Act. These values trigger community notification and a risk reduction plan.

- Cancer Risk: 10 in a million lifetime cancer risk (continual 70 year exposure);
- Non-Cancer Acute Hazard: acute hazard index greater than or equal to 1.0 (sum of acute hazard hourly index of each pollutant with similar adverse health effects); and
- Non-Cancer Chronic Hazard: chronic hazard index greater than or equal to 1.0 (sum of chronic hazard annual index of each pollutant with similar adverse health effects).

5. Odors:

APCD Rule 402 states "A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property." Violation of Rule 402 is considered a significant impact.

5.3.1.2 Short-Term Impacts

Impact AQ-1: Construction activity would generate air emissions that may adversely impact local and regional air quality.

Discussion: The emissions of construction equipment and vehicles would be short-term and consist of fugitive dust and exhaust emissions. A worst-case peak day and peak quarter construction emissions inventory was prepared for comparison to the thresholds of significance (see Table 5.2-3 and Appendix D).

Construction would generally consist of building pad grading, and installation of storage/chemical tanks, air strippers, and other appurtenances. The construction period is expected to last approximately 3 quarters, or 180 days, with 30 work days for site preparation and 150 work days of construction.

Construction equipment specifications were obtained from PXP and incorporated into the model along with existing emissions factors (see Appendix D). Several assumptions were made for the air model to estimate emissions. Because emissions factors for several pieces of equipment were not available, substitutes were obtained by using factors from similar horsepower-rated equipment. Additionally, several load factors were based on averages from composite load factors taken from the Median Life, Annual Activity, and Load-Factor Values for Nonroad Emissions Modeling Report (EPA, 2004). See Appendix D, for the air modeling emissions results per piece of equipment.

Table 5.2-~~43~~ summarizes total emissions per day and per quarter, based on the quantity of each piece of equipment to be used during operation. Emissions estimates presented in Table 5.2-~~43~~ represent a worst-case scenario without mitigation (i.e., emissions reduction factors).

In summary, construction emissions would exceed the APCD's daily and quarterly significance thresholds for NOx and is considered a significant impact to regional air quality (see Table 5.2-~~43~~). As such, mitigation for NOx and PM_{10} for the Phase IV EIR would be applied to the proposed project (see Mitigation Measure AQ-1(A)). A variety of mitigation measures have been included, which would quantifiably reduce emissions, depending on which measures are implemented. Additionally, standard mitigation for the control of fugitive dust (i.e., PM_{10}) would be required (Mitigation Measure AQ-1(B)).

Table 5.2-~~43~~. Construction Emissions Estimates

Equipment	Quantity	Pounds per day			ton/qtr.		
		NOx	ROG	PM_{10}	NOx	ROG	PM_{10}
Motor grader	1	13.5	1.9	0.6	0.4	0.1	0.0
Backhoe	2	13	1.2	0.8	0.4	0.0	0.0
Hydrocrane F-750	4	41.2	5.2	2.8	1.4	0.2	0.1
Manlift 40LF	4	45.6	4	2	1.5	0.1	0.1
28-ton hydrocrane RT	1	10.3	0.9	0.7	0.3	0.0	0.0
100-ton Hydrocrane	1	11.1	1	0.7	0.4	0.0	0.0
210-Ton Hydrocrane	1	11.5	1	0.7	0.4	0.0	0.0
D9 Dozer	2	47.6	4.6	11.4	1.6	0.2	0.4

Table 5.2-4. (Continued)

Equipment	Quantity	Pounds per day			ton/qtr.		
		NOx	ROG	PM_{10}	NOx	ROG	PM_{10}
Concrete Mixer Truck	3	17.4	1.8	4.2	0.6	0.1	0.1
980 Loader	1	5.7	0.5	0.4	0.2	0.0	0.0
Compactor 54" drum	1	5.4	0.5	0.4	0.2	0.0	0.0
Air Compressor 185	2	12.4	1.4	0.6	0.4	0.0	0.0
Welding Rig	10	40	3	2	1.3	0.1	0.1
Welding Machine	10	36	4	2	1.2	0.1	0.1
Onroad vehicles	23	0.6	0.2	0.0	0.0	0.0	0.0
Totals		**311.3**	**31.2**	**29.3**	**10.3**	**0.9**	**0.9**

1 Total number of construction days, including site preparation, will last approximately 180 work days (i.e., approximately 32 quarters).

2 Onroad vehicles include 23 vehicles operating at the same time at worst-case scenario at an overall average speed of 40 35 miles per hour. Vehicles include 15-passenger van, ¾-ton pickup and 1-ton utility truck. See Appendix 12.2D for tabular data.

3 "0.0" represents values rounded up to the nearest decimal point and does not indicated a level of absolute zero

4 Emissions estimates represent *worst-case* scenario without mitigation.

Source: EPA 1991, 2004

Impact Category: Class: 2

Threshold of Significance: 2, 3

Mitigation Measure AQ-1:

A. Equipment Emission Control Measures. According to Rule 402204 of the APCD Handbook of Rules and Regulations, an Authority to Construct permit shall require the use of Best Available Control Technology (BACT) where emissions of subject air contaminants would be 25 poundstons per dayyear or more (which is applicable to NOx). Prior to construction, a Nitrogen Oxide Emissions Reduction and Monitoring Plan shall be developed using the previously implemented Monitoring Plan for the Phase IV EIR, approved by the County and fully implemented. The Plan shall specify the emissions control measures to be implemented on each emission source, the expected reduction for each criteria pollutant, the period the emissions control measures are to be in place, and a quarterly summary of the emissions reductions. The summary shall include sufficient information for the APCD to verify the emissions reductions have occurred. Potential emission reduction measures shall include, but not be limited to, a combination of the following:

- All mobile construction equipment shall use engines certified by the EPA and ARB to meet Tier 2 emission standards as listed in Title 40 Part 89 of the Code of Federal Regulations and employ Currently Verified Technologies per the ARB;

- All portable equipment shall be registered under the Statewide Portable Equipment Registration Program and implement all emissions and reporting requirements (if a piece of equipment is 50 horsepower or greater, and is not registered under the ARB state program, it will need an APCD permit);
- Installation of diesel reduction catalyst/catalyzed diesel particulate filter system (25 to 40 percent NOx reduction); and,
- Use of PuriNOx fuel by Lubrizol (15 percent NOx reduction).

B. Dust Control Measures. Dust generated by construction activities shall be kept to a minimum by full implementation of the following measures.

- During clearing, grading, earth moving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems shall be used to prevent dust from leaving the site and to create a crust after each day's activities cease;
- During construction, water trucks or sprinkler systems shall be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this would include wetting down such areas in the morning and after work is completed for the day. Watering frequency may need to be increased~~and~~ whenever wind exceeds 15 miles per hour;
- Stockpiled earth material shall be sprayed or covered as needed to minimize dust generation;
- During construction, the amount of disturbed area shall be minimized, and onsite vehicle speeds should be reduced to 15 mph or less;
- Consistent with the County Land Use Ordinance and SWPPP, all e~~E~~xposed ground areas that are planned to be reworked at dates more than one month after initial grading during the rainy season (i.e., Oct. 15 to April 15) shall be sown with a fast-germinating native grass seed and watered until vegetation is established;
- After clearing, grading, earth moving, or excavation is completed, the entire area of disturbed soil shall be treated immediately by watering or revegetating or spreading soil binders to minimize dust generation until the area is paved or otherwise compacted so that dust generation is minimized;
- Grading and scraping operations shall be suspended when wind speeds exceed 20 mph (one hour average);
- Rumble pads (minor road obstructions designed to dislodge accumulated earth material from trucks) with spray washers shall be installed and maintained at all construction entrances; ~~and,~~
- All roadways associated with construction activities ~~should be paved as efficiently as possible.~~ shall be paved or utilize some other technique to control dust (i.e. water or APCD-approved soil stabilizer); and,

- The contractor or builder shall designate a person or person to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the APCD prior to land use clearance for map recordation and finished grading of the area.

C. ~~Emissions Offsets~~CEQA Off-site Mitigation. Project emissions remaining following implementation of the above mitigation measures shall be offset through contribution to an off-site mitigation fund. The fund is managed by the APCD and used to finance regional emission reduction projects such as bikeways, vehicle scrapping programs, diesel bus conversions, agricultural engine replacements and similar activities. Therefore, project emissions would be offset on a regional basis through PXP-funded off-site projects that would result in emissions reductions. Based on past experience, the APCD has determined that $8,500 is required per ton NOx reduced. These funds would be used by the APCD to purchase clean-burning engines and other equipment/facilities that would result in a decrease in emissions in the County. The financial contribution shall be based on offsetting excess emissions (greater than 2.5 tons NOx per quarter) at $8,500 per ton.

Residual Impacts

Impact Category = Class 3. NOx and fugitive dust emissions can feasibly be reduced below the threshold of significance. As such, impacts are significant, but mitigable.

Impact AQ-2: Diesel fuel combustion associated with project construction activity would generate emissions of toxic air contaminants (TACs).

Discussion: The combustion of diesel fuel in truck engines (as well as other internal combustion engines) produces exhaust containing a number of compounds that have been identified as hazardous air pollutants by EPA and TACs by the ARB. PM from diesel exhaust has recently been identified as a TAC, which has prompted ARB to develop a Final Risk Reduction Plan (released October 2000) for exposure to diesel PM. Based on ARB Resolution 00-30, full implementation of emission reduction measures recommended in the Final Risk Reduction Plan would result in a 75 percent reduction in the diesel PM Statewide inventory and the associated cancer risk by 2010, and an 85 percent reduction by 2020 in the diesel PM inventory and potential cancer risk.

The emissions of construction equipment and vehicles would be short-term, lasting only for the duration of the water reclamation facility construction phase. Diesel PM emissions would be up to 29.3 pounds per day (PM_{10} in Table 5.2-3 less fugitive dust). These emissions would be much less than the APCD's 185 pounds per day threshold. Therefore, construction-related PM emissions specific to diesel engines are considered a less than significant impact.

Impact Category: Class 3

Threshold of Significance: 2

Mitigation Measures: None required.

Impact AQ-3: Fugitive dust generated by construction or relocation/demolition activity may contain asbestos and/or lead and result in exposure of the public to these~~is~~ TACs.

Discussion: As discussed in the Phase IV EIR, the project site is located within the Pismo Formation, a sedimentary geologic unit, which is not expected to include ultramafic or asbestos-containing materials. According to the County Geologist, the potential for encountering asbestos-containing materials is very low. As required by the APCD, contingency measures (see Mitigation Measure AQ-3) have been included to address issues regarding relocation of existing pipelines and/or demolition activities, in the event they are necessary.

Impact Category: Class 2~~3~~

Threshold of Significance: 4

Mitigation Measure~~s: None required.~~

~~AQ-3~~A. In the event utility pipelines are scheduled for removal or relocation, or building(s) are removed or renovated, the project shall be subject to various regulatory jurisdictions, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M – asbestos NESHAP). These requirements include, but are not limited to: 1) notification requirements to the District, 2) asbestos survey conducted by a Certified Asbestos Inspector, and, 3) applicable removal and disposal requirements of identified ACM.

~~AQ-3~~B. In the event demolition activities are required as part of project construction, ~~approval of~~ a lead work plan shall be prepared and submitted to ~~by~~ the APCD for review and approval ~~shall required and must be submitted~~ ten days prior to the start of demolition. Depending on the lead-removal method, an APCD permit may be required. Proof of APCD approval and/or authorization shall be submitted to the County prior to start of demolition.

5.3.1.3 Long-Term Impacts

Impact AQ-4: Operation of the proposed water reclamation facility would increase the number of heavy truck trips to and from the proposed project site, resulting in increased emissions

Discussion: Based on a 25-ton per truck hauling and delivery capacity, liquid chemical deliveries are anticipated at two per week, plus one to two truck trips per week for solid chemical deliveries and three to four truck trips per week to haul waste to a Class II disposal site; therefore, a total of eight heavy-duty truck trips would be added to local

roadways during project operations. Operational emissions thresholds for ROG (10 lbs/day) and CO (550 lbs/day) would be applicable. The addition of eight heavy-duty truck trips per week (assuming diesel fuel) would produce emissions of ROG and CO well below operational emission thresholds. Impacts would be less than significant.

Impact Category: Class 3

Threshold of Significance: 1

Mitigation Measures: None required.

Impact AQ-5: Operation of the proposed water treatment facility would result in emissions of contaminants into the atmosphere which may result in a health risk to local residents.

Discussion: A facility-wide Health Risk Assessment (HRA) was recently completed and included the TAC emissions from the proposed water treatment plant. TAC emissions considered included existing and proposed steam generators, the gas turbine, proposed heaters and air strippers, existing gas plant emissions, existing storage tanks, existing loading racks and fugitive hydrocarbons. The HRA assumes that all TACs contained in water to be treated is released to the atmosphere. The HRA was completed using Hotspots Analysis and Reporting Program (HARP v. 1.3) developed by the ARB. Cancer and non-cancer (acute and chronic) health impacts were estimated using guidelines developed by the Office of Environmental Health Hazard Assessment. Ground level pollutant concentrations and resulting health risk was calculated for 13 residences and a school in the project area. Cancer and non-cancer health risks at the three most impacted receptors are provided in Table 5.2-5. The significance threshold for health risk is a cancer risk 10 per million, and hazard index of 1.0. The results of the HRA indicate that health risk associated with PXP operations, including the proposed water treatment facility would be less than significant. In addition, the facility would not be subject to BACT under APCD Rule 219 as the cancer health risk would be less than 1 per million and a hazard index less than 0.1.

Table 5.2-5. Summary of the Health Risk Assessment

Receptor	Cancer Risk (per million)	Chronic Hazard Index	Acute Hazard Index
Residence 1	0.39	0.031	0.073
Residence 2	0.70	0.042	0.066
Residence 3	0.80	0.036	0.048

~~**Impact AQ-5**: Operation of the proposed water treatment facility would result in emissions of ROGs, ammonia, and other TACs from air strippers.~~

Discussion: A screening-level Health Risk Assessment (HRA) was conducted on the projected emissions from the proposed air stripper exhaust proposed as part of the project. Two different scenarios, one assuming six stacks and the other assuming one stack, were performed; however, the volume of water introduced into the stacks is the same regardless of number of stacks. Using the worst-case assumption of 24 hours a day, 7 days a week exhaust, it was determined that risks for cancers and Chronic and Acute Health Indexes were below significance thresholds. Please refer to Appendix D, for detailed HRA results and emissions calculations.

The following table summarizes the constituent emissions analyzed in the screening-level HRA, with the volume of water analyzed being emitted from three stacks. It assumes that air strippers would be running for 24 hours per day at worst-case.

Table 5.2-4. Air Stripper Emissions

Pollutant	Lbs/day
Acetone*	0.12
Ammonia*	139.92
Methyl Ethyl Ketone	0.06
Benzene	0.00005
Xylene	0.0001
Chlorobenzene	0.00007
Ethylbenzene	0.00002
Napthalene	0.00003
Toluene	0.00002
Totals	ROG = 0.06
	ALL = 140.1

* Acetone and Ammonia are not classified as ROGs.

CEQA thresholds for ROGs would not be exceeded; however, APCD Rule 219 would be applicable to the proposed project. The purpose of Rule 219 is to provide a mechanism for evaluating potential toxic impacts of TACs from new, modified, and relocated sources pursuant to devices or processes where an APCD permit is required. The proposed project would need to meet the requirements of Rule 219 in order to obtain an Authority to Construct/Permit to Operate (ACPO) from the APCD. This would be accomplished with implementation of Mitigation Measure AQ-5(A).

Per APCD Rule 429, ammonia emissions from control devices installed to meet the requirements of this Rule shall not exceed 10 ppm based on a one (1) clock hour average at three percent (3%) oxygen on a dry basis. Although air stripper emissions were below applicable thresholds, the ACPD will require that these emissions be offset to the extent feasible via Mitigation Measure AQ-5(B).

Impact Category: Class 3~~2~~

Threshold of Significance: ~~1,~~ 4

Mitigation Measures: None required.

~~**Mitigation Measure AQ-5:**~~

~~A. As part of permitting for the proposed air strippers (New Source Review), the APCD would require PXP to include provisions for meeting the permit requirements concerning sampling and testing protocol for air stripper emissions per Rule 204;~~

~~B. PXP shall apply Toxics BACTs such as carbon canisters or toxics scrubbers, depending on what is reasonably available at the time of permit application. As part of the permit application, PXP shall state what they intend to implement in terms of BACTs to the satisfaction of the APCD.~~

~~**Residual Impacts:**~~

~~Impact Category = Class 3. Mitigation Measure AQ-5 would reduce impacts resulting from air stripper emissions to a less than significant level.~~

Impact AQ-6: Due to the high levels of ammonia emissions (see Table 5.2-4) from the air strippers, the impact of related odors is considered an air quality issue.

Discussion: Per APCD Rule 402, which deals with nuisance, ammonia odors could potentially create a significant impact due to the high levels of emissions predicted by the screening-level HRA. Thus, the air strippers' emissions must be incorporated into the Odor Monitoring and Complaint Response Plan incorporated as part of the Phase IV EIR. This plan included various contingency measures, programs and procedures designed to address detectable odors and chronic odor complaints. If odors associated with ammonia become a monitoring issue, BACT measures such as carbon canisters or scrubbers may be implemented to the satisfaction of the APCD.

Impact Category: Class 2

Threshold of Significance: 5

Mitigation Measure AQ-6: PXP shall incorporate the issue of ammonia odors into the existing Plan referenced above.

Residual Impacts

Impact Category = Class 3. Odor control mitigation for ammonia would reduce impacts to a less than significant level.

5.3.1.4 Cumulative Impacts

A cumulative analysis of operational emissions includes the steam generator peak day emissions estimated for the Phase IV EIR, and the screening-level HRA emissions estimates. NOx and CO would not be applicable to the cumulative impact, as these pollutants would not be released by the air strippers. However, the remaining constituents analyzed by the previous HRA, including ROGs, would result in cumulative emissions (at Phase IV build-out) as summarized in Table 5.2-5. "All other ROGs" includes those estimated in Table 5.4-4 of the Phase IV EIR, plus the constituents listed in Table 5.4-4 of this SEIR which are not listed below. All but two of the constituents listed in Table 5.2-5 are considered ROGs; those not classified as ROGs include acetone and ammonia.

Table 5.2-65. Operational Cumulative Emissions Estimates

Pollutant	lbs./yearday
Benzene	6.610.00765
Naphthalene	32.060.02203
Toluene	6.090.01202
All other ROGs	8,748.5819.86
Total	**8,793.34 (1.1 tons/qtr)19.9**

Ongoing cumulative projects in the project area include the Tentative Tract Map no. 2388 (Spanish Springs) and Tract 2554 (PVP Investments), which would result in the development of low density residential land uses, a hotel, golf course and vineyards. These land uses would result in cumulative air emissions associated with construction equipment, motor vehicle use (visitors and residents), agricultural equipment use, golf course maintenance equipment use and space heating. These air emissions would likely exacerbate the air quality impacts of the proposed project. However, these cumulative impacts would not alter the significance of air quality impacts of the project. Construction and operational emissions from cumulative projects in Price Canyon would be subject to similar mitigation measures as for the proposed project, and would reduce emissions to the extent feasible; therefore, impacts are considered less than significant.

5.3 BIOLOGICAL RESOURCES

The purpose of this section is to assess potential impacts to biological resources associated with the proposed Plains Exploration and Production (PXP) Arroyo Grande Oil Field Produced Water Reclamation Facility, located directly east and west of Price Canyon Road in San Luis Obispo County. This section includes a review of pertinent literature and field surveys, the results of coordination with resource agencies, discussion and analysis of pertinent regulatory requirements, and an assessment of the impacts of the Proposed Project on biological resources.

5.3.1 Regulatory Setting

This section identifies those plans and policies administered by resource agencies pertaining to those biological resources that are known to exist and/or have the potential to occur within the project area.

5.3.1.1 Special-Status Species

Federal Authority. The Federal Endangered Species Act (FESA), administered by the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS), provides protection to species listed as Threatened (FT) or Endangered (FE), or proposed for listing as Threatened (PFT) or Endangered (PFE). In addition to the listed species, the Federal government also maintains lists of species that are neither formally listed nor proposed, but could potentially be listed in the future. Federal candidate species (FC) include taxa for which substantial information on biological vulnerability and potential threats exist, and are maintained in order to support the appropriateness of proposing to list the taxa as an endangered or threatened species. Federal Species of Concern (FSC) comprise those species that should be given consideration during environmental review.

Section 9 of the FESA prohibits the "take" of any member of a listed species. Take is defined as, "...to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Harass is "an intentional or negligent act or omission that creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns that include, but are not limited to, breeding, feeding, or sheltering." Harm is defined as "...significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering."

Projects that would result in the take of a Federally listed or proposed species are required to consult with USFWS or NMFS. The objective of consultation is to determine whether the project would jeopardize the continued existence of a listed or proposed species, and to determine what mitigation measures would be required to avoid jeopardy.

Consultations are conducted under Sections 7 or 10 of FESA depending on the involvement by the Federal government. Section 7 requires agencies to make a finding on all Federal actions, including the approval by an agency of a public or private action, such as the

issuance of a permit pursuant to Section 10/404 of the Clean Water Act, on the potential to jeopardize the continued existence of any listed or proposed species potentially impacted by the action. Section 10 is conducted when there is no Federal involvement in a project except compliance with FESA.

Under Section 7, the USFWS and NMFS are authorized to issue Incidental Take Permits (ITP) for the take of a listed species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency. The ITP includes measures to minimize the take. Under Section 10(a), the USFWS and NMFS can issue ITPs for non-Federal projects.

The USFWS also administers the Federal Migratory Bird Treaty Act of 1918 (16 USC 703-711). Under the MBTA, it is unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR 10, including feathers or other parts, nests, eggs or products, except as allowed by implementing regulations (50 CFR 21).

State Authority. The California Department of Fish and Game (CDFG) administers a number of laws and programs designed to protect fish and wildlife resources. Principal of these is the California Endangered Species Act of 1984 (CESA - Fish and Game Code Section 2050) that regulates the listing and take of State endangered (SE) and threatened species (ST). Under Section 2081 of CESA, CDFG may authorize the take of an Endangered and/or Threatened species, or candidate species by a permit or Memorandum of Understanding (MOU) for scientific, educational, or management purposes.

CDFG maintains lists of Candidate-Endangered species (SCE) and Candidate-Threatened species (SCT). California candidate species are afforded the same level of protection as listed species. CDFG also designates Species of Special Concern (CSC) that are species of limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. These species do not have the same legal protection as listed species, but may be added to official lists in the future. The CSC list is intended by CDFG as a management tool to call attention to declining populations and focus efforts on decreasing threats to long-term viability.

CDFG administers other State laws designed to protect wildlife and plants. Under Section 3511 of the Fish and Game Code, CDFG designates species that are afforded "fully protected" (FP) status. Under this protection, designated species can only be taken or possessed with a permit. Section 3503 of the Fish and Game Code protects all birds-of-prey, their eggs, and their nests.

CDFG manages the California Native Plant Protection Act of 1977 (Fish and Game Code Section 1900, et seq), which was enacted to identify, designate and, protect rare plants. In accordance with CDFG guidelines, California Native Plant Society (CNPS) 1B list plants are considered "rare" under the Act, and are evaluated in California Environmental Quality Act (CEQA) reports.

Local Authority. Special-status species of the project area are afforded protection by the County of San Luis Obispo under goals and polices contained in the County of San Luis Obispo General Plan, Agriculture & Open Space Element (1998) and the San Luis Bay Area Inland Planning Area Plan (2002). These documents provide a framework of policies designed to protect special-status species and sensitive habitat areas. Project-related adverse impacts on special-status species are considered significant for CEQA purposes.

5.3.1.2 Waters and Wetlands

Federal Authority. The Corps is responsible for the issuance of permits for the placement of dredged or fill material into waters of the United States (waters) pursuant to Section 404 of the Clean Water Act (33 USC 1344). As defined by the Corps at 33 CFR 328.3(a)(3), waters are those that are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; tributaries and impoundments to such waters; all interstate waters including interstate wetlands; and territorial seas. (Note: Based on the recent U.S. Supreme Court decision in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* [2001], and guidance from the U.S. Army Corps of Engineers and U.S. Environmental Protection Agency [2001], the Federal government no longer asserts jurisdiction over isolated waters and wetlands under Section 404 of the Clean Water Act based on the "migratory bird rule." Further guidance on the issue of isolated wetlands and waters is expected (U.S. Army Corps of Engineers, 2001).

Wetlands are a special category of waters, and are defined at 33 CFR 328.3(b) as: "*...those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.*"

In non-tidal waters, the lateral extent of Corps jurisdiction is determined by the ordinary high water mark (OHWM), which is defined as the: "*...line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.*" (33 CFR 328[e]).

In addition, a wetland definition has been adopted by the U.S. Fish and Wildlife Service to include both vegetated and non-vegetated wetlands, recognizing that some types of wetlands may lack vegetation (e.g., mudflats, sandbar, rocky shores, and sand flats), but still provide functional habitat for fish and wildlife species (Cowardin, et al., 1979). These wetlands are defined as "*...lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by*

shallow water at some time during the growing season of each year." Some of the USFWS-defined wetlands are not regulated by the Federal government.

The upper (landward) limit of USFWS-defined wetlands are the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover; the boundary between soil that is predominantly hydric and soil that is predominantly non-hydric; or in the case of wetlands without vegetation or soil, the boundary between land that is flooded or saturated at some time each year and land that is not (Cowardin et al., 1979). The lower limit in inland areas is established at a depth of 6.6 feet below the water surface; unless emergent plants, shrubs, or trees grow beyond this depth, at which the deepwater edge of such vegetation is the boundary (Cowardin et al., 1979).

State and Local Authority. Pursuant to Section 1601 of the California Fish and Game Code, CDFG requires a streambed alteration agreement (SAA) between CDFG and any State or local governmental agency or public utility before the initiation of any construction project that will: 1) divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake; 2) use materials from a streambed; or 3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake.

The California Fish and Game Commission adopted a modification of the USFWS definition of wetlands on March 9, 1987 as its principal means of wetland identification in conjunction with on-site inspections for implementation of the Fish and Game Commission's policy (Rollins, 1987). Unlike USFWS, the CDFG definition only requires the presence of one wetland indicator for an area to qualify as a wetland. CDFG does not have a wetland regulatory program, but advises other state agencies on wetland issues.

County of San Luis Obispo General Plan, Agriculture & Open Space Element identifies a series of unique plant or animal habitats including the following: habitat of rare, endangered or threatened plant or animal species as classified by state and Federal agencies and the California Native Plant Society (CNPS); wetlands and marshes; and sensitive natural communities as identified in the California Department of Fish and Game Natural Diversity Data Base (such as Central maritime chaparral).

The importance of wetlands has long been recognized in the San Luis Obispo County General Plan. However, there is no inventory of the wetland resources in the County, so the identification and protection of these resources most often occurs when a development proposal is submitted on property that may include a wetland.

5.3.2 Setting

The following description of the biological setting is based on a review of pertinent literature and field reconnaissance surveys of the project site. The literature review included the examination of the following documents:

- PXP Arroyo Grande Oil Field Produced Water Reclamation Facility Site Plans (PXP);

- Supplemental Information to Land Use Application, PXP Arroyo Grande Oil Field Produced Water Reclamation Facility (Entrix, 2006);
- Revised Hydrologic, Water Quality, and Biological Characterization of Pismo Creek, PXP Arroyo Grande Oil Field Produced Water Reclamation Facility (Entrix, 2006);
- Final Environmental Impact Report (EIR), PXP Phase IV Development Plan, Arroyo Grande Oil Field (Padre, 2004);
- PXP Phase IV Biological Resources Mitigation Monitoring Report 2006-1 (DWE Principal Ecologists, 2006);
- PXP Arroyo Grande Oil Field Environmental Constraint Map (Firma Consultants, 2007);
- Recovery Plan for the Tidewater Goby (USFWS, 2005);
- CDFG Stream Survey of Pismo Creek (CDFG, 2006);
- Arroyo Grande Creek Watershed Management Plan (Central Coast Salmon Enhancement, 2005);
- Oceano Dunes Protected Fish Species Surveys: Technical Memorandum (HES, 2005); and,
- USGS 7.5-minute topographical maps.

In addition, the California Natural Diversity Database (CNDDB) was queried for records of special-status species within the Pismo Beach and Arroyo Grande NE 7.5 minute quadrangle maps (CDFG, 2007). The categories of special-status species are listed in Tables 5.3-2 and 5.3-4 and the CNDDB report is included under Appendix E. Special-status taxa that are known to exist or have the potential to exist on the project sites were also identified through a review of relevant literature (California Native Plant Society, 2001; and Zeiner et al., 1988; 1990a, b), and previous biological studies in the area (Entrix, 2006; DWE Principal Ecologists, 2006; Firma, 2007). Further, a list of Federally threatened and endangered species potentially occurring within the area was also obtained from the USFWS (see Appendix E).

Field reconnaissance surveys were conducted at the project site for the purpose of identifying the varying vegetation communities/habitat areas, determining typical species associated with the different vegetation communities, identifying and assessing potentially impacted oak trees, and to document occurrences of special-status species and habitats. This included a focused spring botanical survey of all project impact areas, including proposed pipeline routes and pipeline buffer areas, margins and interiors of the proposed Project Site and surrounding habitat areas (i.e., adjacent grasslands, etc.).

Field surveys for wildlife were conducted by walking transects of opportunity through habitat types and recording species observed based on visual observation using 10X42 binoculars, auditory cues (calls and songs), and indirect signs (tracks, scat, skeletal remains, burrows, etc.). In addition, USFWS protocol-level California red-legged frog (CRLF) surveys were conducted within the proposed tempering pond, adjacent stock pond, and within the

proposed outfall location to Pismo Creek including a 500-foot buffer upstream and downstream of the proposed outfall site. Lastly, a reconnaissance-level snorkel survey and preliminary habitat assessment of the creek corridor was conducted with emphasis on the presence/absence of steelhead.

California coast live oaks (*Quercus agrifolia*), although not considered to be a sensitive species, represent an essential component of coast live oak woodland, a habitat that is increasingly threatened by development and agriculture along the central California coast. As such, focused oak tree surveys were conducted to identify those oak trees which could potentially be affected by project activities. Trees surveyed were limited to living oak trees located within or immediately adjacent to designated potential impact areas, including those trees expected to be completely removed and/or impacted as a result of project implementation. Surveys included a measurement of oak tree diameter at breast height (DBH) and canopy cover which were recorded on field observation forms (see Appendix E). Additionally, all oak trees were numbered and mapped accordingly. Physical data was collected only on those oak trees considered mature and all saplings were mapped as components of coast live oak woodland habitat. Specifically, oaks classified as mature were greater than 10 cm (3.93 in.) DBH and oaks classified as saplings were less than 10 cm DBH. The following Table 5.3 -1 lists the field surveys performed and the dates they were conducted.

Table 5.3-1. Biological Field Survey Dates

Field Survey Type	Dates Conducted
Botanical Surveys	May 24 & 30, 2007
Oak Tree Survey	May 17, 2007
Wetland Assessment	June 18, 2007
General Wildlife Surveys	May 1 & 8, 2003
Protocol-level CRLF Surveys	April, May, July 2007
Steelhead Snorkel Survey	April 26, 2007
Steelhead Habitat Assessment	May 31,2007`

5.3.2.1 Physical Setting

The project area is located approximately three miles north of the City of Pismo Beach along Price Canyon Road in central San Luis Obispo County. The site is situated within the Outer South Coast Range district of the Central Western California floristic province (Hickman, 1993).

Vegetation. Focused botanical field surveys were conducted by Padre biologists on May 24 and 30, 2007, within the typical spring flowering season of this floristic province (April-May). Based on the results of the botanical field surveys conducted by Padre personnel and results from previous botanical studies of the project area (Padre, 2003), a list of plant species was compiled (see Appendix E) and a map of vegetation communities occurring in the project area was generated (refer to Figure 5.3-1). A total of 127 vascular plant species were identified

during the field survey, which consisted of 69 (52 percent) native taxa and 64 (48 percent) non-native naturalized taxa. The percentage of non-native taxa is greater than for the State as a whole (17.4 percent), reflecting the relatively high level of disturbance associated with well site development and continuing operation and maintenance activities throughout the oil field.

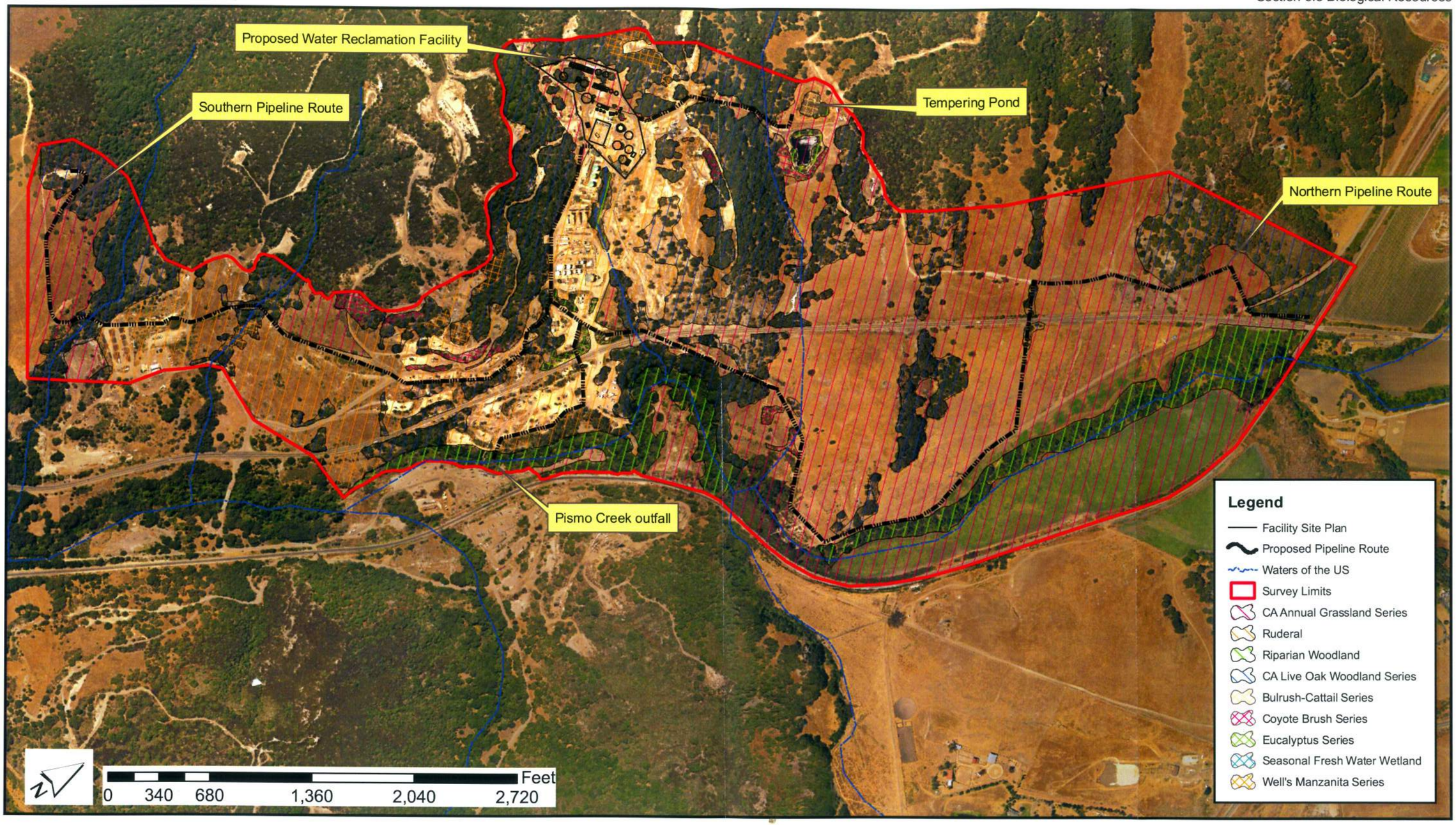
The project site encompasses eight generalized vegetation communities: California Annual Grassland Series, Coyote Brush Series, Well's Manzanita Series, California Live Oak Woodland Series, Riparian Woodland, Streambed/bank, Bulrush-cattail Series, Seasonal Wetland, and Ruderal (disturbed) habitat. Classification of these habitat types or vegetation communities is based primarily on Sawyer and Keeler-Wolf (1995) with several modifications to more accurately characterize existing conditions in the field. The general location of these communities in relation to the project elements is depicted in Figure 5.3-1. The following is a description of each of the vegetative communities occurring within the project site:

- ***California Annual Grassland Series (AG).*** This community is composed of low-growing native and non-native annual grasses and forbs in areas generally used for grazing, but may be fallow or inactive. Within the proposed Produced Water Reclamation Facility project area, the California annual grassland series was observed in close association with the California live oak woodland series and in areas of low relief. Dominant species included several invasive weedy species such as slender wild oats (*Avena barbata*), ripgut grass (*Bromus diandrus*), Italian thistle (*Carduus pycnocephalus*), red-stem filaree (*Erodium cicutarium*), and black mustard (*Brassica nigra*). This community represents the dominant cover along the proposed pipeline route within the northern portion of the project area (i.e., active cattle grazing area).
- ***Coyote Brush Series (CBS).*** This community is dominated by coyote brush (*Baccharis pilularis*), a moderate-sized shrub (<2m) with mesophytic leaves and semiwoody stems growing from a woody base. Sub-dominate species included California sagebrush (*Artemisia californica*), black sage (*Salvia mellifera*), sticky monkey flower (*Mimulus aurantiacus*). Arroyo willow (*Salix lasiolepis*) also occurred frequently in association within this community. Coyote brush habitat is present within and adjacent to the project area in scattered locations typically in close association with the California annual grassland, California live oak woodland series, and Well's manzanita series.
- ***Well's Manzanita Series (WMS).*** This plant community is represented by areas dominated by Well's manzanita (*Arctostaphylos wellsii)*, a broad-leaved sclerophyllous shrub, <3 meter tall, forming dense, often impenetrable stands. This community occurs along the proposed pipeline route located on the southern side of project site and around the proposed construction staging area on south-facing slopes and in close association with rocky outcrops and shallow soils associated with the Edna member of the Pismo formation (i.e., Edna tar sands deposits). It should be noted that this community is referred to as central maritime chaparral within the CNDDB, and is considered a sensitive habitat area of limited distribution.

- ***California Live Oak Woodland Series (OW).*** California live oak woodland communities are characteristic of the rolling hills and valleys of California's central coast. This habitat is particularly important for its ability to support a wide variety of wildlife species due to its high value as foraging habitat and vegetative cover (e.g., acorn production, forest canopy, etc.). However, because this habitat is frequently lost to agriculture and/or development, oak woodlands have been declining for many years. This situation is aggravated by the long time period required for regeneration of this habitat. As a consequence, oak woodland is considered to be a sensitive resource by San Luis Obispo County. California live oak woodland is considered a climax plant community, which often forms dense, closed-canopies in mesic sites. Within the project site, this community is dominated by coast live oak primarily occurring in dense stands on north-facing slopes. Typical understory species occurring within this community included toyon (*Heteromeles arbutifolia*), California coffee-berry (*Rhamnus californica*), poison oak (*Toxicodendron diversilobum*), and California blackberry (*Rubus ursinus*). As indicated above, this community is prevalent in undisturbed sites throughout the project area.

- ***Riparian Woodland (RW).*** This community is dominated by shrub-sized (<20 feet high) Arroyo (*Salix lasiolepis)* and yellow willows (*Salix lucida* ssp. *lasiandra*), and occurs along the banks of Pismo Creek and associated drainages, as well as the perimeter of the proposed tempering pond and existing stock pond. Scattered stands of riparian trees, principally western sycamore (*Platanus racemosa*) and black cottonwood (*Populus balsamifera*) are also present along the stream channel of Pismo Creek and surrounding areas. Additionally, coast live oaks are present in some portions of the Pismo Creek riparian corridor and surrounding tributaries. This community corresponds to the Riparian Shrub-Scrub wetland community described by Cowardin et al. (1979). Pismo Creek is perennial coastal stream that flows into the Pacific Ocean at a point approximately 3 miles south of the project area. It is characteristic of a Central coast steelhead/speckled dace stream (A2635) under the inland waters classification system developed by Moyle and Ellison (1991). Species abundance can be high, diversity low and structural heterogeneity moderate to high, particularly in areas with tree, shrubs, and herbaceous layers.

- ***Streambed/Bank (SB).*** This community occurs on the creek banks immediately within the wetted perimeter of the active stream channel of Pismo Creek, and on accreted sand and gravel bars in the channel where stream flow decreases and sediments are deposited. The substrate consisted primarily of silts, sands and small gravel with occasional cobbles. Clean gravel only occurred immediately downstream of several existing beaver dams which had concentrated the water flow and subsequently kept small portions of gravel and small cobble clean. When surface flow is present, this community represents a transition between open water and the riparian scrub. Vegetation on the banks and bars varied by elevation, and was moderately dense or non-existent. Hydrophytes within the streambed included some portions of emergent wetland habitat composed of rooted emergent herbaceous plants which were located in mud or on sandbars dominated by giant horsetail (*Equisetum telmateia* ssp. *braunii*) and panicled bulrush (*Scirpus microcarpus*)



Source: ADAIR

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

PLANT COMMUNITIES MAP
FIGURE 5.3-1

These species were primarily found at elevations below the level of the ordinary high water mark (OHW).

- ***Seasonal Freshwater Wetland (SFW).*** This habitat type occurs in seasonally saturated areas and is present within the gradual swale located adjacent to the existing roadway and man-made storm water conveyance structures southeast of Tank 202. Dominant species observed within this habitat area include western ragweed (*Ambrosia psilostachya*), brown-headed rush (*Juncus phaeocephalus*), cattail (*Typha latifolia*), and Italian ryegrass (*Lolium multiflorum*). Other species present included slender wild oats and common rush (*Juncus effusus).* This habitat area is highly disturbed due to ongoing oil field and grazing activities. This seasonal freshwater habitat area does not qualify as a federal wetland due to the lack of hydric soil and wetland hydrology indicators; however, it is considered a CDFG-defined State wetland due to the dominance of hydrophytic vegetation.

- ***Bulrush-Cattail Series (BCS).*** This freshwater wetland community is dominated by California bulrush (*Scirpus californicus*) and cattail and occurs in permanently flooded habitat as well as seasonally/irregularly flooded habitat areas. This community is present within the proposed tempering pond, roadside drainage, and storm water conveyance structures/ponds located within the proposed project impact area. Other species present within the bulrush-cattail series include umbrella flatsedge (*Cyperus eragrostis*), curly dock (*Rumex crispus)*, common rush (*Juncus effuse* var. *brunneus*), brown-headed rush (*Juncus phaeocephalus* var. *phaeocephalus*), and rabbitsfoot grass (*Polypogon monspeliensis*). Areas containing this community within the project site meet the CDFG-definition of State wetlands due to the dominance of hydrophytic vegetation.

- ***Ruderal (RU).*** It should be noted that the species composition of plant communities within the existing facility is highly variable due to the frequency and magnitude of past disturbance. Specifically, the site proposed for the water reclamation facility and associated pipeline routes are located within the existing oil field which have been heavily influenced by past and current activities. As such, the majority of the native plant communities within these areas have been replaced by facility equipment, piping, and non-native plant species. The term "ruderal" is used to describe those areas that have been disturbed by past land-use practices and/or recent ground disturbance, and are confined to the weedy areas located within existing well pads and bordering access roadways. Typical species are disturbance-adapted plants such as poison hemlock (*Conium maculatum*), cheeseweed (*Malva parviflora*), prickly wild sowthistle (*Sonchus asper*), prickly lettuce (*Lactuca serriola*), white sweetclover (*Melilotus alba*), telegraph weed (*Heterotheca grandiflora*), and summer mustard (*Hirschfeldia incana*).

Wildlife. Wildlife surveys were conducted at the project site in April and May of 2007. Detection methods included direct observation with binocular, examination and identification of tracks, scats, burrows/diggings, and carcasses/skeletal remains; and identification of vocalizations (calls and songs). Surveys were supplemented with previously published wildlife

reports, regional and local species distribution references, and consultation with the USFWS and CDFG to determine which species occur or potentially occur on the project site. Appendix E contains a listing of wildlife species observed during field surveys and/or expected to occur within the various vegetative communities. It should be noted that accurate assessment of wildlife populations would require extended periods of site research, trapping, and census taking. It is particularly difficult to detect nocturnal, rare or reclusive species to obtain accurate estimates of population size and geographical distribution. Other complications in the quantitative assessment of vertebrate (and invertebrate) populations include:

1. Many species may occur in the area only for short periods during migrations;

2. Many species of amphibians and reptiles become inactive during one or more seasons; and,

3. Seasonal or annual fluctuations in climate or weather patterns may confound observations.

The principal cover types that would be impacted by proposed project activities are California annual grassland series, California live oak woodland, riparian woodland, streambed/bank, seasonal freshwater wetland, and bulrush-cattail series. Typical wildlife species found in association with each of these cover types are discussed below:

- ***California Annual Grassland Series.*** The grassland habitat is dominated by low-growing vegetation that provides forage and cover for small mammals, such as voles, deer mice, ground squirrels, and Botta's pocket gopher. These species, in turn, provide the prey base for predators such as red-tailed hawk, red-shouldered hawk, American kestrel, gopher snake, and coyote. Little nesting cover is provided; however, certain species of plants, such as fennel, provide perch sites and forage for birds. Typical bird species include Brewer's blackbird, mourning dove, western kingbird, and western meadowlark. Other species common to this habitat include western fence lizard, house finch, sparrows, wintering raptors, and striped skunk.

- ***California Live Oak Woodland.*** As stated above, coastal oak woodlands provide habitat for a variety of wildlife species. However, population numbers may fluctuate dependent upon annual acorn production within a given area. Specifically, common ground-dwelling birds such as quail and turkey, and various mammals including squirrels and deer may be so dependent on acorns in fall and early winter that a poor acorn year can result in significant declines in their populations (CDFG, 1988).

  Due to the extensive canopy and sub-canopy existing within mature stands of oak woodland, a wide variety of bird species have the potential to frequent oak canopies to utilize them as protective cover and for the purposes of nesting. Typical bird species include acorn woodpecker, Nuttall's woodpecker, downy woodpecker, hairy woodpecker, northern flicker, white-breasted nuthatch, brown creeper, ash-throated flycatcher, Pacific-slope flycatcher, oak titmouse, chestnut-backed chickadee, Bewick's wren, and western scrub-jay. These bird species along with various small mammal species that inhabit the forest floor, in turn, provide the prey base for

predators such as sharp-shinned hawk, Cooper's hawk, western screech owl, and great-horned owl within oak woodland habitat areas. Numerous woodrat houses were also observed in close association with the oak woodland habitat. Further, mature oak woodlands are an important habitat for the survival of several bat species, including the pallid bat, as they provide downed woody debris for roosting.

- ***Riparian Woodland.*** In general, riparian habitats provide food, water, migration and dispersal corridors, and escape, nesting, and thermal cover for an abundance of wildlife. This includes habitat for a variety of songbirds including but not limited to common yellowthroat, oak titmouse, warbling vireo, black-headed grosbeak and yellow warbler, all of which were observed an/or detected within the riparian woodland habitat area of Pismo Creek during Padre's field surveys on-site. This habitat also provides cover for larger animals using the associated water body, including mule deer, gray fox, and raccoon. Riparian habitats also provide roosting and foraging habitat for several raptorial species such as the red-shouldered hawk.
- ***Streambed/Bank.*** During the time of the 2007 field surveys, the creek channel contained low to moderate water flows. Several adult American beavers and associated waterside burrows and multiple dams were observed in the creek corridor during the survey(s). The beaver habitation of the streambed has resulted in substantial modification to the existing stream channel morphology (i.e., creation of several large pools), which may create additional habitat for other wildlife such as the southwestern pond turtle which were observed during the survey. Native steelhead trout were also observed within Pismo Creek during field survey(s), including other native fish species, such as three-spine stickleback, speckled dace, prickly sculpin, and introduced species such as mosquito fish, and channel catfish.
- ***Seasonal Freshwater Wetland.*** Species expected to frequent the seasonal emergent wetland habitats would likely be limited to those wildlife species that typically occupy surrounding grassland habitats as discussed above. However, wetland habitats containing standing water or moist substrates for extended periods would also provide suitable habitat for amphibians including but not limited to Pacific chorus frog and Pacific slender salamander. Reptilian species such as the western aquatic garter snake would also frequent these areas in search of prey, such as Pacific chorus frog adults and larvae. In addition, various shorebirds including killdeer, may frequent seasonal freshwater wetland areas for foraging purposes during various times of the year.
- ***Bulrush-Cattail Series.*** Wildlife expected to occur within the bulrush-cattail series is similar to the amphibian and reptile species listed above within the seasonal freshwater wetland habitat areas in addition to numerous aquatic macroinvertebrates including but not limited to water boatmen and water striders. Birds such as the red-winged blackbird, and song sparrow are also common in within this habitat type. Lastly, during Padre's field surveys largemouth bass were observed in association with the bulrush-cattail series.

- ***Coyote Brush Series.*** As stated above, this community primarily occurred along borders of existing well pads in close association with grassland, oak woodland, and chaparral habitat areas (i.e., intermingled). Though vegetative productivity is lower in the coyote brush scrub than in adjacent chaparral/woodland habitats, it appears to support numbers of vertebrate species roughly equivalent to those in surrounding areas. As such, those species expected to occur in adjacent habitats would also be expected to frequent the coyote brush series existing within the project area. A complete listing of the wildlife species observed during field surveys and/or expected to occur within the various plant communities is provided as in Appendix E.

Special-Status Plant Species. Special-status plant species are either listed as endangered or threatened under the Federal or California Endangered Special Acts, or rare under the California Native Plant Protection Act, or considered to be rare (but not formally listed) by resource agencies, professional organizations (e.g., Audubon Society, CNPS, The Wildlife Society), and the scientific community. For the purposes of this project, special-status plant species are defined in Table 5.3-2.

Based on data provided by USFWS, coordination with CDFG, a query of the CNDDB, and a review of pertinent literature, a list of potential special-status species occurring in the general vicinity of the project was compiled. The results of the literature search conducted for this impact analysis indicates that 30 special-status plant species have the potential to occur in the project region. Table 5.3-3 lists these species, their current status, habitat requirements, presence of habitat, and the nearest known location relative to the Plains Exploration and Production Oil facility.

Table 5.3-2. Definitions of Special-Status Plant Species

Special-Status Plant Species
➢ Plants listed or proposed for listing as threatened or endangered under the Federal Endangered Species Act (50 CFR 17.12 for listed plants and various notices in the Federal Register for proposed species).
➢ Plants that are candidates for possible future listing as threatened or endangered under the Federal Endangered Species Act (Federal Register Vol. 71, No. 176, pp. 53756-53835, September 12, 2006).
➢ Plants that meet the definitions of rare or endangered species under the CEQA (*State CEQA Guidelines,* Section 15380).
➢ Plants considered by the CNPS to be "rare, threatened, or endangered" in California (Lists 1B and 2 in California Native Plant Society, 2001).
➢ Plants listed by CNPS as plants about which we need more information and plants of limited distribution (Lists 3 and 4 in California Native Plant Society, 2001).
➢ Plants listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 CCR 670.5).
➢ Plants listed under the California Native Plant Protection Act (California Fish and Game Code 1900 et seq.).
➢ Plants considered sensitive by other Federal agencies (i.e., U.S. Forest Service, Bureau of Land Management), state and local agencies or jurisdictions.
➢ Plants considered sensitive or unique by the scientific community or occurring at the limits of its natural range (*State CEQA Guidelines*, Appendix G).

Table 5.3-3. Special-Status Plant Species Potentially Occurring in the Project Area

Common Name *Scientific Name*	Status	Habitat	Habitat Present/ Absent	Nearest Known Location
Beach spectaclepod *Dithyrea maritima*	-- / ST / List 1B	Coastal dunes, coastal scrub	A	Pismo State Beach, 1.5 miles south of Pismo Beach, 3 miles west of Arroyo Grande (CNDDB, 2007)
Black-flowered figwort * *Scrophularia atrata*	-- / -- / List 1B	Closed-cone coniferous forest, chaparral, coastal dunes, coastal scrub, riparian scrub	P	Species observed on-site during botanical surveys (Padre, 2003)
Blochman's dudleya *Dudleya blochmaniae* ssp. *blochmaniae*	-- / -- / List 1B	Coastal scrub, coastal bluff scrub, valley and foothill grassland	P	Froom Ranch, west of intersection of Los Osos Valley Road and U.S. 101, just outside city limits of San Luis Obispo (CNDDB, 2007)
Blochman's leafy daisy *Erigeron blochmaniae* ssp. *blochmaniae*	-- / -- / List 1B	Coastal dunes	A	Pismo Beach State Park (CNDDB, 2007)
Brewer's spineflower *Chorizanthe breweri*	-- / -- / List 1B	Chaparral, cismontane woodland, coastal scrub, closed-cone coniferous forest	P	Price Canyon Road about 1 mile southwest of Highway 227, south of San Luis Obispo (CNDDB, 2007)
Cambria morning-glory *Calystegia subacaulis* ssp. *episcopalis*	-- / -- List 1B	Chaparral, cismontane woodland	P	Northwest of SLO County Airport, Tank Farm Road vicinity (CNDDB, 2007)
Chorro creek bog thistle *Cirsium fontinale* var. *obispoense*	FE/ SE / List 1B	Chaparral, cismontane woodland, and serpentine seeps	P	Froom Ranch, west of Los Osos Valley Road, South of San Luis Obispo (CNDDB, 2007)
Congdon's tarplant *Centromadia parryi* ssp. *congdonii*	-- / -- / List 1B	Valley and foothill grassland	P	Northwest of SLO County Airport, Tank Farm Road vicinity (CNDDB, 2007)
Fuzzy prickly phlox* *Leptodactylon californicum* ssp. *tomentosum*	-- / -- / List 4	Chaparral, coastal dunes and scrub	P	Species observed during botanical surveys conducted on-site (Levine Fricke, 2002)
Hoover's bent grass * *Agrostis hooveri*	-- / -- / List 1B	Chaparral and grassland	P	Species observed during botanical surveys conducted on-site (Levine Fricke, 2002)
Hoover's button-celery *Eryngium aristulatum* var. *hooveri*	-- / -- / List 1B	Vernal pools	A	Northwest of SLO County Airport, Tank Farm Road vicinity (CNDDB, 2007)
Indian knob mountainbalm *Eriodictyon altissimum*	FE / SE / List 1B	Chaparral, cismontane woodland	P	Indian knob, about 4 miles north of Pismo and 3 miles south of San Luis Obispo (CNDDB, 2007)
Jones's layia *Layia jonesii*	-- / -- / List 1B	Chaparral, valley foothill grassland	P	1.75 mile southwest of San Luis Obispo (CNDDB, 2007)

Table 5.3-3. (Continued)

Common Name *Scientific Name*	Status	Habitat	Habitat Present/ Absent	Nearest Known Location
Leafy tarplant *Deinandra increscens* ssp. *foliosa*	-- / -- / List 1B	Valley and foothill grassland	P	Immediately NE of Lopez Reservoir (CNDDB, 2007)
Marsh sandwort *Arenaria paludicola*	FE / SE / List 1B	Marshes and swamps	A	Pismo Beach, San Luis Obispo County (CNDDB, 2007)
Mesa horkelia *Horkelia cuneata* ssp. *puberula*	-- / -- / List 1B	Chaparral, cismontane woodland, coastal scrub	P	Approx. 1 mile NE of Pismo Beach (CNDDB, 2007)
Morro manzanita *Arctostaphylos morroensis*	FT / -- / List 1B	Chaparral, cismontane woodland, coastal dunes, coastal scrub	P	Edge of Prefumo Canyon Road in Prefumo Canyon, Southwest of San Luis Obispo (CNDDB, 2007)
Obispo Indian paintbrush *Castilleja densiflora* ssp. *obispoensis*	-- / -- / List 1B	Valley and foothill grassland	P	East of Pismo Creek, near eastern boundary of Pismo Beach (CNDDB, 2007)
Pecho manzanita *Arctostaphylos pechoensis*	-- / -- / List 1B	Closed cone coniferous forest, chaparral, and coastal scrub	P	Davis Canyon, Irish Hills (CNDDB, 2007)
Pismo clarkia * *Clarkia speciosa* ssp. *immaculata*	FE / SR / List 1B	Chaparral, cismontane woodland, valley and foothill grassland	P	Species observed on-site during botanical surveys (Padre, 2003 & 2007; Levine Fricke, 2001& 2006)
Saint's Daisy* *Erigeron sanctarum*	-- / -- / List 4	Chaparral, cismontane woodland and coastal scrub	P	Species observed during botanical surveys conducted on-site (Levine Fricke, 2002)
San Luis mariposa lily *Calochortus obispoensis*	-- / -- / List 1B	Chaparral, coastal scrub, valley and foothill grassland	P	Western ridge of Indian Knob, about 4 miles north of Pismo Beach (CNDDB, 2007)
San Luis Obispo County lupine *Lupinus ludovicianus*	-- / -- / List 1B	Chaparral, cismontane woodland	P	Hills north of Price Canyon, north of Pismo Creek, NNE of Pismo Beach (CNDDB, 2007)
San Luis Obispo dudleya *Dudleya abramsii* ssp. *murina*	-- / -- / List 1B	Chaparral, cismontane woodlands, associated with serpentine outcvrops	A	Approx. 4 miles north of Avila Beach, north slope of See Canyon, (CNDDB, 2007)
San Luis Obispo mariposa lily *Calchortus simulans*	-- / -- / List 1B	Valley and foothill grassland, cismontane woodland, chaparral	P	Approx. 4 miles north of Avila Beach, on La Quinta de Avila Ranch (CNDDB, 2007)
Santa Lucia manzanita *Arctostaphylos luciana*	-- / -- / List 1B	Chaparral	P	1.75 miles NNE of Slide Hill, East of San Luis Obispo (CNDDB, 2007)
Santa Margarita manzanita *Arctostaphylos pilosula*	-- / -- / List 1B	Closed-cone coniferous forest, and chaparral.	P	Vicinity of Indian Knob, about 3.5 miles NNW of Pismo Beach, South of San Luis Obispo (CNDDB, 2007)
Straight-awned spineflower *Chorizanthe rectispina*	-- / -- / List 1B	Chaparral, cismontane woodland, coastal scrub	P	Just west of Carpenter Canyon Road, about 0.5 north of Printz Road (CNDDB, 2007)

Table 5.3-3. (Continued)

Common Name *Scientific Name*	Status	Habitat	Habitat Present/ Absent	Nearest Known Location
Surf thistle *Cirsium rhothophilum*	-- / ST / List 1B	Coastal dunes, costal bluff scrub	A	Pismo Beach (CNDDB, 2007)
Well's manzanita * *Arctostaphylos wellsii*	-- / -- / List 1B	Chaparral, closed-cone coniferous forest	P	Species observed during botanical surveys conducted on site (Padre, 2003 & 2007)

Status Codes:

FE	Federal Endangered (U.S. Fish and Wildlife Service [USFWS])
FT	Federal Threatened (USFWS)
List 1B	Plants rare, threatened, or endangered in California and elsewhere (CNPS)
List 4	"Watch list" for plants of limited distribution (CNPS)
SE	State Endangered (CDFG)
ST	State Threatened (CDFG)
SR	State Rare (CDFG)
*	Species observed during recent surveys (Padre 2003, 2007 Levine Fricke 2002)

To determine the presence and/or absence of the special-status plant species listed in Table 5.3-3 above, a focused botanical survey of the project site and proposed pipeline routes was conducted on May 24 and 30, 2007, during the typical flowering period for the majority of the species listed. For a complete listing of vascular flora observed within the project site, please refer to Appendix E.

Special-status plant species that could potentially occur within the project site based on known occurrences within the vicinity of Price Canyon or adjacent portions of San Luis Obispo County included Blochman's dudleya, Brewer's spineflower, Jones' layia, San Luis mariposa lily, Chorro creek bog thistle, Congdon's tarplant, and leafy tarplant. However, none of these species were observed during the 2007 botanical surveys conducted within the project area or during past botanical surveys conducted by Padre in 2003, Levine Fricke in 2000, 2002 and SAIC in 1994.

In addition, Well's manzanita was the only species of *Arctostaphylos* identified in the project area and represents the dominant component of the Central maritime chaparral habitat occurring within the site. Therefore, Morro manzanita, Santa Margarita manzanita, Pecho manzanita, and Santa Lucia manzanita are not expected to occur within the project site. Moreover, special-status plant species associated with specific habitats types such as surf thistle, beach spectaclepod, La Graciosa thistle, and marsh sandwort were not observed during surveys and are not expected to occur within the site due to the lack of suitable habitat (i.e., require coastal foredune and marsh habitat, which is not present within the project site).

Two special-status plant species were observed on the project site during the 2007 botanical surveys including Pismo clarkia and Well's manzanita. Additionally, Hoover's bent grass and Saint's daisy were previously identified and mapped within the project area by Levine Fricke (2002). The locations of these plant species are illustrated on the following Figure 5.3-2.

It should be noted that the location of the Well's manzanita has not been identified on Figure 5.3-2 because of its dominance in the Central maritime chaparral habitat.

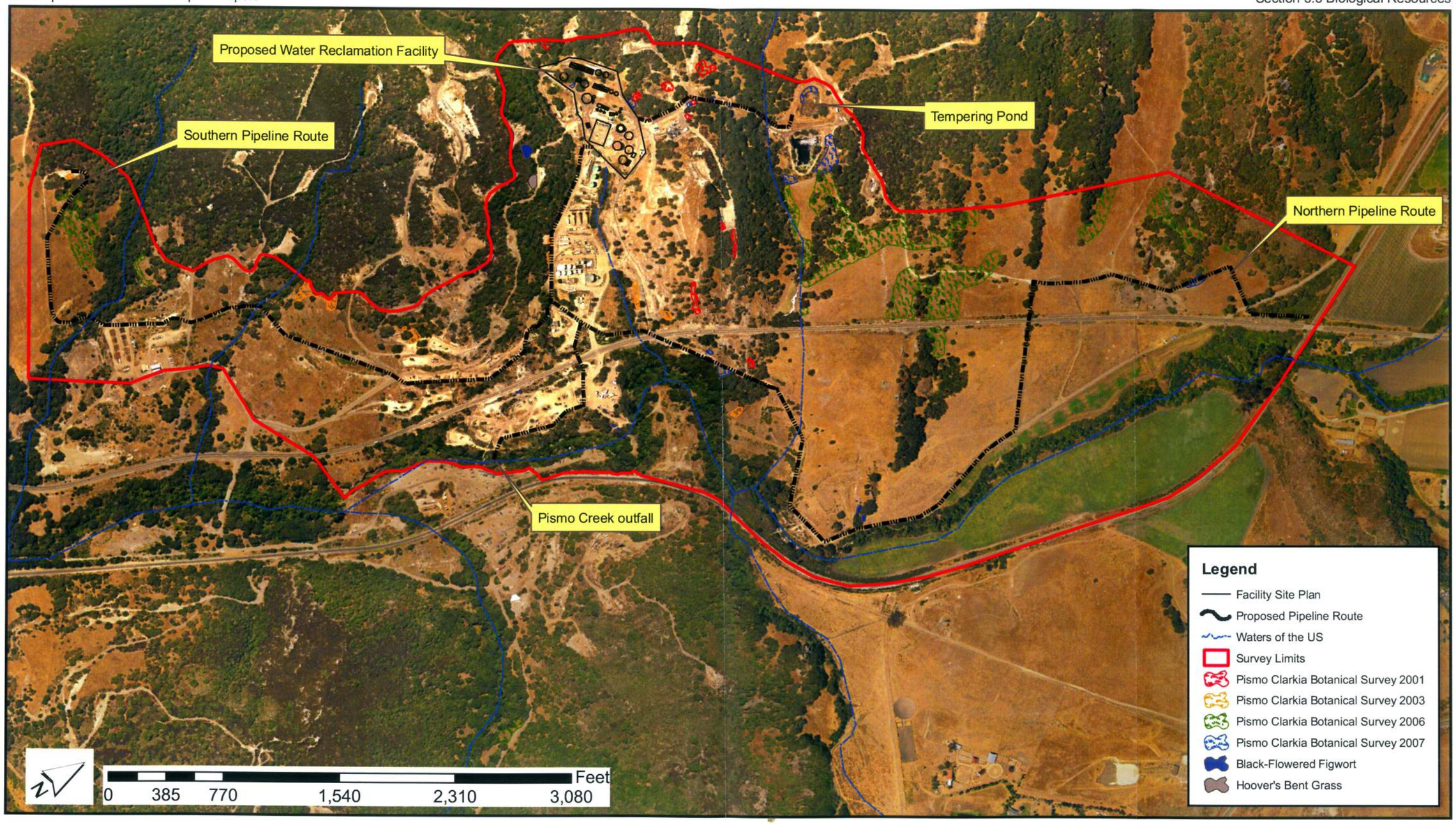
In addition, fuzzy prickly phlox was identified within the vicinity of the project site by Levine Fricke (2002); however, outside the proposed impact areas of the project. Further, the manzanita-dominated chaparral occurring along the proposed pipeline route in the southern portion of the site is potentially suitable habitat for Indian Knob mountainbalm, which is known to occur just northwest of the site. San Luis Obispo County lupine would also be expected on thin, sandy soils of the chaparral and is known to occur approximately one mile north of Price Canyon (Levine Fricke, 2002). However, none of these three sensitive plant species were observed during the 2003 or 2007 botanical field surveys.

For the purposes of impact analysis, the following briefly presents the legal status and applicable ecological and range information for those special-status plant species identified within the proposed impact areas and for those that have a high likelihood of occurrence:

- **Pismo Clarkia (*Clarkia speciosa* spp. *immaculata*).** The Pismo clarkia is an annual herb that typically blooms from May to June, and is only known from four extant occurrences (CNPS, 2001). It is Federally listed as endangered, California listed as rare, and is on the CNPS List 1B for plants rare, threatened or endangered in California and elsewhere. Pismo clarkia typically occurs within chaparral, cismontane, and grassland habitats and is generally closely associated with oak woodland habitat. Many occurrences of Pismo clarkia were noted within the project site, most commonly within areas of annual grassland located along the perimeter of oak trees road cuts and within the proposed water reclamation facility building site and tempering pond location (see Figure 5.3-2).
- **Black-flowered figwort (*Scrophularia atrata*).** Black-flowered figwort is a Federal species of concern and is a CNPS list 1B species. This species typically occurs in chaparral, coastal dunes, and riparian scrub habitat and is most commonly associated with rock outcroppings. Black-flowered figwort is a tall, perennial herb that blooms from April through June. Suitable habitat to support this species exists in several locations within the project area. In addition, black-flowered figwort was identified on-site during previous botanical surveys (Padre, 2003). However, this species was not observed within the proposed project impact areas during the 2007 botanical surveys.
- **Well's manzanita (*Arctostaphylos wellsii*).** Well's manzanita is a CNPS list 1B species and is endemic to San Luis Obispo County. This chaparral shrub species blooms from December to April and occurs primarily on the Pismo sandstone formation in southern San Luis Obispo County (SAIC, 1994). As stated above, this species represents the dominant shrub within the maritime chaparral habitat of the project area and occurs around the proposed construction staging area, north of the proposed water reclamation facility and along the proposed pipeline route that traverses the southern portion of the project site.

- **Hoover's bent grass (*Agrostis hooveri*).** Hoover's bent grass is a CNPS List 1B species. This species occurs in chaparral, cismontane woodland, valley foothill grassland communities with sandy substrate. Hoover's bent grass is a tufted perennial that typically flowers during the month of June (Skinner and Pavlik, 1994). Hoover's bent grass was identified by Levine Fricke (2002) on road cuts on the western portion of the site, on thin soil at the margins of oak canopies (see Figure 5.3-2). However, this species was not observed within the proposed project impact areas during the 2007 botanical surveys.
- **Saint's daisy (*Erigeron sanctarum*).** Saint's daisy is a CNPS List 4 species. This species is a small herbaceous perennial in the sunflower family (Asteraceae), which occurs in chaparral, cismontane woodland and coastal scrub communities at elevations below 300 meters. The blooming period for this species is typically from March to July. Saint's daisy was identified by Levine Fricke (2002) adjacent to a road cut within the eastern portion of the site (see Figure 5.3-2). However, this species was not observed within proposed project impact areas during the 2007 botanical surveys.
- **Fuzzy prickly phlox (*Leptodactylon californicum* ssp. *tomentosum*).** Fuzzy prickly phlox is a CNPS List 4 species. This species is a small herbaceous perennial in the phlox family (Polemoniaceae), which typically occurs in openings within chaparral habitat on dry hillsides at elevations up to 1500 meters. The blooming period for this species is typically from February to May. Fuzzy prickly phlox was identified outside the proposed impact areas by Levine Fricke (2002).
- **Indian Knob mountainbalm (*Eriodictyon altissimum*).** Indian knob mountain balm is a Federal and State endangered plant species, and a CNPS List 1B species. This species is a woody shrub in the waterleaf family (Hydrophyllaceae), which typically occurs along sandstone ridges and chaparral habitat in southwest San Luis Obispo County at elevations at approximately 250 meters. The blooming period for this species is typically from March to June and it has the potential to occur within chaparral habitat areas along the proposed pipeline route in the southern portion of the site.
- **San Luis Obispo County lupine (*Lupinus ludovicianus*).** San Luis Obispo County lupine is a Federal species of concern and a CNPS List 1B species. This species is a small herbaceous perennial in the pea family (Fabaceae) and is endemic to San Luis Obispo County. It typically occurs in open grasslands and oak woodland habitat up to 500 meters. The blooming period for this species is typically from April to June and it has the potential to occur the within adjacent oak woodland habitat areas of the site.

PAGE INTENTIONALLY LEFT BLANK



Source: ADAIR and FIRMA

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

SPECIAL-STATUS SPECIES MAP
FIGURE 5.3-2

- **Special Status Wildlife Species.** For the purposes of this project, special-status wildlife species are defined in Table 5.3-4. Literature research and field surveys conducted for this impact analysis indicates that 22 special-status wildlife species have the potential to occur in the vicinity of project components. Information regarding regulatory status and known location of these species relative to project components is provided in Table 5.3-5. Additional discussion of special-status wildlife species is provided below.

Table 5.3-4. Definitions of Special-Status Wildlife Species

Special-Status Animal Species
➢ Animals listed or proposed for listing as threatened or endangered under the Federal Endangered Species Act (50 CFR 17.11 for listed animals and various notices in the Federal Register for proposed species).
➢ Animals that are candidates for possible future listing as threatened or endangered under the Federal Endangered Species Act (Federal Register Vol. 71, No. 176, pp. 53756-53835, September 12, 2006).
➢ Animals that meet the definitions of rare or endangered species under the CEQA (*State CEQA Guidelines*, Section 15380).
➢ Animals listed or proposed for listing by the State of California as threatened and endangered under the California Endangered Species Act (14 CCR 670.5).
➢ Animal species of special concern to the CDFG (Remsen, 1978 for birds; Williams, 1986 for mammals).
➢ Animal species that are fully protected in California (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).

Table 5.3-5. Special-Status Wildlife Species Potentially Occurring within the Project Area

Common Name ***Scientific Name***	**Status**	**Nearest Known Occurrence(s)**
Invertebrates		
Monarch butterfly *Danaus plexippus*	SA	Pismo Dunes State Vehicular Recreation Area District Office, Grover Beach (CNDDB, 2007)
Sandy beach tiger beetle *Cicindela hirticollis gravida*	SA	Pismo Beach (CNDDB, 2007)
Vernal pool fairy shrimp *Branchinecta lynchi*	FT	Northwest of SLO County Airport, Tank Farm Road vicinity (CNDDB, 2007)
Fish		
South-central California coast steelhead* *Oncorhynchus mykiss irideus*	FT, CSC	Pismo Creek and West Corral de Piedra Creek, Price Canyon (CNDDB, 2007)
Tidewater goby *Eucyclogobius newberryi*	FE, CSC	Pismo Creek (from mouth to 1.0 mile upstream), Pismo Beach (CNDDB, 2007)
Reptiles		
California horned lizard *Phrynosoma coronatum frontale*	CSC	El Chorro Regional Park, San Luis Obispo County (CNDDB, 2007); Guadalupe Dunes, San Luis Obispo County (Unocal, 2000)
Southwestern pond turtle* *Clemmys marmorata pallida*	CSC	Species observed in Pismo Creek during field surveys (Padre, 2007)
Two striped garter snake *Thamnophis hammondi*	CSC	Cuyama River, Los Padres National Forest (CNDDB, 2003)

Table 5.3-5. (Continued)

Common Name ***Scientific Name***	**Status**	**Nearest Known Occurrence(s)**
Amphibians		
California red-legged frog *Rana aurora draytonii*	FT, CSC	Unnamed tributary to Pismo Creek, 1.5 miles north of Pismo Beach (CNDDB, 2007)
Birds		
Western snowy plover *Charadrius alexandrinus nivosus*	FT (nesting), CSC (nesting), M	Pismo State Beach (CNDDB, 2007)
California least tern *Sterna antillarum browni*	FE (nesting colony), SE (nesting colony), M	Pismo State Beach (Padre, 2003)
Brown pelican *Pelecanus occidentalis*	FE (nesting colony), SE (nesting colony), M	Pismo State Beach (Padre, 2003)
Golden eagle* *Aquila chrysaetos*	CSC (nesting), FP, M	Observed during 2007 surveys conducted on-site.
Cooper's hawk * *Accipiter cooperii*	CSC (nesting), M	Observed during 2003 surveys conducted on-site.
American peregrine falcon * *Falco peregrinus anatum*	SE (nesting), FP, M	Observed during 2003 surveys conducted on-site.
Loggerhead shrike *Lanius ludovicianus*	CSC (nesting), M	Observed on site during previous survey (ERCO, 1981)
Northern harrier *Circus cyaneus*	CSC (wintering), M	Known from region; nearest occurrence unknown
Sharp-shinned hawk *Accipiter striatus*	CSC (nesting), M	Known from region; nearest occurrence unknown
Southwestern willow flycatcher *Empidonax trailli extimus*	SE (nesting), M	Known from region; nearest occurrence unknown
Yellow warbler* *Dendroica petechia*	CSC (nesting), M	Recorded at Pismo Beach and Oceano (SAIC, 1994)
Mammals		
San Diego desert woodrat *Neotoma lepida intermedia*	CSC	Green Peak, approximately 1.5 miles southeast of Diablo Canyon (CNDDB, 2003)
Southern sea otter *Enhydra lutris nereis*	FT, FP	Pismo State Beach (Padre, 2003)
American badger *Taxidea taxus*	CSC	Price Canyon Road, 3 miles north of Pismo Beach (CNDDB, 2007)

Status Codes:
- FE Federal Endangered (USFWS)
- FT Federal Threatened (USFWS)
- FC Federal Candidate Species (USFWS)
- SE State Endangered (CDFG)
- ST State Threatened (CDFG)
- CSC California Species of Special Concern (CDFG)
- FP Fully Protected under California Fish and Game Code
- SA Special animal (CDFG)
- M Protected under the Migratory Bird Treaty Act of 1918
- * Species observed during recent surveys (Padre 2003 & 2007)

For the purposes of impact analysis, the following briefly presents the legal status and applicable ecological and range information for those special-status wildlife species identified within the proposed impact areas and/or for those that have a high likelihood of occurrence based on the presence of suitable habitat. Special-status wildlife species associated with coastal and/or marine habitats located west of the project area such as the southern sea otter, least tern, western snowy plover, brown pelican, and sandy beach tiger beetle were not observed during surveys and are not expected to occur within the site due to the lack of suitable habitat. In addition, no vernal pools are present within the project site; therefore, vernal pool fairy shrimp are not expected to occur within the site due to lack of suitable habitat.

Invertebrates

- **Monarch butterfly (Danaus plexippus).** The overwintering habitats for the monarch butterfly are considered to be of special concern by CDFG. This species is known to roost in winter (usually in dense concentrations) within groves of eucalyptus or pine trees. Autumnal roosts are abandoned early (November or December) by individuals seeking more favorable conditions, while permanent roosts begin forming in October and persist into February. There are several known eucalyptus woodland monarch butterfly roosting areas located within coastal San Luis Obispo County. The nearest known overwintering location to the project area is in Pismo Beach. Several groves of eucalyptus occur within the site however no monarch congregations were observed during the numerous field surveys conducted by Padre and Levine Fricke.

Fish

- **South-central California coast steelhead (*Oncorhynchus mykiss irideus*).** Steelhead trout are the anadromous form of rainbow trout (McEwan and Jackson 1996). Steelhead historically ranged from Alaska southward to the California-Mexico border, though current data suggests that the Ventura River is presently the southernmost drainage supporting substantial steelhead runs. Periodically, steelhead are reported within the Santa Clara River and Malibu Creek. Southern steelhead are important in that they represent the southernmost portion of the native steelhead range in North America, having ecologically and physiologically adapted to seasonally intermittent coastal California streams. Optimal habitat for steelhead throughout its entire range on the Pacific Coast can generally be characterized by clear, cool water with abundant instream cover (e.g., submerged branches, rocks, logs), well-vegetated stream margins, relatively stable water flow, and a 1:1 pool-to-riffle ratio (Raleigh *et al.* 1984). However, steelhead are occasionally found in reaches of streams containing habitat which would be considered less than optimal. Steelhead within the central coast region begin moving up coastal drainages (including Pismo Creek) following the first substantial rainfall of the fall season typically entering freshwater from December to March. It is for this reason that the south-central California coastal steelhead trout are considered winter run fish. Spawning typically occurs in the spring in pool tail or riffle areas that consist of clean coarse gravels. Deposited eggs incubate for approximately 3 to 4 weeks, with

hatched fry rearing within the gravel interstices for an additional 2 to 3 weeks. Emergent fry rear at the stream margins near overhanging vegetation. Juveniles (smolts) after rearing for 1 to 3 years within freshwater, and post-spawning adults out-migrate to the ocean from March to July, depending on stream flows. Therefore, juvenile steelhead can be found within Pismo Creek at all times of the year, while adults are more likely to be found from February to July.

All populations of steelhead occurring within the south-central California coast Distinct Population Segment (DPS) Region - which is defined as that geographic region north of the Santa Maria River, northward to (and including) the Pajaro River (and it's tributaries), Santa Cruz County, were listed as Federally Threatened by the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) in August 1997 (62 FR 43937, August 18, 1997; 71 FR 834, January 5, 2006). The NMFS (a.k.a. NOAA Fisheries) lists habitat deterioration due to sedimentation and flooding related to land management practices, and potential genetic interaction with hatchery rainbow trout, as risk factors to steelhead within the south-central California coast DPS. As such, this species is protected under the FESA.

Critical habitat designations have been established to protect steelhead in Pismo Creek. Critical habitat as defined by NOAA Fisheries is any physical or biological feature that is essential to the conservation of the species including space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover for shelter; sites for breeding, reproduction, and habitats that are protected from disturbance or are representative of the historical geographical and ecological distribution of a species (50 FR No. 226 / September 2, 2005).

Steelhead typically require cool, clear flowing water with clean gravel in which to spawn. Their primary food source, benthic macroinvertebrates (BMI) also require these general habitat conditions. During 2007 field visit(s), clean gravel within the stream channel only occurred immediately downstream of several existing beaver dams which had concentrated the water flow and subsequently kept small portions of gravel and small cobble clean. It is unknown how many beavers reside in the vicinity of the project site; however, beavers can be both beneficial and detrimental to steelhead. Specifically, they have the tendency to create large ponds which provide good over-summering rearing habitat for steelhead smolts, however these ponds also allow for fine sediments to deposit in the creek bed further decreasing the localized BMI productivity available to steelhead for consumption. BMI samples collected by Entrix in 2006 indicated a lack of Plecoptera (pollution intolerant species) within project area, and a dominance of BMI species within the mid-range for pollution tolerance. Snorkel surveys identified a thick layer of silt and algae within the vicinity of the existing beaver dams. Due to the poor visibility, accurate in-depth steelhead counts were unattainable, however several steelhead fry (~1-inch total length) were observed in the vicinity of the project site indicating spawning of steelhead had obviously been successful in 2007 despite the existing marginal

conditions. Additionally, one juvenile steelhead was observed beneath an undercut bank within the immediate vicinity of the proposed facility outfall location.

The adjoining landowner immediately downstream of the PXP property has a cattle operation and there is no riparian fencing increasing current sediment and nutrient loading of this portion of the creek. No beavers or signs of beavers were observed during field surveys at this location and the habitat was of better quality. The existing pools were not completely silted-in and riffle habitat was present increasing the potential available BMI productivity. Further downstream, Pismo Creek becomes more entrenched and flows through a bedrock section. Land use practices adjacent to the lower 1-mile of Pismo Creek that may impact water quality or quantity are recreation (Price House Historic Property), a sewage treatment facility, residential developments. Ultimately, the creek enters Pismo Estuary which transects the City of Pismo Beach. Current upstream land uses coupled with impacts from the urban setting of the City of Pismo have resulted in substantially decreased water quality conditions in the estuary. The estuary is an important feature for both listed steelhead and tidewater goby (see discussion below) in the watershed. It is the location where smoltification of salmonids begins to allow the next phase of the lifecycle to be completed and also contains most of the spawning and rearing habitat for the tidewater goby. Current low flow conditions through the estuary increases temperature, decreases water quality, and has the potential to prevent migration of anadromous fish to the ocean due to build-up of large sand bars which close the mouth of the estuary.

In summary, south-central California coast steelhead are known to occur throughout the Pismo Creek watershed and were observed during the 2007 field surveys within 500 feet of the proposed outfall (Padre, 2007).

- **Tidewater goby (*Eucyclogobius newberryi*).** The tidewater goby, is a small fish, rarely exceeding 2-inches in length, and is characterized by large pectoral fins, a blunt elongate tail, and a ventral "sucker-like" disk formed by the complete fusion of the pelvic fins. The tidewater goby is a mottled dark olive color and is nearly translucent. The best field mark for identifying tidewater goby is the transparent, whitish or yellowish triangular area on the upper 1/4 to 1/3 of the first, spinous dorsal fin (USFWS, 2005). The tidewater goby, found only in California, is almost unique among fish along the Pacific coast in its restriction to brackish waters of coastal wetlands. It historically occurred in at least 87 California coastal lagoons from San Diego County to Humboldt County; however has disappeared from most of these sites.

  Tidewater goby habitat consists of brackish shallow lagoons and lower stream reaches where the water is fairly still, but not stagnant. The Pismo Creek estuary is a location identified to currently support tidewater goby, which have been documented in water with salinity levels typically less than 12 parts per thousand (ptt), temperature levels from 35 to 73 degrees Fahrenheit (F°), and water depths typically less than four feet. The tidewater goby apparently spends all life stages in lagoons. It may enter the marine environment only when forced out of the lagoon by

strong storms and migrate up tributaries in close proximity to the estuary for spawning purposes. Reproduction occurs year-round although distinct peaks in spawning, often in April and May, do occur. Female tidewater goby lay 6 to 12 clutches of eggs per year (Swenson, 1999). When breeding, males dig vertical burrows for females to deposit eggs. Within nine to ten days larvae emerge and are approximately ¼-inch in length. The larvae inhabit vegetated areas within the lagoon until they are about ¾-inch in length.

The tidewater goby is regulated by the USFWS and was proposed for listing under the ESA as endangered in March 1994 (59 FR 5494, March 7, 1994). Tidewater goby populations within the Central Coast Unit (CC) are those located from the Big Sur Coast south through San Luis Obispo County. The Sub-Unit CC3 completes coverage of San Luis Obispo county from Estero Point north of Morro Bay to the southern county line (Santa Maria River begins Santa Barbara County) which contains Pismo Creek.

Critical habitat designations have been established to protect tidewater goby populations. Critical habitat includes the stream channels and their associated wetlands, flood plains and estuaries. These habitat areas provide the primary biological needs of foraging, shelter, reproduction, and dispersal which are essential for the conservation of the tidewater goby (USFWS, 2005). Initially critical habitat was designated only for San Diego and Orange counties (65 FR 69693, November 20, 2000). Subsequently critical habitat has been proposed for other coastal California counties including San Luis Obispo County (71 FR68913, November 28, 2006). Although no tidewater goby were observed during surveys of the site, they are known to occur within the Pismo Creek estuary.

Reptiles

- **California horned lizard (*Phrynosoma coronatum frontale*).** The California horned lizard is a Federal species of concern and a California species of special concern that occurs in a variety of open habitats that provide sites for basking, sandy or sandy-loam substrates in which night-time burial can occur, and have a suitable prey base (the species feeds almost exclusively on native ants). It was historically distributed throughout the Central and Coast Range, but now occurs at scattered, disjunct locations within this range. The California coast horned lizard produces clutches of 6 to 21 eggs from May to June and hatching typically occurs in August and September. The chaparral habitat areas of the project site may provide suitable habitat for this species, thus vegetation clearing activities during construction of the proposed facility and associated pipeline routes has the potential to result in impacts to this species.
- **Southwestern pond turtle (*Clemmys marmorata pallida*).** The southwestern pond turtle is a Federal species of concern and a California species of special concern. It is an aquatic turtle inhabiting streams, marshes, ponds, and irrigation ditches within woodland, grassland, and open forest communities. However, it requires upland sites for nesting and over-wintering. Stream habitat must contain large, deep pool

areas (six feet) with moderate-to-good plant and debris cover, and rock and cobble substrates for escape retreats. The southwestern pond turtle is known to occur within the Pismo Creek watershed and was observed approximately 500 feet downstream of the proposed facility outfall location during field surveys (Padre, 2007). As such, the proposed project has the potential to result in direct impacts to this species during project implementation, as well as potential long-term impacts due to operation of the facility.

- **Two-striped garter snake (Thamnophis hammondi).** The two-striped garter snake is a California species of special concern which is highly aquatic and is typically found near permanent fresh water streams associated with willow habitat. Small mammal burrows are used as over-wintering sites for the snake (Jennings, 1994). This species occurs historically and currently throughout southern California streams, including the central coast. Existing habitat throughout the Pismo Creek watershed is suitable for this species to occur. Due to the mobility of this species and tendency to inhabit upper banks of riparian corridors, direct impacts to this species may occur during vegetation clearing within the vicinity of Pismo Creek or nearby habitats. Additionally, the proposed project has the potential to result in long-term impacts to this species due to operation of the facility.

Amphibians

- **California red-legged frog (*Rana aurora draytonii*)** is a Federally listed threatened species and a California species of special concern. It formerly ranged from northern California south along the Pacific Coast, west of the Cascade Mountains and the Sierra Nevada, to northern Baja California at elevations from near sea level to 8,000 feet. Populations remain in the San Francisco Bay Area, along the California coast, and the western edge of the Central Valley.

  The California red-legged frog (CRLF) occurs in different habitats depending on their life stage and season. All stages are most likely to be encountered in and around breeding sites, which include coast lagoons, marshes, springs, permanent and semi-permanent natural ponds, ponded and backwater portions of streams, as well as artificial impoundments such as stock ponds, irrigation ponds, and siltation ponds. They require dense and extensive vegetative cover of emergent and bank vegetation including willow (*Salix* sp.), cattail (*Typha* sp.), and bulrush (*Scirpus* sp.), as occurs within the project site. The presence of one or all of these plants is an important indicator that the site may provide foraging or breeding habitat (USFWS, 1997). The largest CRLF densities are associated with deep-water pools with dense stands of overhanging willows and an intermixed fringe of cattails (Jennings and Hayes, 1994).

  CRLFs breed from November through March. The female lays between 2,000 to 5,000 eggs in clusters attached to emergent and submergent vegetation in ponds and backwater pools in creeks. The tadpoles remain in this habitat until they metamorphose in the summer between 11 and 20 weeks after hatching. Young frogs can occur in slow moving, shallow riffle zones in creeks or along the margins of ponds.

Based upon the presence of suitable habitat within the proposed tempering pond and Pismo Creek, protocol-level CRLF surveys were performed within the project site by Padre in 2007 using the *Revised Guidance on site Assessments and Fields Surveys for California Red-legged Frog* (USFWS, 2005). As required, this included four night surveys and two day surveys in the breeding season (Jan. 1 through June 30) and one night survey and one day survey within the non-breeding season (July 1 through Sept. 30). Although no CRLFs were identified on-site during protocol-level surveys (see Appendix E), the CRLF is known to occur downstream of the project site in an unnamed tributary to Pismo Creek approximately 0.2-mile upstream from the Pismo Creek confluence, 1.5 miles north of Pismo Beach, and suitable habitat exists within those portions of Pismo Creek bordering the project site. Thus, direct impacts to this species may occur during project implementation due to vegetation clearing within the vicinity of Pismo Creek or nearby habitats. Additionally, the proposed project has the potential to result in long-term impacts to CRLF due to operation of the facility. .

Birds

- **Golden Eagle (*Aquila chrysaetos*).** Golden eagle occurs as an uncommon breeding resident throughout the state including San Luis Obispo County with the exception of the valley floor of the Central Valley. The species is a fully protected species within California (under §3511 of the California Fish and Game Code). As such the species cannot be taken at anytime and permits authorizing take cannot be issued. Nest sites are generally located on secluded cliffs or in large trees in rugged, open canyons or on escarpments. Nesting occurs from January through August with peak activity occurring during March through July. Nest territories have been documented ranging in size from 22 to 74 square miles where size is probably a function of prey density and the openness of the habitat surrounding the nest site (which affects prey availability during hunting). An active golden eagle nesting site was observed along the southern boundary project site during the 2007 survey (i.e., rocky outcrop located immediately southeast of Ormonde Road); therefore the proposed project has the potential to result in short-term impacts this species during implementation.

- **Cooper's hawk (*Accipiter cooperii*).** Cooper's hawk is considered a California species of special concern during nesting periods, primarily due to the loss of riparian nesting habitat. Preferred nesting habitat consists of dense stands of coast live oak, riparian or other forest habitat located near water. This species is an uncommon permanent resident and fairly common fall transient along the coast. Cooper's hawk was identified within the oak woodland habitat area during the Padre 2003 field surveys conducted within the project area.

- **American peregrine falcon (*Falco peregrinus anatum*).** American peregrine falcon is considered a State endangered species and a Federal species of concern during nesting periods. Peregrine falcons nest on rugged cliffs and human-made structures in the interior and along the coast of California, and it is an uncommon migrant and breeder in the state. Peregrine falcons may forage for medium-sized

birds in almost any habitat except for dense forest. Although the peregrine falcon may rarely fly over the area, potential nesting habitat exists on nearby cliffs within the project area, and one was observed foraging during field surveys of the site.

- **Loggerhead shrike (*Lanius ludovicianus*).** Loggerhead shrike is considered a Federal species of concern and a California species of special concern, during nesting periods. The species generally occurs in a variety of open grassland, oak savannah, shrub-land, and other similar habitats where it feeds primarily on large insects (e.g., grasshoppers). However, the species may also occasionally take small reptiles, birds, and mammals. Loggerhead shrikes nest during March to June with young becoming independent during July or August. The nest is generally well-concealed on a stable branch in a densely-foliaged shrub or tree. This species was identified on-site during previous surveys (SAIC, 1994).

- **Northern harrier (*Circus cyaneus*).** Northern harrier is a California species of special concern during nesting periods. Nesting sites are typically located within a mound of dead reeds and grass within a marsh or shrubby meadow. Northern harrier typically forages in grassland or wetland habitats where it feeds on mice, rats and frogs. The northern harrier is a fairly common winter visitor and occasional breeder within the coastal region (i.e., breeds within Vandenberg AFB), often foraging in open marshes and fields (SAIC, 1994). This species may occasionally utilize the site for the purposes of foraging and as such may be impacted by project implementation.

- **Sharp-shinned hawk (*Accipiter striatus*).** The sharp-shinned hawk is a California species of concern during nesting periods. This species typically builds nests within woodland habitat where they forage on small birds. Sharp-shinned hawks will also occasionally eat small mammals and insects. This species is a fairly common winter visitor and resident along coastal ridges foraging in woodland and semi-open habitats (SAIC, 1994). This species has the potential to occur within the project area during its winter migration.

- **Southwestern willow flycatcher (*Empidonax trailli extimus*).** The southwestern willow flycatcher is a State and Federally listed endangered species during nesting periods. Dense thickets of riparian vegetation provide nesting and foraging habitat for this species. This vegetation typically includes plant species such as willows (*Salix* sp.) and/or seepwillow (*Baccharis* sp.). Southwestern willow flycatcher is an occasional spring and fall transient along riparian woodland in coastal regions. There are no nesting records of this species within the Pismo Creek drainage, though the creek corridor could provide migratory habitat (resting/feeding).

- **Yellow warbler (*Dendroica petechia brewsteri*).** The yellow warbler is a California species of special concern during nesting periods. This species typically nests within riparian woodland habitat of the coastal foothills from mid-April to early August. Yellow warbler forages within riparian woodland habitats by gleaning the bark of riparian vegetation for insects; however, the species will occasionally eat berries. Within San Luis Obispo County, this species is a fairly common summer transient of

deciduous riparian habitats and was observed within Pismo Creek by Padre during the 2007 surveys.

Mammals

- **San Diego desert woodrat (*Neotoma lepida intermedia*).** San Diego desert woodrat is a California species of special concern. This species typically constructs a nest structure with twigs, sticks, cactus parts, and various other materials. San Diego desert woodrat houses are generally built against rock outcrops or at the base of cactus (Whitaker, 1998). Nests are used for nesting, food caching, and predator escape. Numerous woodrat nests were observed throughout the oak woodland and chaparral habitats of the project site during field surveys. The project site is located near the extreme northern boundary of the desert woodrat's range, it is normally found in more arid habitats commonly associated with cactus scrub and rocky outcrops. Observed woodrat nests were constructed at the base of oak trees and various shrubs including Well's manzanitas and were characteristic of the dusky-footed woodrat, which is a common species throughout San Luis Obispo County. Therefore, San Diego desert woodrat is unlikely to occur at the project site.
- **American badger (*Taxidea taxus*).** The American badger is a California species of special concern. This species typically occurs in drier open stages of most shrub, forest, and herbaceous habitats with friable soils and open, uncultivated ground. The American badger preys on burrowing rodents by digging large, elliptical burrows at the base of rodent dens and waiting for its prey. This species is known to occur along Price Canyon Road, 3 miles north of Pismo Beach, in the vicinity of the project site. Although, no American badgers or evidence of badger activity was observed during the field surveys; this species is expected to occur within the project area.

Regulated Habitats. According to the Significant Natural Areas of California (Hoshevsky, 2002), the project site occurs within the 55,165-acre Significant Natural Area (SNA) SLO No. 54 within the Pismo Beach, Arroyo Grande NE, Guadalupe, Nipomo, Oceano, Pismo Beach, Point Sal, and Tar Spring Ridge quadrangles. The SNA contains lands managed by the CDFG, Calif. Dept. of Parks and Recreation, the Nature Conservancy, Air Force, County and City Regional Parks and Reserves, State Lands Commission, and privately owned lands. The SNA contains thirty special-status plant and animal species, and five sensitive plant communities as discussed below in further detail.

The CNDDB has inventoried natural communities and ranked them according to their rarity and potential for loss. Based on a CNDDB query for the project area, central foredune, central maritime chaparral, and coastal and valley freshwater marsh are considered sensitive natural communities that have the potential to occur within the project area. However, based on past and recent field surveys, central maritime chaparral and coastal and valley freshwater marsh are the only sensitive habitats existing within the project area. Specifically, central maritime chaparral has been ranked by the CNDDB globally as G2, and at the State level as S2.2 and coastal and valley freshwater marsh has been ranked by the CNDDB globally as G3, and at the State level as S2.1. A global sensitivity level of G2 means only 2,000 to 10,000 acres of this habitat exist worldwide and G3 means only 10,000 to 50,000 acres worldwide,

respectively. A State sensitivity of S2 means only 2,000 to 10,000 acres of this habitat exist Statewide and is considered very threatened.

As stated above, Pismo Creek and adjacent riparian habitat areas are known steelhead habitat and are considered an integral component of the south central coast steelhead ESU. On April 30, 2002 the U.S. District Court for the District of Columbia approved a NMFS consent decree withdrawing critical habitat designations for 19 salmon and steelhead populations on the west coast, including those contained in the south central coast steelhead ESU (NOAA, 2003). However, a more thorough analysis of steelhead critical habitat ~~is~~ was conducted by NMFS, which will resulted in the re-issuance of critical habitat designations for the south central coast steelhead ESU in 2005, including Pismo Creek.

Further, the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 USC 1801 et seq.) requires Federal agencies to identify Essential Fish Habitat (EFH) for any fish species included under a Federal Fishery Management Plan (FMP). EFH is defined as *"...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity"* (NOAA, 1997). Further, *"waters"* are defined to include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; *"substrate"* includes sediment, hard bottom, structures underlying the waters, and associated biological communities; *"necessary"* means the habitat elements required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and *"spawning, breeding, feeding, or growth to maturity"* cover a species' full life cycle (NMFS, 1998b). For anadromous species such as steelhead, EFH includes freshwater streams used for spawning and rearing (i.e., Pismo Creek and tributaries).

Prior to any Federal action that would fund, permit, or implement activities that may adversely affect EFH, the Federal action agency is required to consult with the NMFS regarding potential adverse effects of the action on EFH, and respond in writing to NMFS recommendations.

A number of FMPs developed by the Pacific Fishery Management Council exist for the coastal zone of central California including the Coast Pelagics Fishery Management Plan, Pacific Salmon Management Plan, and Pacific Groundfish Fishery Management Plan (NMFS, 1999).

Wildlife Movement Corridors. Wildlife migration corridors are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Migration corridors may be local such as between foraging and nesting or denning areas, or they may be regional in nature. Migration corridors are not unidirectional access routes; however, reference is usually made to source and receiver areas in discussions of wildlife movement networks. "Habitat linkages" are migration corridors that contain contiguous strips of native vegetation between source and receiver areas. Habitat linkages provide cover and forage sufficient for temporary habitation by a variety of ground-dwelling animal species. Wildlife migration corridors are essential to the regional ecology of an

area as they provide avenues of genetic exchange and allow animals to access alternative territories as fluctuating dispersal pressures dictate.

Pismo Creek and associated tributaries may play an important role as migration corridors for wildlife species moving within the region and coastal habitat to the west. These migration corridors are especially critical through areas where human activities would otherwise prohibit or impair the movement of species between habitat areas.

5.3.3 Impact Analysis

When development occurs in natural or semi-natural areas, the biological resources of the site and the surrounding area are affected. These effects may take the form of direct impacts, which include habitat loss and fragmentation, introduction of barriers to movement and dispersion, and conversion of native communities to developed conditions. Development may also result in indirect impacts that affect the quality of habitats on and surrounding the project site. These impacts may include the invasion of weedy or landscape plants into natural areas, noise disturbances, and declines in air and water quality. The project sites in and around the Plains Exploration and Production oil facility include areas that have experienced a range of past disturbance from low to high. Consequently, the character of the native communities varies considerably by project element.

5.3.3.1 Thresholds of Significance

Based on the mandatory findings of significance criteria at Section 15065 and Appendix G of the State CEQA Guidelines (Governor's Office of Planning and Research, 1999), an impact would be significant if any of the following conditions, or potential thereof, would result with implementation of the Proposed Project:

1. A substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game, the U.S. Fish and Wildlife Service, or the National Marine Fisheries Service;
2. A substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulation, or by the California Coastal Commission, California Department of Fish and Game, U.S. Fish and Wildlife Service, or National Marine Fisheries Service;
3. A substantial adverse effect on Federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
4. A substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery site;

5. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan;
6. A substantial reduction of habitat of a fish and wildlife species;
7. Cause the population of a fish or wildlife population to drop below self-sustaining levels;
8. Threaten to eliminate a plant or animal community; and/or,
9. Conflict with any local polices or ordinances protecting biological resources. For the purpose of this report, relevant goals and policies regarding sensitive resources from the San Luis Obispo County Land Use Ordinance (Title 23), San Luis Bay Inland Planning Area Land Use Element, and Agriculture and Open Space Element were used to assess conflicts with local policies. See Chapter 4.0 for detailed discussion of applicable policies and ordinances.

5.3.3.2 Project Impacts

Short-Term Impacts. The following are the potential impacts of project implementation occurring during the short-term installation phase of the project (i.e., modification of existing facility and construction of new water treatment facility and associated structures including several pipeline corridors).

Impact BIO-1: Construction activities could result in the disturbance of wildlife occupying adjacent habitats.

Discussion: Construction will entail the use of heavy equipment and increased human presence throughout the project area. This could potentially disturb wildlife at the construction sites and result in mortality of less mobile species, particularly ground-dwelling (fossorial) species such as California ground squirrel, Botta's pocket gopher, broad-footed mole, and dusky-footed woodrat. More mobile species are likely to be temporarily displaced to alternative habitats until the completion of construction. These short-term construction impacts are considered temporary and less than significant.

Impact Category: Class 3

Thresholds of Significance: 6, 7, and 8.

Mitigation Measure: None required.

Impact BIO-2: Construction activities could adversely affect nesting activities of protected migratory birds.

Discussion: A number of migratory bird species could potentially nest in the California annual grassland, chaparral (Well's manzanita and Chamise series), coyote brush scrub, California live oak woodland, seasonal and perennial wetlands (proposed tempering

pond), riparian woodland habitat areas of the site (Pismo Creek and tributaries). These include ground nesters (northern harrier, horned lark, western meadowlark, and lark sparrow), small tree/shrub nesters (bushtit, American robin, northern mockingbird, house finch, and lesser goldfinch) and several raptors which require large trees for nesting (red-tailed hawk, red-shouldered hawk, etc.). Additionally, an active golden eagle nest was identified within the southern boundary of the project site along an existing cliff face during 2007 surveys. Construction activities resulting in the removal of shrubs and trees and/or ground-clearing activities with heavy equipment could disturb and/or destroy nests, nestlings, or hatchlings, and result in a violation of the Migratory Bird Treaty Act (MBTA) (16 USC 703-712). The Act prohibits, by any means or in any manner, the intentional or unintentional capture, possession, or destruction of any migratory bird, its nest, eggs, young, or parts thereof without a permit issued by the USFWS.

Further, the proposed tempering pond may attract waterfowl and other bird species which could be impacted ~~due to contact with untreated water and/or~~ during periodic maintenance activities resulting in further violations of the MBTA.

Impact Category: Class 2

Thresholds of Significance: 1 and 4

Mitigation Measure: BIO-2: Construction operations shall be conducted prior to the initiation of nesting, or after the completion of nesting to avoid any potential impact to migratory birds. Specifically, the following measures shall be implemented:

A. Construction operations shall be conducted prior to the initiation of nesting, or after the completion of nesting to avoid any potential impact to migratory birds. Therefore, all clearing, grading, and general construction operations should be conducted between the months of August and March.

B. If Measure A is infeasible, pre-construction surveys shall be conducted between February 15 and August 15 to identify potential bird and raptor nesting sites:

   - If active nest sites of common bird species protected under the Migratory Bird Treaty Act (e.g., northern mockingbird, house finch, etc.) are observed within the vicinity of the project site, then the project shall be modified and/or delayed as necessary to avoid direct take of the identified nests, eggs, and/or young; and,
   - If active nest sites of raptors and/or species of special concern (e.g., golden eagle, northern harrier, horned lark, etc.) are observed within the vicinity of proposed construction operations, then CDFG shall be contacted to establish the appropriate buffer around the nest site. Construction activities in the buffer zone shall be prohibited until the young have fledged the nest.

C. The proposed tempering pond shall be designed and constructed with a low permeability material ~~protective netting~~ to prevent the growth of vegetation and

discourage the use and potential nesting by waterfowl and other bird species protected under the MBTA. This shall include construction of permanent fencing (i.e., chain-link) around the pond perimeter to prevent debris accumulation and general wildlife use of the structure. In addition, a Tempering Pond Maintenance and Monitoring Plan shall be prepared to ensure that the ~~netted area pond~~ is inspected and maintained for the life of the Produced Water Reclamation Facility~~in perpetuity with the facility~~. This shall include provisions for ~~monthly~~periodic maintenance and monitoring of the ~~netted~~ structure by ~~a qualified biologist~~ facility staff to ensure that the pond is free of vegetation and miscellaneous debris that may attract birds and wildlife ~~no birds are trapped and to capture and release any entangled birds~~ as necessary through the life of the project.

Residual Impacts

Impact Category = Class 3. Implementation of this mitigation measure will reduce potential impacts to less than significant levels.

Impact BIO-3: Construction activities could adversely affect special-status plant and terrestrial animal species potentially occurring in the project area.

Discussion: Development of the proposed Produced Water Reclamation Facility will include construction of a water treatment plant and various associated structures. This will include construction of water transmission pipelines for re-use on/off-site, placement of an outfall structure along Pismo Creek, and creation of a smooth-bottom tempering pond within an existing stormwater collection basin. New facilities would be constructed within the existing disturbed plant area, in addition to a two- to three-acre area of oak woodland habitat located west of the existing plant. In addition, water transmission pipelines will be placed subsurface along existing facility roadways or, where feasible, atop existing pipe racks located along facility roadways.

Special-status species occurring in the project area have the potential to be adversely affected by proposed short-term construction activities throughout the project area. Specifically, special-status plant species, including Pismo clarkia and Well's manzanita, have been documented within and/or adjacent to the proposed impact areas (i.e., adjacent to oak woodland habitat and along proposed pipeline routes) and have the potential to be impacted by project operations. Pismo clarkia is widespread within project area and occurs primarily along slopes, road cuts, and within grassland areas bordering oak woodlands. Specifically, approximately 1,500-square feet of Pismo clarkia has been recorded within and/or directly adjacent to the proposed building envelope for the water reclamation facility and numerous individuals were observed along the proposed tempering pond location and water transmission pipeline routes as illustrated on Figures 5.3-2 and 5.3-3. In addition, potential impacts to Well's manzanita located within the vicinity of proposed pipeline routes and within a small area directly west of the proposed equipment staging area (see Figure 5.3-3) could occur during construction activities. However, construction of the proposed water transmission pipelines would remain within previously disturbed facility roadways and pipeline routes. Therefore,

impacts to special-status plant species within these areas should be avoided through project design.

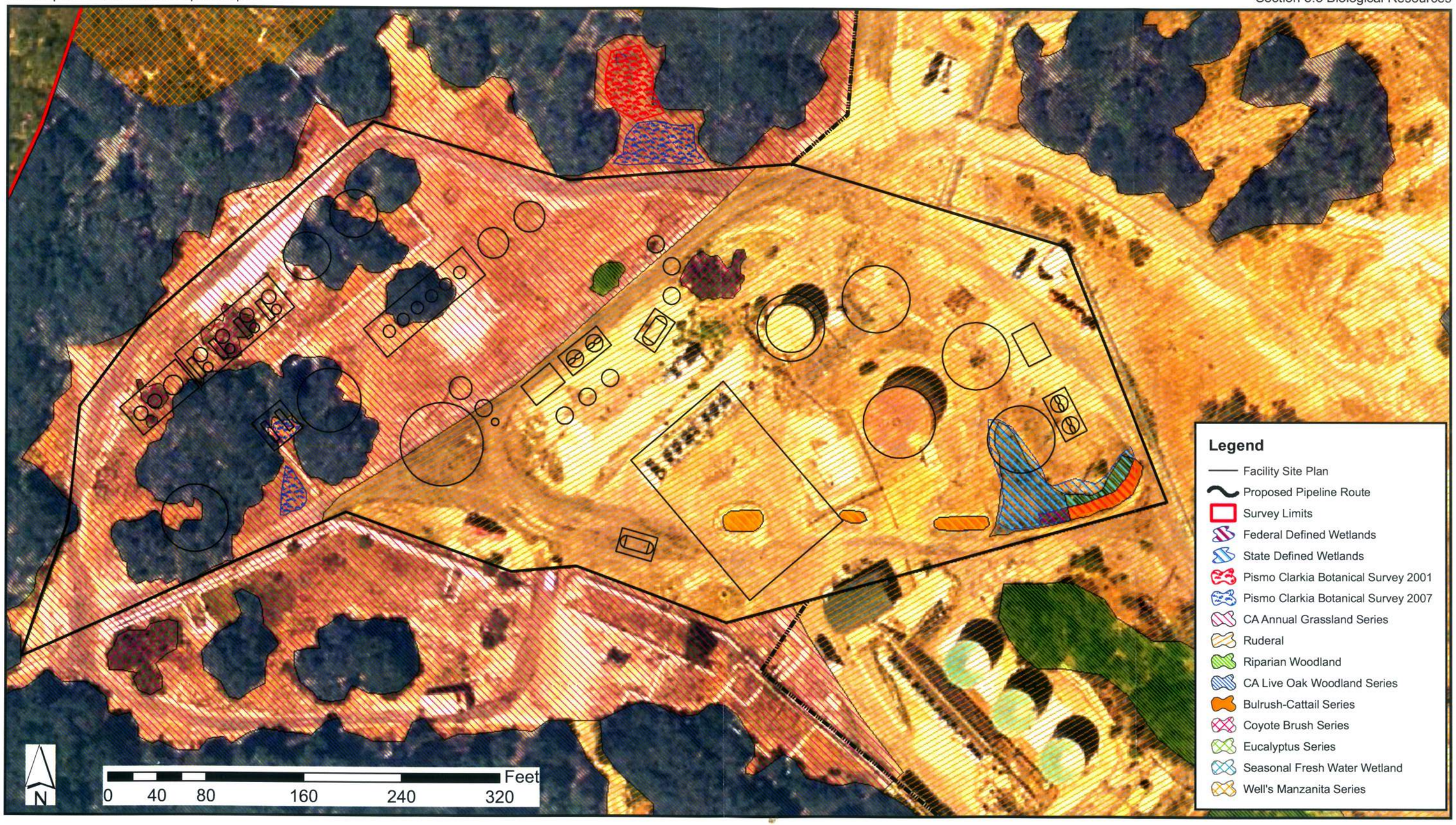
The California horned lizard inhabits the drier and more open areas within the chaparral and scrub vegetation and, as such has the potential to occur within portions of the project site. Specifically, clearing of vegetation including coyote brush scrub and staging of heavy equipment within the vicinity of dense chaparral habitat (i.e., Well's manzanita) during construction of the water reclamation facility and construction of proposed pipeline routes has the potential to result in significant impacts to this sensitive species.

Special-status bird species such as the loggerhead shrike, horned lark, and sharp-shinned hawk could be potentially impacted during construction through the short-term loss of foraging opportunities within areas of construction. The American peregrine falcon and northern harrier could also be affected during breeding season by the short-term disturbance of the open grassland and adjacent woodland habitat areas. The golden eagle and Cooper's hawk are likely to be affected by the short-term disturbance of both foraging habitat and potential and/or known nest sites. Historically, the nesting site for the American peregrine falcon within the vicinity of the project area has been at Shell Beach (SAIC, 1994), however the numerous rocky outcrops and cliff faces occurring within the eastern portion of the site may provide suitable nesting sites for falcons. Further, an active golden eagle nest was observed along a rocky outcrop within the eastern portion of the site during the 2007 survey(s). Due to the small area of disturbance and short-term construction period, impacts to foraging raptors are expected to be minimal. However, potential nesting habitat for all bird species should be carefully surveyed prior to construction as discussed in BIO-2.

Impact Category: Potential impacts to special-status plant species (Pismo clarkia and Well's manzanita) and resident special-status animal species (California horned lizard, golden eagle [nesting], American peregrine falcon [nesting], horned lark [nesting], northern harrier [nesting], and Cooper's hawk [nesting]) are considered significant and mitigable = Class 2; and impacts to migratory special-status species (loggerhead shrike, and sharp-shinned hawk) that have the potential to periodically frequent the project area for the purpose of foraging are considered short-term and less than significant = Class 3.

Threshold of Significance: 1

Mitigation Measure: BIO-3: The following mitigation measures are required to avoid and/or minimize impacts to special-status species known to occur or with the potential to occur within the proposed building envelope for the water reclamation facility, tempering pond, and associated pipeline routes during construction. This includes protective measures to avoid and/or minimize impacts to Pismo clarkia and Well's manzanita during the construction phase of the project:



Source: ADAIR

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

FOCUSED IMPACT MAP
FIGURE 5.3-3

General Measures:

A. All equipment staging areas and construction-crew parking areas shall be established within the two proposed construction staging areas identified on Figure 3-4. Additionally, all construction access routes shall be established in previously disturbed areas and/or existing roadways;

B. Exclusionary fencing will be erected at the boundaries of construction areas to avoid equipment and human intrusion into adjacent habitats with emphasis on protection of areas containing special-status species. The exact location of exclusionary fencing for each construction area shall be determined by a County-approved biological monitor. The fencing shall remain in place throughout the construction phase for each individual project component;

C. A County-approved biological monitor shall conduct a worker orientation for all construction contractors (site supervisors, equipment operators and laborers) which emphasizes the presence of special-status species within the project site, identification, their habitat requirements, and applicable regulatory policies and provisions regarding their protection, and measures being implemented to avoid and/or minimize impacts;

D. If nighttime construction activities are warranted, all equipment lighting shall be shielded away from adjacent wildlife habitat areas and sky, to the extent feasible while still providing safe working conditions for construction personnel, to minimize lighting/glare impacts of wildlife; and,

E. Mitigation Measure AQ-1 (a dust control program during the construction phase of the project shall be implemented to minimize dust impacts to adjacent vegetation communities and special-status plant species).

Protective Measures for Special-Status Plants:

F. Due to the fluctuation in annual plant populations (i.e., Pismo clarkia), spring botanical surveys shall be conducted annually by a County-approved biologist to update the location of special-status plant species populations on project plans until project construction is complete (as illustrated on Figure 5.3-2 and 5.3-3). Annual botanical survey results and documented fluctuations in populations shall be added cumulatively to the project plans (i.e., all newly discovered populations shall be added to existing populations documented in previous years). All mapped populations shall be clearly fenced off with exclusionary fencing prior to construction in those areas. If areas supporting Pismo clarkia and/or other sensitive plant species are determined by the County to be unavoidable then seed shall be collected from selected plants in impact areas and utilized to restore habitat within the pre-designated PXP Open Space Easement located directly south of the proposed RO facility within the PXP oil field (see Figure 5.3-4). The designated Open Space

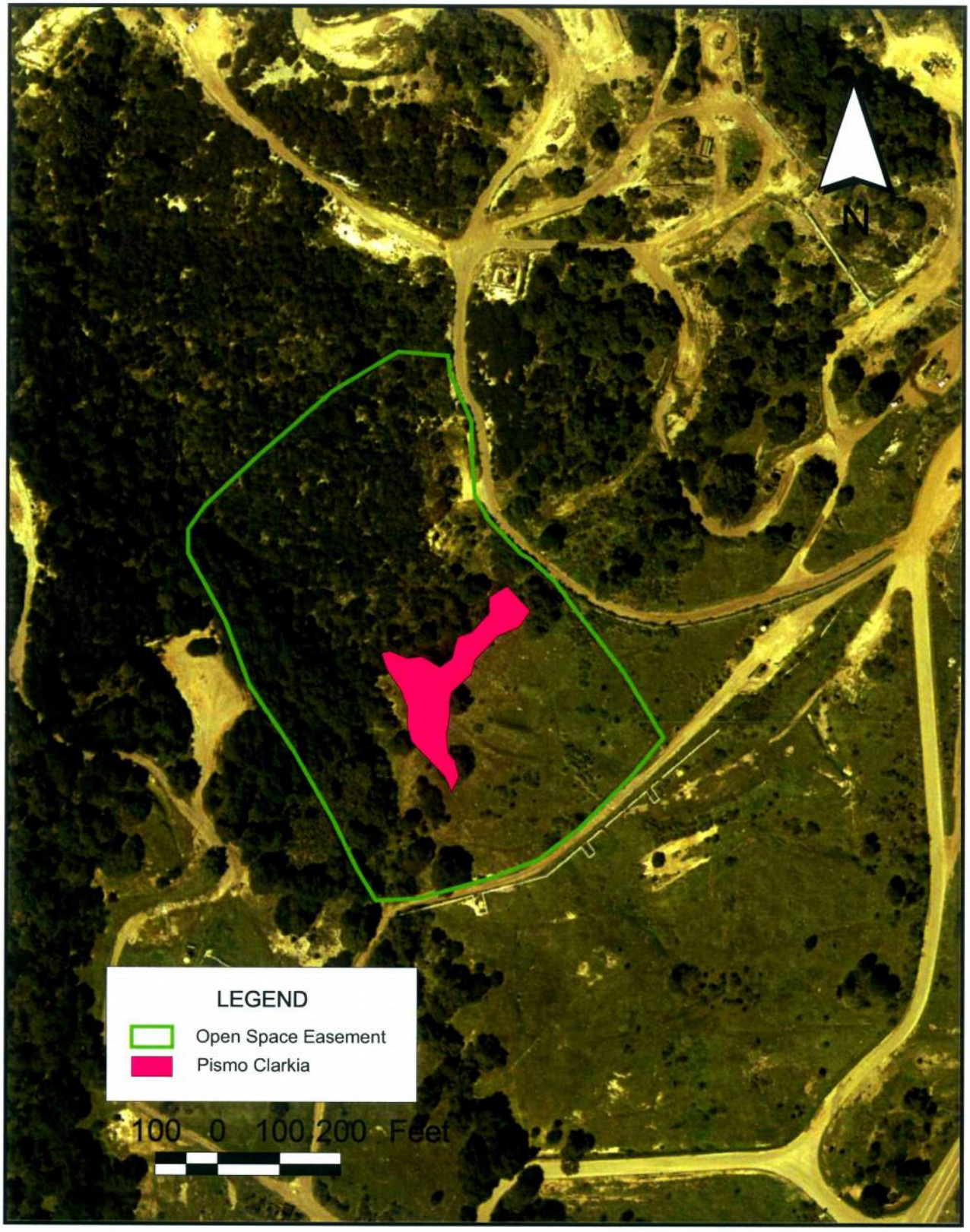
Easement was required as Mitigation Measure BIO-6 in the original Phase IV EIR and is currently being utilized as a receiver site for mitigation plantings from Phase IV expansion operations (i.e., oak tree, Well's manzanita, and Pismo clarkia restoration efforts). The Open Space Easement includes approximately 4.5 acres of oak woodland and grassland habitat areas and should be sufficiently sized to handle the additional Pismo clarkia restoration efforts outlined above. However, in the event the existing easement is determined to be insufficiently sized to handle the additional restoration plantings, then an additional Open Space Easement shall be dedicated by PXP for these purposes; ~~;~~ and,

G. No Well's Manzanita shall be removed and/or impacted as part of the proposed project. The final project plans shall clearly illustrate the location of all Well's manzanita existing within 25 feet of construction activities. Prior to any construction, grubbing or tree removal, each manzanita within the vicinity of the work areas shall be clearly marked for protection. To further avoid impacts to Well's manzanita located adjacent to proposed pipeline routes and the proposed construction staging area(s), boundaries of all work areas shall be clearly defined and marked with visible flagging and/or orange protective fencing. All construction activities shall remain in existing roadways and pipeline routes. If Well's manzanita is deemed unavoidable during project implementation, then the same measures outlined in BIO-6B of the Phase IV EIR (incorporated here by reference), would be implemented within the designated Open Space Easement to offset manzanita impacts.

Protective Measures for Special-Status Wildlife:

H. A County-approved biologist shall conduct pre-construction surveys to determine presence/absence of California horned lizard within and adjacent to project components containing suitable chaparral and/or scrub habitat (i.e., proposed equipment staging area and pipeline routes). Surveys shall only be conducted during the active period of California horned lizards (generally April through September). If California horned lizards are identified adjacent to and/or within work areas, then hand rakes or an equivalent shall be utilized by biological monitors to scarify the ground surface and encourage the horned lizards (and other wildlife) to vacate the immediate area prior to construction. Alternatively, sampling composed of drift fences shall be used to capture horned lizards. As necessary, the County-approved biological monitor shall physically relocate California horned lizards to suitable habitat located outside the construction zone. Exact procedures and protocols for relocation shall be based upon pre-project consultation with CDFG;

I. A County-approved biological monitor shall be on-site during all vegetation clearing and shall periodically monitor the project site during construction activities to inspect protective fencing, equipment staging areas, and physically relocate/remove any special-status wildlife species entering the construction zone (i.e., California horned lizard, etc.). All special-status species shall be relocated to suitable habitat located outside the construction zone by a qualified biologist. Exact procedures and



Source: EDA

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

PHASE IV OPEN SPACE EASEMENT

FIGURE 5.3-4

protocols for relocation shall be based upon pre-project consultation with CDFG; and,

J. Mitigation Measure BIO-2 (nesting bird surveys shall be conducted between February 15 and August 15 to identify nest sites of special-status bird species including golden eagle, American peregrine falcon, horned lark, northern harrier, and Cooper's hawk).

Residual Impacts

Impact Category = Class 3. Implementation of this mitigation measure will reduce potential impacts to special-status species to less than significant levels.

Impact BIO-4: Construction activities could result in direct and indirect impacts to special-status species potentially occurring within the proposed tempering pond and Pismo Creek and associated tributaries.

Discussion: Special-status aquatic and semi-aquatic species including the two-striped garter snake, southwestern pond turtle, south-central California coast steelhead and California red-legged frog are either known to occur and/or have the potential to occur within the Pismo Creek watershed. Southwestern pond turtle also have the potential to occupy the proposed location of the tempering pond during wet years. Further, tidewater goby is known to inhabit the lower reaches of Pismo Creek. Although some of these species are strictly aquatic, such as steelhead and tidewater goby, several of these species use upland habitat for forage and cover, as well as the aquatic habitat present within Pismo Creek. Examples of these species include the southwestern pond turtle, two-striped garter snake, and the California red-legged frog, as well as several bird species (e.g. yellow warbler, southern willow flycatcher, etc.).

Construction activities within close vicinity of the creek could result in direct impacts to semi-aquatic species that utilize the upland areas of the watershed, disrupt the natural behavior patterns of special-status species (i.e., breeding activity) and/or result in indirect impacts to aquatic species, such as steelhead, due to inadvertent spills of deleterious materials during construction of the proposed outfall structure. However, with implementation of Mitigation Measures BIO-3A-E and BIO-4, a qualified biologist shall conduct a worker orientation wich emphasizes the special-status species of the proposed tempering pond, Pismo Creek and adjacent areas. In addition, the qualified biologist shall complete pre-construction surveys for special-status wildlife species and conduct monitoring on a full-time basis for all activities within a 100-foot buffer of Pismo Creek. Per Mitigation Measure BIO-2, nesting bird surveys shall also be conducted prior to construction activities within or adjacent to the tempering pond and riparian corridor of Pismo Creek. Therefore, impacts to nesting birds (e.g. yellow warbler, southern willow flycatcher, etc.) shall be avoided and/or minimized to the extent feasible. However, impacts to southwestern pond turtle, two-striped garter snake, and potentially the California red-legged frog occurring in upland habitat areas is still considered likely.

The expected increased sediment load during short-term construction activities has the potential to impact existing habitat and water quality of Pismo Creek. However, as discussed in Section 5.5 - Hydrology and Water Quality, implementation of a site-specific erosion control plan during and subsequent to construction activities would minimize the potential for short-term sedimentation impacts to Pismo Creek. Further, an inadvertent spill into Pismo Creek during construction of the outfall concrete supports and placement of gunite surfacing on the existing rip-rap slope is considered likely. However, with implementation of the mitigation measures outlined below, impacts to Pismo Creek due to sedimentation and inadvertent spills would be considered less than significant.

Impact Category: South-central California coast steelhead, Southwestern pond turtle, two-striped garter snake, and California red-legged frog = Class 2.

Thresholds of Significance: 1, 2, and 6

Mitigation Measure: BIO-4: The following mitigation measures are recommended to avoid and/or minimize impacts to special-status species known to occur or with the potential to occur within the proposed tempering pond and the Pismo Creek watershed:

A. Construction of the proposed tempering pond and outfall at Pismo Creek including clearing and grubbing of vegetation shall be limited to the dry season (i.e., April 15 to Oct. 15);

B. The proposed outfall structure shall be designed to minimize impacts to the existing willow scrub habitat of Pismo Creek to the greatest extent feasible. Specifically, this shall include placement of the structure within a pre-disturbed area (i.e., existing rip-rap bank) located downstream of the "Hyla Crossing" near an existing pipe bridge. Additionally, the final design of the outfall shall include a series of 20- to 30-foot long discharge pipes positioned at appropriate intervals along the creek bank to further minimize the footprint of impact to habitat along the creek bank;

C. All existing downed woody debris and willow cuttings removed during construction of the outfall shall be placed and/or stockpiled in natural clumps on nearby creek banks to ensure no net loss of habitat for wildlife including special-status species;

D. PXP shall prepare and implement a Spill Contingency Plan that includes provisions for avoiding and/or minimizing impacts to Pismo Creek due to spills during construction of the proposed outfall. Specifically, the plan shall include an overview of the secondary containment structures to be installed along the toe of the creek bank to prevent discharge of concrete and gunite into the stream channel during construction operations. Further, the plan shall outline the response equipment that will be on-site during construction and procedures for responding to any inadvertent spills within the creek or surrounding areas including miscellaneous fuel and/or lubricant spills from construction equipment and vehicles during operations. Final specifications of the Spill Contingency Plan shall be reviewed and approved by the County and CDFG prior to project implementation;

E. All construction activities within a 100-foot buffer of Pismo Creek shall be monitored by a qualified biologist on a full-time basis or at a frequency deemed necessary by a qualified biologist in consultation with the appropriate regulatory agencies. The biological monitor shall conducted pre-construction surveys for special-status wildlife species (e.g., southwestern pond turtle, two-striped garter snake, Calif. red-legged frog, etc.), maintain protective fencing, inspect equipment staging areas, and, as necessary, physically relocate/remove any special-status wildlife species entering the construction zone; and,

F. Mitigation Measures BIO-3A-E (General Protective Measures for Biological Resources); and,

G. Mitigation Measure BIO-2 (nesting bird surveys shall be conducted between February 15 and August 15 to identify nest sites of special-status bird species including yellow warbler, southern willow flycatcher, and Cooper's hawk).

Residual Impacts

Impact Category = Class 3. Implementation of this mitigation measure will reduce potential impacts to special-status wildlife species occurring within Pismo Creek to less than significant levels.

Impact BIO-5: Development of the produced water reclamation facility will result in the removal of up to 26 coast live oak trees and an additional six oak trees could be impacted by proposed activities.

Discussion: An estimated 26 coast live oak trees, located within the proposed impact area, would be removed to accommodate construction of the proposed Produced Water Reclamation Facility. An estimated 6 oak trees, located around the perimeter of the impact area, have the potential to be impacted by proposed activities, which may include rough grading within the drip line of the trees, and/or pruning of major limbs to facilitate equipment access. All tree specimens considered in this analysis have diameters at breast height (DBH, 4.5-feet above grade) exceeding 5 inches. Potential impacts were quantified as part of the oak tree survey conducted on-site. All oak trees to be removed or impacted by project activities were numbered in the field (see Appendix E - Oak Tree Survey Data) and displayed on Figure 5.3-3 as oak woodland habitat areas.

Oak woodland is considered to be a sensitive habitat and is already fragmented in much of the proposed project area. Further, oak trees provide food, cover, nest, and roost habitat for a number of species, particularly birds. It is a violation of Section 3503 of the California Fish and Game Code to take, possess, or destroy the nests and/or eggs of birds-of-prey, such as red-tailed hawk, red-shouldered hawk. The MBTA provides similar protection for nesting migratory bird species. Consequently, removal of any tree while migratory or other protected bird species are nesting would be a Class 2 impact.

Impact Category: Class 2

Thresholds of Significance: 2, 9

Mitigation Measure: BIO-5: The following mitigation measures are recommended to mitigate impacts to oak trees due to project implementation. This includes protective measures to avoid and/or minimize impacts to oak trees designated for long-term preservation:

A. Mitigation Measures BIO-3A-E (General Protective Measures for Biological Resources);

B. Prior to construction, a Supplemental Habitat Enhancement Plan containing site-specific oak tree protection and replacement procedures shall be prepared for the project. The Supplemental Habitat Enhancement Plan shall tier off of the previously developed Habitat Enhancement Plan established per mitigation measure BIO-5 of the original Phase IV EIR and clearly outline the procedures for protecting oak trees to remain in place during construction and provide details for replacing oak trees that are removed at a 4:1 ratio and those impacted at a 2:1 ratio. Final specifications of the Supplemental Habitat Enhancement Plan shall be approved by the County and CDFG prior to construction. At a minimum, the plan shall contain the following provisions:

- Utilizing the oak tree survey data collected in 2007, final project plans shall clearly illustrate the size and location of all oak trees to be removed as part of the project and all oak trees to remain within 25 feet of construction activities. Prior to any construction, grubbing or tree removal, each mature coast live oak tree within the vicinity of the proposed impact area shall be clearly marked for removal or protection;
- Protective fencing shall be installed around each oak tree to remain in place with emphasis on the six mature oak trees located along the perimeter of the proposed Produced Water Reclamation Facility. The fencing shall be installed prior to grubbing/construction and provide protection of the root zone of oak trees (the outer edge of the tree root zone is 1-1/2 times the distance from the trunk to the drip line of the tree);
- To further protect oak trees to remain in place, a certified arborist shall be retained by the applicant to perform any necessary trimming of oak tree limbs overhanging equipment access routes. This shall be conducted prior to allowing construction equipment to enter the proposed impact area to avoid and/or minimize the potential for inadvertent damage to oak trees limbs (i.e., equipment, vehicles, etc.);
- Replacement oak trees shall be from vertical tubes or deep, one-gallon container stock;
- Replanting shall be completed in the fall season upon completion of grading within a given area and by a qualified individual familiar with native vegetation;

- Location of newly planted oak trees shall adhere to the following whenever possible: on the north side of and at the canopy/dripline edge of existing mature native trees; north-facing slopes; within drainages swales; where topsoil is present; and if clustered, at least 10' "on-center" separation between each tree. Tree spacing will average approximately 15 feet on-center. Some clustering is acceptable to maintain a more natural appearance; and,
- Newly planted trees shall be maintained until successfully established. This shall include protection (e.g., caging, tree shelters) from burrowing and browsing animals (e.g., deer, rodents), regular weeding (minimum of once early fall and once early spring) of at least a 3-foot radius around the plant base and adequate watering (i.e., drip irrigation system). Heavy mulching consisting of local oak leaf litter/mulch so seedlings are exposed to local mycorrhizal fungi to enhance survivability and growth is also recommended. Irrigation shall be slowly terminated over a 3-year period. If possible, planting during the warmest, driest months (June through September) shall be avoided. Replacement oak trees identified as dead and/or diseased during the monitoring period shall be replaced accordingly.

C. Mitigation Measure BIO-2 (the tree removals shall be conducted as to avoid a take of raptors or migratory birds).

Residual Impacts

Impact Category = Class 3. Implementation of the above listed mitigation measure will reduce project impacts to oak trees to less than significant levels.

Long-Term Impacts. The following are the potential impacts associated with the conversion of natural habitats within project sites and the long-term operation and maintenance of the site on biological resources.

Impact BIO-6. The proposed Produced Water Reclamation Facility will result in the permanent loss and/or long-term degradation and fragmentation of natural habitats, which provide forage, cover, and breeding elements for a wide variety of wildlife species, including several special-status species.

Discussion: Plant communities existing within and along the perimeters of the existing facility and roadways have been previously disturbed by past oil field operations (e.g., clearing and grading, long-term dust impacts, etc.). Although portions may be intact, the habitat value of these plant communities has been substantially reduced due to fragmentation, introduction of non-native vegetation, and ongoing disturbance. However, the proposed project includes the installation of a water treatment facility, various water tanks and silos, tempering ponds, three air strippers, and two heat exchangers. Ultimate construction of these structures as well as construction/installation of water transmission pipelines and reclaimed water outfall structure would result in the permanent and temporary loss of the plant communities existing within the project area

and result in further degradation of habitat supporting special-status species, including Pismo clarkia. The estimated total loss for each cover type within proposed project area is provided below in following Table 5.3-8:

Table 5.3-6. Plant Community Impact Summary Table

Plant Community	Loss (acres)
Calif. live oak woodland series	0.66
Bulrush-cattail series	0.68
Riparian woodland	0.1
Seasonal freshwater wetland	0.09
Coyote brush series	0.07
Calif. annual grassland series	1.75
Total Acreage:	**3.35**

Note: The remaining estimated 3.25 acres of disturbance is expected to occur in pre-disturbed habitat areas (i.e., ruderal).

Loss of non-native annual grassland areas is not considered a significant impact to wildlife because it supports a relatively low density and diversity of species and is considered abundant both locally and statewide. Although coyote brush scrub provides moderate foraging and nesting habitat for wildlife species it is not considered a sensitive plant community. Therefore, loss of 0.07-acre of coyote brush scrub is not considered a significant impact. However, the riparian woodland community, seasonal freshwater wetland, and the bulrush-cattail community meet the CDFG definition of state wetlands; consequently, loss of these habitats is considered significant. In addition, loss of California live oak woodland habitat is considered significant because of their high habitat value and declining abundance of these habitat areas within San Luis Obispo County.

The loss of the 0.66-acre of California live oak woodland habitat would occur as a result of construction of the proposed water treatment facility and associated structures. Implementation of provision A of Mitigation Measures BIO-3 and BIO-5 (listed above) would minimize impacts to oaks through avoidance measures. However, project implementation would ultimately result in the permanent loss of approximately 26 mature oak trees and associated habitat. Moreover, construction of the proposed structures and transmission pipelines would result in further degradation of adjacent habitat areas known to support special-status species (e.g., Pismo clarkia).

A wetland assessment was conducted within the proposed project impact areas on June 18, 2007 (see Appendix E - Wetland Assessment Report). The permanent loss of 0.634-acre of State wetlands would occur as a result of construction of the proposed tempering pond (0.62-acre) and installation of the reclaimed water outfall structure along Pismo Creek (0.01-acre). In addition, 0.19-acre of wetland habitat exists within the proposed location of the water reclamation facility (i.e., three man-made storm water conveyance structures/ponds (0.07-acre), seasonal freshwater wetland (0.09-acre), and roadside drainage (0.03-acre)) (see Figure 5.3-3); however, impacts to these wetland features could be avoided through project design. Temporary impacts to the riparian

corridor of Pismo Creek would include trimming/clearing of vegetation on either side of the proposed outfall structure, primarily willows, during construction activities.

Impact Category: Loss of the California live oak woodland series, riparian woodland, seasonal wetlands and bulrush-cattail series = Class 2; Loss of California annual grassland and coyote brush series = Class 3

Thresholds of Significance: 1, 2, and 9

Mitigation Measure: BIO-6: The following measures shall be implemented to compensate for the actual permanent loss of vegetation resulting from project implementation and potential long-term degradation of adjacent habitat areas from projected long-term utilization of the site:

A. Prior to construction, an area within the previously dedicated PXP Open Space Easement shall be set aside to accommodate the required oak replacement (estimated at 104 total) and Pismo clarkia plantings (BIO-3 and BIO-5). If the available area within the existing open space easement is not sufficient to accommodate all of the required oak tree and Pismo clarkia plantings additional mitigation areas containing suitable habitat shall be identified by the applicant and dedicated as supplemental open space easement areas. These areas should contain a representative mixture of oak woodland and annual grassland with known populations of Pismo clarkia. Final specifications of any additional dedicated easement areas (size and location) shall be reviewed and approved by the County and CDFG prior to construction. In addition, future equipment staging areas, access routes, and additional well pads shall be prohibited in the dedicated easement areas;

B. Provision B of Mitigation Measure BIO-5 (Supplemental Habitat Enhancement Plan) shall also contain measures to offset additional impacts to Pismo clarkia and oak woodland within the dedicated easement area. Specifically, the Supplemental Habitat Enhancement Plan shall include species lists, installation and maintenance methods, performance criteria, and monitoring protocols for enhancing existing habitats within the dedicated easement area. At a minimum, the plan shall contain the following additional provisions:

- Procedures to further mitigate permanent loss of California live oak woodland by augmenting existing oak woodland habitat within the dedicated easement with a portion of the required 4:1 ratio oak tree plantings;
- Planting of Pismo clarkia as required by Mitigation Measure BIO-3 shall occur within selected areas (if loss is deemed unavoidable by the County) of the dedicated easement to augment existing populations, concentrating the majority of seed dispersal along the northeastern perimeter of the existing oak woodland habitat;
- Installation of all replacement planting and/or seed dispersal shall be conducted within the appropriate season to promote survivability (i.e., fall/winter). If

possible, planting during the warmest, driest months (June through September) shall be avoided;

- Shall provide procedures to ensure eradication of exotic plant species (i.e., pampus grass, tree tobacco, etc.) within the dedicated easement. This shall include provisions for controlling the spread of exotic species throughout the project area; and,
- Shall provide an implementation schedule which emphasizes initiation of the Habitat Enhancement Plan within the 1st year of improvements authorized under this approval. The schedule shall outline the sequencing of all mitigation planting and timing for long-term monitoring and maintenance of the dedicated open space easement through the life of the project.

C. To offset approximately 0.62-acre of state wetland impacts due to construction of the proposed tempering pond, PXP shall either develop a compensatory wetland mitigation plan which outlines procedures for restoring wetland habitat on-site in-kind (i.e., bulrush-cattail series) or pay an in-lieu fee as directed by the County into a designated wetland restoration fund.

D. To avoid further impacts to state-designated wetland habitat areas, the proposed water reclamation facility and tempering pond shall be modified to avoid impacts to the wetland features mapped on Figure 5.3.-3 and in Appendix E - Wetland Assessment. This shall include the following provisions:

- A 10-foot buffer measured outward from the edge of the seasonal wetland swale and riparian woodland (i.e., willows) shall be preserved in a natural vegetation state. This includes the seasonal freshwater wetland, riparian woodland, and roadside drainage located along the southeastern corner of the currently proposed water reclamation facility site plan as well as the riparian woodland habitat located along the southeastern corner of the proposed tempering pond. This measure shall not apply to the three man-made storm water conveyance structures/ponds (0.07-acre) located along the southeastern corner of the proposed reclamation facility, and;
- Wetlands and setback areas shall be temporarily fenced with silt fencing and orange protective fencing during construction to minimize and/or avoid inadvertent impacts due to temporary construction related erosion and sedimentation.

E. To offset approximately 0.01-acre of riparian woodland impacts due to installation of the proposed outfall structure, PXP shall prepare a Compensatory Mitigation Plan which outlines the procedures for restoring willow habitat removed due to project implementation at a 3:1 ratio with emphasis on habitat enhancement. The plan shall clearly identify planting areas within and adjacent to the proposed impact area in addition to the performance criteria for re-establishing willow habitat within Pismo

Creek. The plan shall be approved by the County, CDFG, RWQCB, and Corps prior to project implementation.

F. Mitigation Measure AQ-1 (a dust control program during the construction phase of the project shall be implemented to minimize dust impacts to adjacent wetland communities);

G. Mitigation Measure HYD-1 (in compliance with the Land Use Ordinance, the applicant will prepare and implement a Sediment and Erosion Control Plan (SECP) which will outline procedures for stabilizing the site and minimizing sedimentation and erosion impacts to adjacent wetland habitat areas);

Residual Impacts

Impact Category = Class 3. Implementation of the above listed measures will reduce long-term project impacts to natural habitats supporting special-status species to less than significant levels.

Impact BIO-7: Development of the proposed the Produced Water Reclamation Facility could result in the permanent loss of wetlands regulated by the Corps under Section 404 of the Clean Water Act.

Discussion: Federal wetlands and designated waters of the U.S. are present within the proposed project area including a roadside drainage, the Pismo Creek channel, and two unnamed tributaries to Pismo Creek. The extent of wetlands and waters of the U.S. within the project site and impacts to wetlands due to proposed project activities were quantified during the wetland assessment conducted on June 18, 2007 (see Appendix E - Wetland Assessment Report).

As a result of the proposed project activities, impacts would occur to a portion of the riparian corridor of Pismo Creek. Specifically, impacts to approximately 0.014-acre of waters of the U.S will result from placement of the permanent reclaimed water outfall structure below the ordinary high water mark (OHWM). Per Mitigation Measure BIO-4, installation of the reclaimed water outfall structure would include placement of a series of three to four, 25 to 30-foot long perforated pipes on the existing rip-rap bank area along Pismo Creek. Construction of the outfall structure would also include clearing of the debris and coating the existing rip-rap slope with gunite to allow sheet flow of discharge water to Pismo Creek. As discussed in BIO-6, the riparian corridor of Pismo Creek is also considered a CDFG-defined state wetland and therefore is considered sensitive. However, with implementation of Mitigation Measure BIO-6E impacts to the riparian corridor of Pismo Creek would be considered less than significant (i.e., Compensatory Mitigation Plan). The four unnamed tributaries to Pismo Creek also qualify as waters of the U.S., however, impacts to the these features during project implementation would be avoided through project design which includes construction of pipelines along existing access roads and overall avoidance of drainages. In the event that major excavation would be required to install pipelines beneath existing culverts, then a jack-and-bore

technique would be utilized to avoid impacts to the tributaries. Therefore, impacts to tributaries of Pismo Creek would be considered less than significant.

Federal wetlands within the project site are limited to a small roadside drainage (approximately 1,300 square feet [0.03-acre]), located in the southeast corner of the proposed water reclamation facility (see Appendix E - Wetland Assessment Report). However, impacts to the federal wetland feature can be avoided through implementation of Mitigation Measure BIO-6, including avoidance and minimization measures (BIO-6D) and therefore would be considered less than significant.

Impact Category: Permanent loss of waters of the U.S. due to placement of the outfall structure along Pismo Creek = Class 2; Secondary impacts to federal wetland (roadside drainage) due to development of the Water Reclamation Facility = Class 2

Thresholds of Significance: 3

Mitigation Measure: BIO-7: The following measures shall be implemented to avoid impacts to Pismo Creek tributaries, compensate for the permanent loss of waters of the U.S. resulting from installation of the proposed outfall structure and potential long-term degradation of adjacent federal wetland habitat areas from projected long-term utilization of the site as required by the Corps (M. Vandersande, Corps, pers. comm., 2007):

A. In the event that no pipe racks exist along the existing roadways at tributary crossings and excavation of the roadway base material would require removal and/or replacement of existing road culvert(s), then a jack-and-bore technique would implemented for pipeline installation to ensure that no impacts occur to the subject drainages.

B. Mitigation Measure BIO-6 (avoidance and minimization measures for protection of wetland habitat features and development of Compensatory Mitigation Plan for Pismo Creek [BIO-6E]); and,

C~~B~~. The applicant shall obtain a permit from the U.S. Army Corps of Engineers pursuant to 404 of the Clean Water Act, Water Quality Certification from the Regional Water Quality Control Board pursuant to 401 of Clean Water Act and a Streambed Alteration Agreement or waiver from the California Department of Fish and Game pursuant to Section 1600 et seq. of the California Fish and Game Code for placement of permanent structures along Pismo Creek (i.e., fill activities) including trimming/removal of riparian vegetation. As part of the permitting process, PXP shall be required to provide the Compensatory Mitigation Plan (Mitigation Measure BIO-6E) to the Corps and RWQCB for review and approval prior to permit issuance. As part of this process, the ~~Corps~~ agencies may require a higher mitigation ratio and/or include additional performance criteria in the form of special permit conditions. All agency permits and the Final Compensatory Mitigation Plan shall be submitted to the County prior to ~~project implementation.~~ issuance of grading permit.

Residual Impacts

Impact Category = Class 3. Implementation of the above listed measures will reduce long-term project impacts to federal wetlands and Waters of the U.S. to less than significant levels.

Impact BIO-8: Operation of the proposed Produced Water Reclamation Facility could result in long-term direct and indirect impacts to special-status species potentially occurring within Pismo Creek and the Pismo Creek Estuary.

Discussion: Special-status aquatic and semi-aquatic species including the south-central California coast steelhead, two-striped garter snake, California red-legged frog, and southwestern pond turtle are either known to occur and/or have the potential to occur within Pismo Creek. Further, tidewater goby is known to inhabit the lower reaches of Pismo Creek and the Pismo Creek Estuary approximately 4 miles downstream of the proposed facility. For the purposes of this impact analysis, aquatic special-status species such as steelhead which spend the most critical portion of their life cycle within freshwater systems are considered sensitive to perturbations in water quality and as such will be the focus of the following impact discussion on the potential long-term effects of the proposed water reclamation facility on aquatic and semi-aquatic organisms.

Because juvenile steelhead remain in the creeks year-round, adequate flows, suitable water temperatures, and an abundant food supply are necessary throughout the year in order to sustain steelhead populations. Cool, clean water is essential for the survival of steelhead during all portions of their life cycle. Elevated water temperatures (>70°F) can greatly impair growth rates of juvenile steelhead if adequate food is not available. Warmer water also holds less dissolved oxygen (DO) and increases a fish's susceptibility to disease (CDFG, 2002). Specifically, rearing steelhead juveniles prefer water temperatures of 7.2-14.4°C (45-58°F) and have a upper lethal limit of 23.9°C (75°F), however can survive up to 27°C (80.6°F) with saturated dissolved oxygen conditions and a plentiful food supply (NMFS, 2001). The most critical period is in the summer and early fall when these conditions become limiting. As such, the primary potential impact of the proposed project to steelhead is the effect of discharge water on the existing temperature and DO levels of Pismo Creek. Secondarily, steelhead residing downstream of the facility and tidewater goby located within the estuary could be affected by long-term discharge of treated water containing potentially toxic chemical constituents (e.g., heavy metals, etc.).

Based upon existing data, the discharge from the facility estimated at 1.3 cubic feet per second (cfs) could be the only flow present downstream of the facility during prolonged drought periods (Entrix, 2006). The continuous discharge would approximately double the average summer flow conditions. However, during storm flows, the discharge would not be discernable in the large volume of stream flow. Based upon water quality measurements obtained in Pismo Creek in 2006 (Entrix), water temperatures ranged from 8.59°C (48.1°F) to 26.89°C (80.4°F) and DO levels ranged from 3.13 to 6.34

micrograms per liter (mg/l), respectively (Entrix, 2006). Average water temperatures during this period were between 13.98 to 14.21°C (57.16 to 57.59°F). Further, 75 compounds were detected in creek water samples including metals, semi-volatile organic compounds, volatile organic compounds, pesticides, and inorganic compounds. One inorganic compound and several metals were detected at limits above established regulatory standards including selenium, iron, and zinc (see Section 5.5 – Hydrology and Water Quality, Table 5.5-1). In summary, the following parameters and/or constituents were determined to be above or below required levels to support a healthy steelhead population: total suspended solids, dissolved oxygen, pH, hardness, manganese, iron, phosphorous, and zinc (Entrix, 2006).

However, despite existing degraded water quality conditions within Pismo Creek including periodic elevated water temperatures and low DO levels, steelhead are still persisting within the creek system as evidenced by the observation of steelhead fry at the proposed discharge location during spring 2007 field surveys (i.e., successful 2007 spawning event) and past reported observations of steelhead within the creek system (Entrix, 2006). Further, as discussed in Section 5.5 – Hydrology and Water Quality, the RWQCB has established thresholds and standards for protection of receiving waters and associated aquatic organisms and habitats. Specifically, the RWQCB Basin Plan Water Quality Objectives contain requirements for receiving waters identified as "Cold Freshwater Habitat" and as "Fish Spawning" areas which corresponds to those conditions existing within Pismo Creek. This includes the following requirements for dissolved oxygen and temperature:

> *"Dissolved Oxygen. The dissolved oxygen concentration shall not be reduced below 7.0 mg/l at any time.*
>
> *Temperature. At no time or place shall the temperature be increased by more than 5°F above natural receiving water temperature."*

In addition, per the RWQCB Basin Plan Water Quality Objectives and California Toxic Rule, toxic constituents which may be harmful to aquatic species should be removed from the water prior to discharge. The following Table 5.3-9 provides an overview of the toxic metals known to be deleterious to fish and wildlife when concentrations are present in excess of the limits identified within the Basin Plan Water Quality Objectives. These limits have been compared to those concentrations detected in produced water samples collected by PXP in 2007:

Table 5.3-7. Toxic Metal Concentrations Not to be Exceeded in Aquatic Life Habitats Compared to PXP Produced Water Metal Concentrations

Metal	RWQCB Established Concentrations not to be Exceeded (mg/l)[1]	Concentrations in PXP Produced Water (mg/l)[2]
Cadmium	.03	<0.005
Chromium	.05	0.005
Copper	.03	<0.005
Lead	.03	<0.002
Mercury	.0002	<0.002
Nickel	.4	<0.020
Zinc	.2	<0.020

[1] Based upon RWQCB Basin Plan, Table 3-5 - *Toxic Metal Concentrations not to be Exceeded in Aquatic Life Habitats, mg/l* (Freshwater [Cold, Warm] Hard [>100 mg/l $CaCO_3$]).

[2] Based upon PXP Produced Water Samples, Sample C taken on 01/25/07; < = indicates less than laboratory detection limit.

Table 5.3-9 illustrates that the toxic metal concentrations within the produced water would not be a concern for discharge to Pismo Creek since existing concentrations are below the established thresholds and would be lowered further after processing through the treatment facility. However, as discussed in Section 5.5 Hydrology and Water Quality, other primary water quality constituents of concern associated with the proposed water treatment facility include the following: pH, turbidity, chlorides, sodium, sulfate, boron, non-ionic ammonia, 2-butanone, acetone, and phenol. In addition, produced water from the facility could potentially be released at temperatures in excess of the receiving water of Pismo Creek which could result in significant impacts including mortality of steelhead residing at or immediately downstream of the discharge location. Long-term effects of increased water temperatures could also include reduced DO levels and an overall decrease in the survival rates of steelhead fry and juveniles in the creek system. Further, Matthew McGoogan of the NMFS conducted a preliminary review of the proposed project and indicated water temperature of discharge flows, spill protection, and steelhead stranding as primary concerns for potential impacts to steelhead associated with the Produced Water Reclamation Facility (Entrix, 2007).

To remove potentially toxic compounds and other constituents to the standards of the RWQCB Basin Plan Water Quality Objectives and California Toxic Rule, the facility will include several water filtration processes that involve both mechanical and chemical filtration of the produced water along with processing through a series of cooling towers. Further, the facility will include a gunite surface at the discharge location which will serve as a "splash pad" to oxygenate the water and increase DO prior to discharge flows reaching the creek channel. A review of PXP's pilot test data (Table 5.5-1) indicates that the proposed treatment technology would meet the applicable state and federal water quality criteria for most of the key constituents analyzed during the pilot study except

~~expect~~ phenol, which could result in a significant health threat to steelhead residing in the creek system as well as tidewater goby within the Pismo Estuary. Further, the proposed produced water project has the potential to result in increased water temperature impacts due to fluctuating water temperatures of Pismo Creek throughout the year. This would be most applicable in winter months, when immediate temperature increases could result in significant impacts to steelhead residing in pools within the vicinity of the discharge location including reductions of available DO.

With implementation of mitigation measure BIO-8 including designing the facility to ensure water temperatures are regulated throughout the year to coincide with current stream temperatures of Pismo Creek (i.e., maximum of 5°F above natural receiving water temperature) with a maximum discharge temperature not to exceed 20°C (68°F) and development and implementation of a Stream Monitoring Plan, impacts associated with increased temperature and reduced DO would be reduced to less than significant. This would include mitigation measures HYD-4 and HYD-5 which will ensure that PXP receives a RWQCB/NPDES permit and implements an appropriate monitoring program to ensure all applicable water quality standards are being met, that a granular activate carbon is utilized in association with the facility as a polishing unit to ensure that treated water does not contain phenol or other organic compounds in excess of RWQCB water quality standards, and that the facility includes sufficient holding capacity to contain water that fails to meet water quality standards or other agency permit conditions to ensure that potentially harmful water is not released to Pismo Creek. With implementation of these measures, potential long-term water quality impacts to steelhead, tidewater goby, and other special-status, semi-aquatic species located downstream of the facility (e.g., southwestern pod turtle, two-striped garter, California red-legged frog) would be considered less than significant.

However, based on the above analysis and implementation of appropriate protective measures to ensure water quality in perpetuity with the project, it is presumed that the long-term operation of the facility may provide additional over-summering habitat downstream of the facility in low-flow years. This would be especially critical in drought years where the projected 1.3 cfs from the facility could be the only source of water flow in the channel and in-stream habitat for steelhead. As such, periodic maintenance of the facility when water flows would be discontinued for up to one week could result in significant impacts to steelhead due to receding water flows, potential stranding and high mortalities (i.e., steelhead fry and juveniles). Further, there may be emergency shut-downs where the water flows would be intermittently shut-in to address water quality deficiencies within the treatment system. Lastly, the proposed project includes a re-use option that has the potential to provide undetermined amounts of water to adjacent landowners for the purposes of supplemental irrigation supply in the dry season. Similarly, the transfer of water flows to adjacent landowners within the summer season could result in significant but mitigable impacts to steelhead supported by discharge flows. The potential long-term stranding effects to steelhead residing in Pismo Creek during operations was discussed with the NMFS which indicated the need for additional analysis and development of appropriate strategies including a Steelhead Stranding

Plan to mitigate potential long-term effects to steelhead (M. McGoogan, NMFS, pers. comm., 2007).

Impact Category: Impacts to special status aquatic and semi-aquatic species due to perturbations in water quality = Class 2; Direct impacts to steelhead due to annual fluctuations in facility water discharge rates/flows = Class 2

Thresholds of Significance: 1 and 4

Mitigation Measure: BIO-8: The following measures shall be implemented to offset potential impacts to special-status species potentially occurring within Pismo Creek and the Pismo Creek Estuary due to long-term operation of the proposed Produced Water Reclamation Facility:

A. PXP shall obtain appropriate approvals and/or authorizations from the NMFS and USFWS to discharge treated water into Pismo Creek per Section 7 of the ESA. If deemed necessary by NMFS, t~~T~~his shall include preparation of an Essential Fish Habitat Analysis per the Magnuson-Stevens Fishery Conservation and Management Act. All conditions and/or specified recommendations from these agencies to afford maximum protection of special-status species known to occur in Pismo Creek including temperature requirements (e.g., steelhead, tidewater goby, California red-legged frog) shall be adhered to and implemented as part of the project. Approvals and/or authorizations from these agencies shall be provided to the County for review prior to ~~project implementation~~ issuance of grading permit;

B. Mitigation Measure HYD 4A and 4B (PXP shall obtain an NPDES permit from the RWQCB the requirements of which shall be fully implemented including waste discharge limitations, and monitoring and reporting requirements. During plant operations, the applicant shall report phenol concentrations in effluent samples indicated above the method detection limits but less than quantitation limits. At such a time that laboratory analytical methods allow for lower quantitation limits, the applicant shall report phenol concentrations to the RWQCB to ensure compliance with the RWQCB's water quality standards~~During operation, the applicant shall utilize granular activate carbon as a polishing unit to ensure that treated water does not contain phenol or other organic compounds that are present in concentrations in excess of RWQCB water quality standards but less than the contract laboratory's analytical method detection limit~~);

C. Mitigation Measure HYD 5 (water treatment system shall be constructed with sufficient holding capacity to contain water that fails to meet water quality per the NPDES permit or other agency permit conditions so that water not meeting specifications is not released to Pismo Creek);

D. To mitigate potentially significant impacts to steelhead and other special-status species due to increased water temperatures within Pismo Creek, PXP shall prepare a Stream Monitoring Plan for the proposed water reclamation facility. The Plan shall

be prepared for County and NMFS review and approval prior to project implementation and shall contain at a minimum the following provisions:

- Identification of permanent temperature monitoring stations within Pismo Creek both upstream and immediately downstream of the proposed discharge location. The upstream location shall be utilized to determine baseline stream temperature conditions of Pismo Creek and downstream shall be utilized as a temperature control station;
- The monitoring stations shall consist of HOBO continuous temperature recorders or an equivalent to allow automatic stream temperature measurements at approximate 2-hour intervals;
- DO levels shall also be monitored at the designated stations on a periodic basis (to be defined in the Plan) utilizing appropriate water quality sampling equipment. If deemed necessary, additional features shall be installed to the treatment system and/or along the splash pad to increase oxygenation of the discharge water;
- The Plan shall identify the procedures and schedule for stream temperature data collection and reporting requirements which will be utilized to determine the maximum discharge water temperature from the water reclamation facility to ensure compliance with the RWQCB Basin Plan and NMFS requirements throughout the life of the project (i.e., at no time shall the temperature of receiving waters be increased by more than 5°F). This shall include modifying water temperatures accordingly throughout the year to coincide with seasonal fluctuations of Pismo Creek ~~with a maximum discharge temperature not to exceed 20°C (68°F)~~;
- The Plan shall include maintenance and inspection procedures to ensure that the temperature monitoring stations are periodically serviced and/or replaced, as necessary throughout the life of the project. This shall include inspections after significant storm events to ensure that the stations are not dislodged and/or damaged by storm flows and debris; and,
- The Plan shall include a reporting schedule that provides quarterly monitoring reports to the County and the RWQCB. The Plan shall also contain provisions for the immediate reporting of upset conditions to the County and RWQCB.

E. To mitigate potentially significant impacts to steelhead due to stranding during periodic maintenance events, emergency shut-downs, and transfer of water to adjacent landowners, PXP shall prepare a Steelhead Stranding Plan for the proposed water reclamation facility. Per NMFS requirements, the Plan shall clearly outline a series of steelhead stranding avoidance measures that shall be adhered to for the life of the facility. The Plan shall be prepared for County and NMFS ~~for~~ review and approval prior to project implementation and shall contain at a minimum the following provisions:

- An analysis of the expected flow fluctuations of Pismo Creek in conjunction with the Water Reclamation Facility at the time of shutdown and/or water transfers;
- Development and implementation of a steelhead monitoring program with emphasis on habitat areas downstream of the facility to provide ~~"real time"~~baseline estimates of steelhead populations within the vicinity of the facility and periodically thereafter as deemed necessary by the NMFS;
- Identification of all factors affecting steelhead stranding potential including but not limited to changes in wetted width with modifications in stream flows and stranding potential in side channels;
- Recommendations for appropriate ramping rates to ensure that the water discharge rate is decreased slowly over a long-duration to prevent to the extent feasible steelhead stranding with emphasis on fry and juveniles;
- Monitoring program during extended temporary shut-ins and emergencies which outlines procedures for qualified biologists to monitor pools and stream channels downstream of the facility and relocate stranded steelhead to suitable habitat areas. The extent of areas within and/or downstream of the PXP property to be monitored for potential steelhead stranding shall be determined as part of the analysis and include a map identifying approximate locations of likely habitat areas (i.e., pools) and distances downstream. Information on relocation sites and estimated steelhead mortalities shall be provided to NMFS and the County in comprehensive monitoring reports; and,
- To mitigate potential impacts to steelhead due to stranding and/or relocation through the life of the project (i.e., worst case scenario), the Plan shall include several mitigation options such as implementation of creek habitat restoration projects within the PXP facility and/or p~~P~~rovisions for monetary compensation to fund high priority projects identified within the Pismo Creek Watershed Plan and adjacent watersheds. Mitigation options, if required, would be commensurate to the level of impact (i.e., installation of a series of root wads to enhance steelhead production). Maximum monetary compensation amounts shall be provided in the Plan and agreed upon by all parties prior to Plan approval. ~~to mitigate potential impacts to steelhead mortalities due to stranding and/or relocation through the life of the project.~~

Residual Impacts

Impact Categories = Class 2 and Class 4. Implementation of the above listed measures will reduce potential long-term project impacts to special-status species of Pismo Creek to less than significant levels (Class 2). Further, with appropriate implementation of mitigation measures and long-term monitoring to ensure water quality standards are being met through the life of the project, the proposed discharged water would be seen as beneficial to the lower 4 miles of the Pismo Creek system during operation (Class 4). The following provides an overview of several of the expected beneficial effects to Pismo Creek:

- Increased water flow into Pismo Creek would have the potential to dilute nutrients that accumulate during low flow periods from adjoining land uses (cattle operations), and agricultural operations next to the creek. Fine sediments could also be kept in suspension instead of settling and smothering BMI habitat and nutrient loading could be diluted to promote the increase in diversity and abundance of sensitive BMI species (Entrix, 2006);
- Increased water flow into the creek would potentially allow the creek to flow (i.e., surface flow) in all reaches from the project site to the ocean. Stream flow as measured during the CDFG stream survey in 2005 at mile 0.87 upstream from the ocean, after a significant winter which produced above average rainfall for the area, was less than 1.0 cfs flow in early June and 0.12 cfs by September (CDFG, 2005);
- Increased water flow into the creek would provide for increased flow over the riffles and would result in an overall expansion in the available habitat for all aquatic species residing in Pismo Creek downstream of PXP property, especially BMI which are the primary food for steelhead;
- Increased water flow into the creek would potentially reduce the existing fine sediments and thick algae mats, especially in the vicinity of the project area, from embedding of the gravel and cobbles essential for steelhead spawning and survival. As was noted during snorkel surveys, a thick layer of fine sediment and algae covered most of the bottom of the pool habitats surveyed;
- Increased water flow into the creek would increase the useable habitat for rearing and survival as the potential for poaching from homeless camps and populations along the creek is a factor for survival of the steelhead. Maximum residual pool depth was another parameter examined during the CDFG 2005 stream survey. This parameter is important especially in small coastal drainages that have the potential to become intermittent or dry during parts of the year as most of the drainages in San Luis Obispo County. The maximum residual pool depth is the deepest portion of the pool, and of the 193 pools measured during the survey, almost 50% had depths between 1 and 2-feet (CDFG, 2005); and,
- Increased water flow into the creek will ensure increased inflow into the estuary to improve water quality and quantity, which can aid in survival of both steelhead trout and tidewater goby. Site conditions in the Pismo Creek estuary as recorded in June 2005 were 1.0 ppt (parts per thousand) salinity and ~145% oxygen saturation (HES, 2005). The saturation of oxygen is an important water quality parameter as it demonstrates significant production during the day. This parameter will convert to respiration at night and could create anoxic conditions, which could be lethal to fish species located in the estuary. This specific issue is documented in the Recovery Plan for Tidewater Goby (USFWS, 2005). The first recovery task for tidewater goby is to stabilize and protect habitat conditions at occupied sites by developing strategies to maintain or enhance, as needed, current habitat conditions, including managing freshwater inflow and water quality.

Impact BIO-9: Termination of the PXP Arroyo Grande oil field and eventual decommissioning of the proposed Produced Water Reclamation Facility could result in significant impacts to steelhead populations potentially occurring within Pismo Creek.

Discussion: As discussed above, the proposed Produced Water Reclamation Facility could result in long-term enhancement of available fish and wildlife habitat in Pismo Creek and its estuary, which in turn could result in a substantial increase in overall populations of special-status aquatic and semi-aquatic species. Specifically, it is feasible that steelhead may become entirely dependent upon the flows from the facility over time. Due to the fact that the proposed Water Reclamation Facility is only required to support continued production of the PXP Arroyo Grande oil field, the water discharge from the facility would be discontinued at some unknown future date and is not considered a permanent source of water to Pismo Creek. Therefore, decommissioning of the proposed Water Reclamation Facility and termination of water discharge to Pismo Creek could have a significant impact on steelhead which become dependent on the water source overtime. The following local case study provides a specific example of related fisheries impacts, which were directly attributable to removal of an artificial water source from a local waterway supporting steelhead:

> *The City of San Luis Obispo (City) maintains the sewage treatment plant located at the south end of City limits adjacent to Prado Lane. The facility discharges treated wastewater (effluent) into San Luis Obispo Creek. In the mid-1990's, the City upgraded their treatment process to a tertiary level at a rate of approximately 6.5 cfs. As a result, a dramatic improvement of the steelhead trout population was immediately noticed within the downstream portions of San Luis Obispo Creek. When the City began examining the option of diverting a portion of the treated discharge water into the City for beneficial recycling and reducing the overall amount of discharge, the regulatory agencies, including NMFS became concerned. The initial reduced discharge rate was to be as low as 1.7-cfs which has subsequently been increased to 2.5-cfs minimum allowable daily discharge rate. However, before any diversion could be approved and/or initiated, a complete assessment of all baseline parameters for the existing steelhead population and their associated habitat was required. This included development of a Habitat Suitability Index (HIS) for the lower 7-miles of San Luis Obispo creek which would be potentially impacted by the diversion.*
>
> *The HIS provided a comprehensive analysis of all parameters associated with steelhead during any/all portions of their lifecycle while in the freshwater system. Canopy cover, water depth, water temperature, creek substrate surveys, etc. were completed in San Luis Obispo Creek and assigned a score which required mitigation at a ratio of 1:1. A watershed wide steelhead population census and distribution analysis was also completed to document where and how many fish were in the system.*

This included an emigration survey which was completed for a 1-year period to determine timing of steelhead smolt emigration. An infra-red water gage was also installed immediately downstream of the discharge location to provide assurance to the agencies that the City was discharging water as required. As mitigation, twenty habitat restoration projects (i.e., development of pools) were required in San Luis Obispo Creek to increase the available habitat for steelhead in the system. However, once the population census was analyzed, it was noticed that there were more fish than anticipated in the lower section of the creek (i.e. below the discharge location) so additional mitigation was required at that time. Specifically, the City was required to remove a barrier on Coon Creek located between PG&E's Diablo Canyon Nuclear Power Plant and Montana de Oro State Park. This effectively opened an additional 6-miles of protected habitat to offset future potential impacts to steelhead trout in San Luis Obispo Creek from removing the artificial water source from the system.

Based upon the case study above proposed long-term discharge of water to Pismo Creek as part of the project (i.e., > 10 years), potential impacts to steelhead associated with future facility decommissioning activities are considered reasonably foreseeable and potentially significant.

Impact Category: Impacts to steelhead due to ultimate facility decommissioning and removal of water source from Pismo Creek = Class 2

Thresholds of Significance: 1 and 4

Mitigation Measure: BIO-9: The following measures shall be implemented to offset potential impacts to steelhead populations established within Pismo Creek due to decommissioning of the Produced Water Reclamation Facility:

A. ~~Prior~~ At the time PXP determines to decommission~~ing of~~ the Produced Water Reclamation Facility, PXP shall be required to obtain formal approval and/or authorization from the County and NMFS. As part of the decommissioning request, PXP shall conduct a complete assessment of all baseline parameters for the existing steelhead population and their associated habitat within Pismo Creek. This shall include a detailed summary of the ~~annual~~ steelhead monitoring data required as part of BIO-8E and development of a Habitat Suitability Index (HIS) for the lower 4 miles of Pismo Creek which would be potentially impacted by removal of the artificial water supply from the creek system;

B. In the event it is determined by NMFS and the County after review of the data that removal of the facility would result in a significant impact to the existing Pismo Creek steelhead population, then PXP shall submit a ~~Pismo Creek~~ Steelhead Habitat Mitigation Plan (Plan) to the County and NMFS for review and approval prior to approval of facility decommissioning. The Plan shall be prepared in accordance with

the most current California salmonid habitat restoration techniques and identify a series of creek habitat restoration projects that will be completed by PXP over a specified time period to enhance the existing breeding and over-summering habitat within Pismo Creek (i.e., creation of pools, etc.) and/or an adjacent watershed, such as Arroyo Grande Creek. The Plan shall focus on restoration of the portion of Pismo Creek located within the PXP Arroyo Grande oil field or within a comparable section of Arroyo Grande Creek ~~including~~ and include, as necessary, replacement of any dilapidated road crossings and associated culverts that may be acting as fish barriers. Again, mitigation options, if required, would be commensurate to the level of impact. ~~As necessary~~Alternatively, the Plan ~~shall also~~ can include provisions for monetary compensation to fund high priority projects identified within other portions of the Pismo Creek and/or Arroyo Grande Watershed ~~Plans~~. Maximum monetary compensation amounts shall be provided in the Plan and agreed upon by all parties prior to Plan approval. Monetary compensation can be provided as mitigation anytime prior to decommissioning of the facility at the discretion of PXP.~~.~~

Residual Impacts

Impact Category = Class 3. Implementation of the above listed measures will reduce potential long-term project impacts to steelhead due to facility decommissioning to less than significant levels.

5.3.3.3 Cumulative Impacts

As discussed in Section 6.2 of this EIR, cumulative projects include King South Ranch and Tentative Tract Map No. 2388 which would result in the development of low density residential land uses, a hotel, golf course and vineyards. Further, there a number of other proposed developments much smaller in scale, however with the potential to cumulatively effect the Pismo Creek watershed due to secondary impacts (i.e., increased runoff, sedimentation, etc.). Price Canyon is a biologically significant area that supports numerous sensitive plant and animal species and natural communities including the Pismo Creek riparian corridor and stream channel, such that construction of either the King South Ranch Project or the Tentative Map Tract no. 2388 may result in impacts to biological resources. Specifically, these projects have the potential to result in further removal and degradation of vegetative communities due to construction of permanent structures, introduction of impervious surfaces, and conversion of natural areas to vineyards and golf courses. This may also result in indirect impacts to Pismo Creek and associated biological resources. It is possible that construction of either of these projects may result in incremental impacts to biological resources within the area. However, these cumulative impacts are not expected to alter the significance of biological resources impacts associated with the proposed project.

THIS PAGE LEFT INTENTIONALLY BLANK

5.4 GEOLOGY AND SOILS

The purpose of this section is to describe geological and soil conditions in the project area and to evaluate potential impacts of the proposed project on these features.

5.4.1 Setting

5.4.1.1 Geology

The project is located in southern San Luis Obispo County, which is situated in the southern Coast Ranges geomorphic province of California. The southern Coast Ranges geomorphic province extends from Point Arguello in the south to the Oregon border in the north and ranges from 20 to 80 miles in width. The Coast Ranges province is bounded on the south by the Transverse Ranges geomorphic province, on the east by the Central Valley, on the north by the Klamath Ranges geomorphic province, and on the west by the Pacific Ocean.

The Coast Ranges geomorphic province is characterized by a series of northwest trending mountain ranges and valleys, many of which are bounded by faults. Rocks exposed in the southern Coast Ranges province include igneous, sedimentary and metamorphic rocks ranging in age from Jurassic to recent (see Figure 5.4-1).

San Luis Obispo County is traversed by five mountain ranges: the Santa Lucia Range, the Temblor Range, the Caliente Range, the La Panza Range and the San Luis Range. The Arroyo Grande Oil Field is located in Price Canyon in the southern portion of the San Luis Range.

The oldest rocks in the San Luis Range belong to the Jurassic-aged Franciscan formation, which forms the basement complex. The Franciscan formation is predominantly comprised of graywacke sandstone, with lesser amounts of shale, limestone, chert, and altered submarine volcanic rocks. Thickness of the Franciscan formation is estimated to be in excess of 25,000 feet. The Franciscan formation is unconformably overlain in the Arroyo Grande Oil Field by the Miocene-aged Monterey and Miocene/Pliocene-aged Pismo formations (ERCO 1981).

The Monterey formation is composed primarily of siliceous and porcelanous shales interbedded with dolomite/limestone, chert, and volcanic ash. The Monterey formation in the Arroyo Grande Oil Field is subdivided into four members: the Tuffaceous Member (Tmmt), the Siliceous Member (Tmmp), the Diatomaceous Member (Tmmd), and the Silty Member (Tmms) (ERCO 1981). Although no hydrocarbons are directly produced from the Monterey Formation, it is believed to be the source rock for the Arroyo Grande field reservoirs. No exploratory borings or wells have been drilled through the entire thickness of the formation, which is believed to be approximately 1,000 to 1,400 feet thick (Dames & Moore 1986).

The late Mio-Pliocene Pismo formation unconformably overlies the Monterey formation and consists of lenticular fine to coarse grained friable sandstone, calcareous siltstone, pebble conglomerate, and siliceous, cherty shale. The Pismo formation in the Arroyo Grande Oil Field area is subdivided into the Edna Member (late Miocene), an intermediate undifferentiated Member, and the Squire Member (Pliocene). The Edna Member is a massive buff to white coarse-grained bituminous sandstone, with layers of course pebble- or boulder-size components appearing randomly throughout the member. Bedding throughout the massive sands is indistinct or absent, with the exception of coarse-grained gravels or horizons of erosional contacts (Dames & Moore 1986).

In addition to the consolidated rock formations, recent alluvial deposits are present in the channel and flood plain of Pismo Creek. The alluvial sediments are comprised of silt, sand, and gravel and reach a maximum thickness of 100 feet near the center of the valley, becoming thinner at the margins of the valley.

5.4.1.2 Geologic Structure

The Arroyo Grande Oil Field lies within a structurally complex area. Significant faults in the area include the Hosgri, Nacimiento, West Huasna, and Rinconada faults. Smaller faults include the Los Osos fault zone, the Edna fault, the Indian Knob fault; the Wilmar Avenue, the Oceano, and the Pecho faults (see Figure 5.4-2). Fault movement includes reverse, strike-slip, and normal types of displacement (ERCE 1991; Dames & Moore 1986). Price Canyon trends north-northeast, cross-cutting the regional east-west or northwest-southwest structural grain. The area also contains a less well-defined north-south fault set (Dames & Moore 1986). There are no known active faults in the project area. The proposed project site is not located within an area susceptible to liquefaction or landsliding, according to the County of San Luis Obispo Safety Element.

5.4.1.3 Topography

Elevations within the site range from a high of 607 feet above sea level in the northern segment of the site to approximately 100 feet above sea level on the east side of the site within the Pismo Creek drainage. The topography at the site is characterized by three main hills (rising to elevations of 442, 506, and 607 feet above sea level) separated by valleys at elevations of approximately 200 feet above sea level.

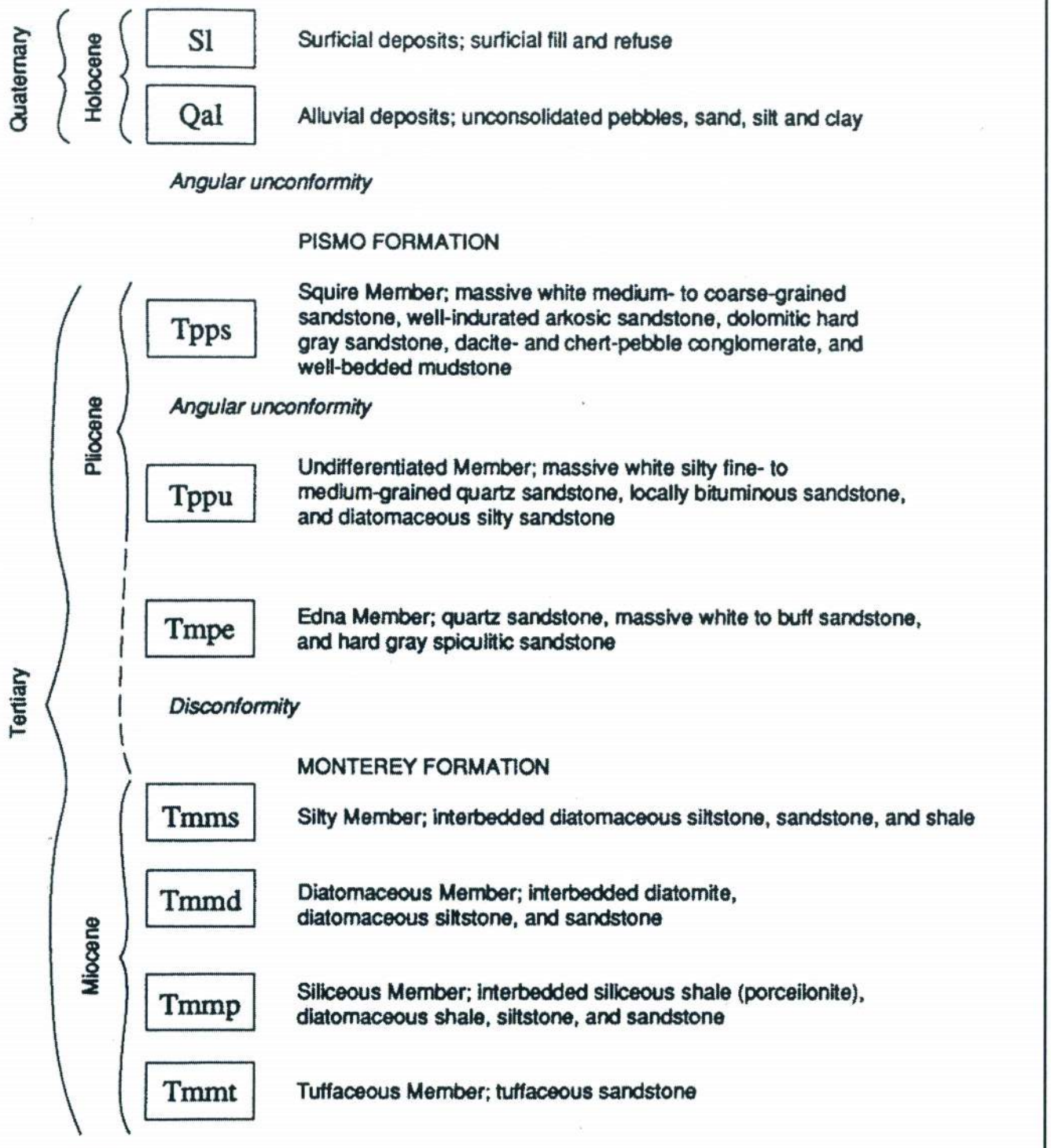
5.4.1.4 Petroleum Occurrence

The Arroyo Grande field is located on the north flank of the Pismo syncline, strata dip southwest; oil-producing zones are deeper in that direction. A structural saddle in the center of the field coincides with a nearly barren zone at depth and divides the field into two major producing areas, north and south. In the northern area, where most of the currently-producing wells lie, the producing zones are shallower and structurally complex, being broken by several inactive faults into roughly half a dozen blocks. The faults isolate the individual blocks, requiring closer and more irregular well spacing to produce the available oil.

A minor amount of natural gas is produced with the oil and is used to fuel the steam generators. Crude oil produced from the Arroyo Grande field has API Gravities ranging from 14 to 22 degrees and 1.6 percent sulfur content, average for California crude oils which range from 0.8 to 2.0 percent sulfur (Lawrence, 1958).

5.4.1.5 Soils

Soils found in the project site are predominantly comprised of weathering products of Pismo formation sandstones. The dominant soil type at the proposed RO plant site is Arnold Loamy Sand is typically developed on 5 to 15 percent slopes. Loamy sands are typically 70 to 90 percent sand with varying percentages of silt and clay constituents making up the remaining 10 to 30 percent.



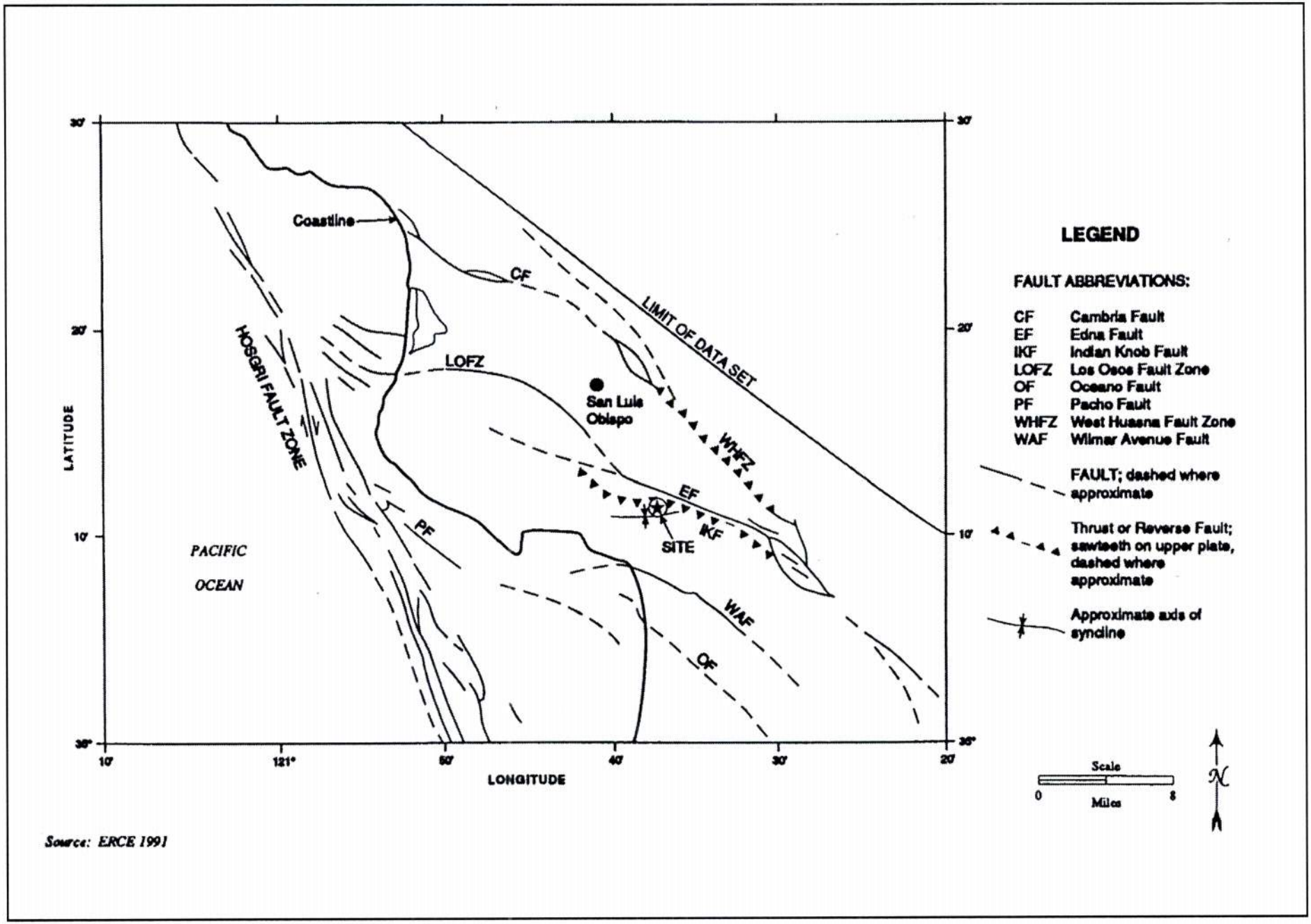
Source: ERCE 1991

Source: SAIC

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

STRATIGRAPHIC COLUMN FOR PRICE CANYON AREA

FIGURE 5.4-1



Source: ERCE 1991

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

MAJOR FAULT STRUCTURES NEAR PRICE CANYON

FIGURE 5.4-2

The parent material for the Arnold loamy sand is derived from unconsolidated material weathered from the nearby siliceous marine sandstones of the Pismo formation. Due to the high quartz content of these weathered materials, the soils derived from them have not been able to develop a significant amount of clay content. This results in a loamy sand texture with a high permeability (i.e., low available water capacity), in turn which leads to limited plant growth and minimal organic matter accumulation (U.S. SCS, 1984).

5.4.2 Impact Analysis

5.4.2.1 Thresholds of Significance

Based on the County of San Luis Obispo's CEQA Guidelines, an impact would be significant if any of the following conditions, or potential thereof, would result with implementation of the proposed project:

1. Exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides;
2. Result in soil erosion, topographic changes, loss of topsoil or unstable soil conditions, from project-related improvements, such as vegetation removal, grading, excavation or fill;
3. Result in the loss of a unique geologic failure;
4. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
5. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the General Plan, Area Plan, or Zoning Ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; or,
6. Preclude the future extraction of valuable mineral resources.

5.4.2.2 Short-Term Impacts

Impact GEO-1: Construction of the proposed project may result in a substantial, or potentially substantial, adverse change in the physical condition of the land.

Discussion: Topography will be impacted by construction. The proposed project will require the construction of new soil pads, construction of approximately 14,600 linear feet of pipelines, and the modification of an existing basin. Site disturbance would consist of approximately 13,610 cubic yards of cut and approximately 12,280 cubic yards of fill (with a balance of approximately 1,330 cubic yards), resulting in a total disturbed area of approximately 5.6 acres. The proposed construction would be limited to a canyon within the developed area of the oil field and would not substantially alter the existing topography. Potential soil erosion and vegetation removal impacts would be addressed by Mitigation Measures HYD-1 and BIO-6. Therefore, the physical change to the land is considered adverse, but less than significant.

Impact Category: Class 3

Threshold of Significance: 2

Mitigation Measures: Since no significant impacts were identified, no mitigation is required.

Residual Impacts

None

5.4.2.3 Long-Term Impacts

Impact GEO-2: Construction of new graded pads and proposed detention pond modifications could result in unstable slopes prone to failure during a seismic event.

Discussion: The applicant proposes to utilize an existing unused detention basin for the temporary storage of treated water prior to discharge or re-use at adjacent properties. The pond would be lined to reduce percolation of the stored water. A geotechnical engineering study will be required as a part of the submittal for grading permits. Construction of new graded pads would require approval of a grading plan reviewed by the County Planning and Building Department's grading plan checker. County inspections and independent geotechnical soils testing would be required during the course of grading activities to ensure that the grading activities meet County grading requirements. Mitigation Measure GEO-2 would ensure that impacts associated with slope failure would be less than significant.

Impact Category: Class 2

Thresholds of Significance: 1-5

Mitigation Measure GEO-2: The applicant shall provide the County with a geotechnical engineering report prepared and certified by a State of California licensed geotechnical engineer which addresses slope stability, landslides, liquefaction, settlement, seismic hazards, and expansive soils at the area of proposed facilities. The applicant shall implement the recommendations contained in the geotechnical engineer's report in preparation of grading plans and during construction.

Residual Impacts

No significant residual impacts are anticipated with implementation of the mitigation measure presented above.

Impact GEO-3: The treatment and discharge of produced water could result in decreased oil production due to the loss of reservoir pressures.

Discussion: The proposed project would result in the treatment and discharge of approximately 840,000 gallons per day of produced water generated during oil production activities. Currently, produced water is re-injected into the oil producing formation. Steam is also injected into the oil-producing formation to enhance oil recovery. The applicant has stated that the re-injection of produced water interferes with the ongoing steam injection activities. The removal of water from the oil-producing formation will lower reservoir pressures which could have a negative impact on oil production rates within the oilfield. It is anticipated that the applicant will continue to

monitor reservoir pressures as part of its ongoing reservoir management practices and adjustments would be made to ensure that oil production rates are maintained.

Impact Category: Class 3

Thresholds of Significance: 6

Mitigation Measure: None required.

Residual Impacts

None

5.4.2.4 Cumulative Impacts

Project Sites for the King South Ranch and Tentative Tract Map No.2388 both drain to Pismo Creek. No significant cumulative geologic or soils impacts are anticipated to result from approval of the proposed project. Refer to Section 5.5 for a discussion of potential drainage, erosion, and sedimentation impacts to Pismo Creek resulting from the proposed project and other projects in the Pismo Creek watershed.

THIS PAGE LEFT INTENTIONALLY BLANK

5.5 HYDROLOGY AND WATER QUALITY

This section addresses potential impacts of the proposed produced water treatment facility on surface water hydrology and water quality. Specifically, this section discusses the existing hydrologic and water quality conditions found in Pismo Creek and the surrounding basin. Potential impacts associated with the proposed water reclamation facility are analyzed and mitigation measures proposed to reduce significant impacts have been included.

The proposed project would develop a water reclamation facility at the PXP Arroyo Grande Oil Field to facilitate continued operations associated with the approved Phase IV Development Plan. See Section 3.0 Project Description for a detailed discussion of the water treatment process proposed by the applicant.

Published reference documents and applicant-supplied information was used in assessing the potential impacts from the proposed project in this SEIR. Water resources reports used in preparation of this SEIR analysis include:

- *Revised Hydrologic, Water Quality, and Biological Characterization of Pismo Creek* (Entrix Inc., 2006);

  This report augments information presented in the Application and Supplemental Information submitted to San Luis Obispo County Department of Building and Planning on May 22, 2006. This report includes a baseline characterization of conditions in Pismo Creek, and an assessment of impacts to hydrology, water quality, and biological resources as a result of the project;

- *Reasonable Potential Analysis and Options Analysis, Plains Exploration and Production Company, Produced Water Reclamation Facility, 1821 Price Canyon Road, Pismo Beach, California,* prepared by Entrix, Inc. and dated March 16, 2007.

  This report includes information requested by the Regional Water Quality Control Board in their October 6, 2006 letter, including detailed information on the proposed water treatment process, a summary of water quality data for produced water samples collected from the oil field, and alternative water disposal methods considered for the project.

- Laboratory analytical reports prepared by Calscience Environmental Laboratories, Inc. and summary tables of water sample analytical data provided by the applicant for pilot test runs conducted in 2006 for the proposed treatment system.

- *San Luis Obispo County Public Works Department Hydrologic Report* (for the Years 2001 through 2003) (hereinafter referred to as the Hydrologic Report);

  This report includes a summary of the hydrological conditions for San Luis Obispo County for the 2001-02 and 2002-03 Water Years. Data is presented for precipitation, evaporation, stream flow, groundwater and reservoir operations; and

- *California Groundwater Bulletin 118 – San Luis Obispo Valley Groundwater Basin.*

This report provides information on hydrologic basin in the project area as well as groundwater quality.

5.5.1 Setting

The following sub-sections present setting information regarding hydrology, surface water quality, and groundwater resources in the vicinity of the project site.

5.5.1.1 Hydrology

The Pismo Creek watershed area is approximately 47 square miles, and attains a maximum elevation of almost 2,865 feet above mean sea level (msl). The watershed consists of approximately 54 percent mountainous and foothill area and 46 percent valley area. Pismo Creek measures approximately 13 miles in length from its headwaters to its confluence with the Pacific Ocean.

There is no stream gauge in Pismo Creek, and as such there are no long-term hydrologic records. Entrix conducted stream flow measurements within Pismo Creek at the project site. Measured base flow conditions during the Entrix study period ranged from 0.9 to 1.76 cubic feet per second (cfs). The peak flow measured during a 2006 storm event was 98 cfs. Entrix utilized the available data for input to a widely used hydraulic model (US Army Corps of Engineers HEC-RAS) which yielded a bankfull flow of 530 cfs. This flow is equivalent to the 2-year recurrence interval flow, and typically measures the flow before the stream enters the floodplain. Entrix calculated the 10-, 50-, and 100-year recurrence interval flows for Pismo Creek and derived estimated flow rates of 6,703 cfs, 32,239 cfs, and 55,937 cfs, respectively.

5.5.1.2 Surface Water Quality

The Pismo Creek watershed is known to contain naturally-occurring inorganic constituents at levels exceeding drinking water standards, and to contain naturally-occurring oil and gas seeps that can result in detectable concentrations of total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), and regulated metals in surface water and groundwater. The Entrix Report presents a characterization of baseline water quality in Pismo Creek, with an emphasis on the area proposed to receive water from the Produced Water Reclamation Facility.

As part of this study, the applicant initiated a sampling program at three locations (upstream, downstream and near the proposed discharge area) under existing operational and hydrological conditions. Sample location P-1 is the uppermost site, located at the eastern property line near Edna Valley and constitutes inflow to the oil field. Sample location P-2 is directly upstream of the proposed discharge site, and just below the Hyla Crossing of Pismo Creek. Sample location P-4 is downstream of the proposed discharge site at the western property line to determine water quality conditions leaving the project area.

Of the total suite of priority pollutants and water quality constituents investigated, 75 were detected in Pismo Creek during at least one of the surveys. All detections were recorded in both wet and dry sampling rounds, with the exception of six analytes found in all three sampling events, and three in the storm event only. Sample locations within the oil field (P-2

and P-4) indicate similar water quality to the sample approximately 2,000 feet upstream from the oil field (P-1).

The 75 detected compounds in existing creek water samples include metals, semi-volatile organic compounds (SVOCs), VOCs, pesticides, and inorganic compounds. The detections were compared to appropriate regulatory standards. Three compounds were identified at concentrations above Basin Plan water quality objectives, as summarized in the following table:

Table 5.5-1. Pismo Creek Baseline Basin Plan Water Quality Objectives

Type	Constituent	Max (mg/L)	Site	Basin Plan (mg/L)	Exceed Basin Plan Thresholds?
Metal	Selenium	0.0963	P-1	0.01	Yes
Metal	Iron	2.95	P-1	1	Yes
Metal	Zinc	0.172	P-1	0.12	Yes

Source: Entrix, 2006
mg/L – milligrams per Liter

5.5.1.3 Groundwater Resources

Groundwater Supply. The project area lies within the Pismo Creek Valley Basin (refer to Figure 5.5-1). The Pismo Basin (or Pismo Creek Hydrologic Subarea) is relatively small with a total storage capacity of 30,000 acre-feet. The estimated annual safe/yield is 2,000 acre-feet per year, but annual consumptive use has been over 2,100 acre-feet, indicating the basin is slightly over-drafted (San Luis Bay Inland Planning Area). As a result, the City of Pismo Beach is currently at a Level of Severity II for water resources (County of SLO, RMS Annual Report, 2005).

Groundwater flow in the region is generally controlled by the local topography and geology. Groundwater in the site area follows the topographic gradient to the southwest, and is probably bounded by the local hills to the northwest and southeast. The majority of stored potable groundwater at the site is likely to be found in the shallow alluvial deposits associated with Pismo Creek.

The nearest municipal groundwater well to the proposed project is located in the Edna Valley. According to the referenced DWR document titled *California's Ground Water*, well yields within the Pismo Creek Valley Groundwater Basin average approximately 350 gallons per minute, with maximum yields of approximately 500 gallons per minute, and the groundwater production zones within the Pismo Creek Valley Groundwater Basin extend from depths of approximately 10 to 110 feet below ground surface.

Groundwater Quality. Groundwater is produced from three water wells within the property. Groundwater at the Arroyo Grande oilfield overlies a naturally occurring oil-bearing formation. The oil regularly migrates naturally upward from lower elevations toward the surface, frequently coming into contact with the groundwater.

The applicant conducted groundwater sample collection and chemical analyses at the project site in June 2004. Groundwater samples were collected from two water supply wells located within the project site and operated by PXP. The groundwater samples were submitted to a local analytical laboratory for chemical analyses for the following parameters: pH values, electrical conductivity, total dissolved solids (TDS), heavy metals, and TPH. The analytical results for water samples collected in 2004 were compared to analytical results for samples collected from the same wells in 1986 and 1993. A review of the analytical results shows that there has been no significant increase in metals or TDS concentrations. TPH was not indicated above reporting limits in samples collected from the two wells. Electrical conductivity and pH values have increased slightly in each well but do not exceed state or federal drinking water standards known as Maximum Contaminant Levels (MCLs). Comparison of this data with historical data does not indicate a significant impact to groundwater from ongoing steam or wastewater injection activities at the oil field.

Analyses of data from seven public supply wells show an average TDS content of 583 milligrams per Liter (mg/L) in the basin with a range from 450 to 800 mg/L. The water quality objective of the Water Quality Control Plan for the Central Coast Region for TDS is 1,000 mg/L; however, the water quality for the Pismo Creek Valley Groundwater Basin is characterized by Department of Water Resources (DWR) as having elevated TDS, chloride, nitrate, and sulfate concentrations.

As part of Phase IV EIR implementation, a Sentry Groundwater Monitoring Well Program was incorporated into a groundwater monitoring program as an added protection measure. This monitoring and reporting program has been implemented and evaluates constituents in the groundwater aquifer associated with the Pismo Creek alluvial valley.

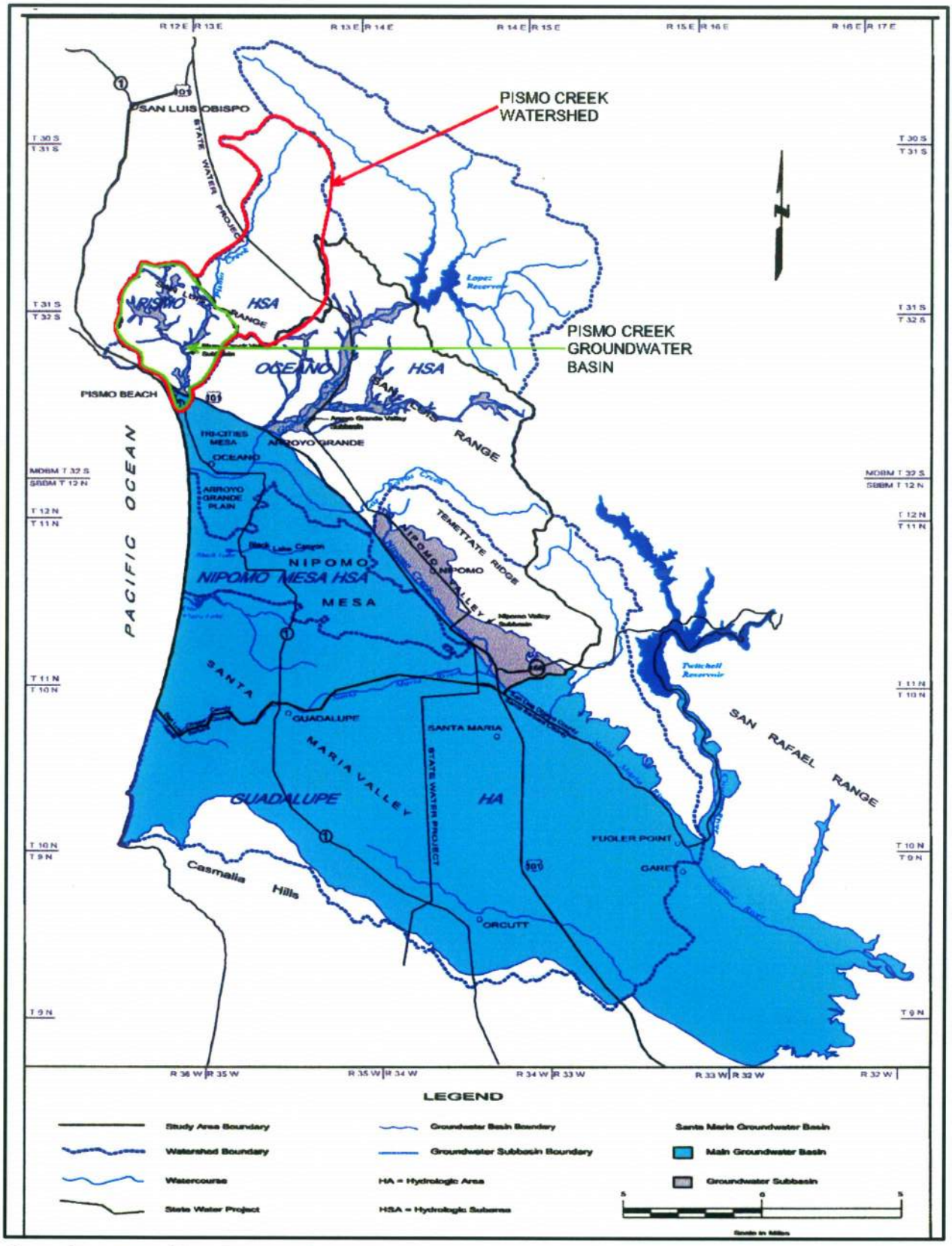
5.5.1.4 Flooding

No stream gauges are currently located on Pismo Creek. Entrix utilized direct flow measurements, combined with estimations of flows using a hydraulic model and approximating hydrologic characteristics using data from nearby Toro Creek which is a gauged, analogous coastal watershed within San Luis Obispo County, to determine anticipated flows within Pismo Creek. The instantaneous peak streamflow data for Toro Creek between 1971 and 1978 (the available period of record) was used to calculate recurrence interval flows using the USGS PEAKFQ Version 4.1 software. The recurrence interval is the average interval, in years, between the occurrences of a flood of equal or greater magnitude to the specified value. The results of the analysis indicate a 2-year recurrence interval flow of approximately 143 cfs for Toro Creek which correlates to a flow of 480 cfs for Pismo Creek which is close to the bankfull flow estimate of 530 cfs predicted by the hydraulic model performed for the study (Entrix, 2006).

5.5.2 Regulatory Setting

5.5.2.1 Federal Policies and Regulations

The Safe Drinking Water Act implemented by the U.S. Environmental Protection Agency (EPA) is the primary federal regulation controlling drinking water quality. It was originally implemented in 1974 with significant revisions in 1986. The Act originally set standards for 83



Source: Department of Water Resources, Southern District

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

PISMO CREEK HYDROLOGIC BASIN

FIGURE 5.5-1

individual constituents, including pesticides, trihalomethanes, arsenic, selenium, radionuclides, nitrates, toxic metals, bacteria, viruses, and pathogens. The 1996 amendment to the Act made some significant changes, most of which resulted in more stringent application of controls. The amended Act also adopted a more rigorous schedule for amending the Disinfectants/Disinfection By-Products Rule and the Enhanced Surface Water Treatment Rule, both of which took effect in 1998. Federal permits relating to water utilities or infrastructure would be required only if the proposed project resulted in Corps involvement or USFWS involvement if issues concerning the project resulted in construction of new infrastructure such as pipelines, utility lines, etc. in sensitive habitat areas. The proposed project will require authorization from the U.S. Army Corps of Engineers under Section 404 of the SDWA.

5.5.2.2 State Policies and Regulations

The State Water Resources Control Board (SWRCB) and Central Coast Regional Water Quality Control Board (RWQCB) have responsibility for maintaining water quality in the State of California under the authority of the federal Clean Water Act, and the State Porter-Cologne Water Quality Control Act (PCWQCA). The Boards exercise this authority through regulations contained in Title 23 and 27 of the California Code of Regulations (CCR). SWRCB provides statewide policy direction and administrative functions, while the nine RWQCBs have principal authority for permitting and enforcing requirements to control any discharge to surface waters, groundwater, or wetlands.

The RWQCBs also direct, oversee, inspect, and enforce tasks associated with the assessment, remedial monitoring, and closure of sites with discharges that have impacted or could impact the waters of the State. Under the PCWQCA, each RWQCB may impose more stringent requirements on discharges of waste than any statewide requirements as needed to protect water quality based on identified beneficial uses.

Water quality goals and cleanup levels at a site are determined by a variety of site-specific factors. As a broad goal, the SWRCB and RWQCBs attempt to restore all contaminated sites to background levels according to State Board's Resolution No. 68-16 "State of Policy With Respect to Maintaining High Quality Waters in California (often referred to as the State's Anti-degradation Policy"). Resolution 68-16 states that "whenever the existing quality of water is better than the quality established in policies...such existing high quality will be maintained." The Resolution further states that degradation will only be allowed if it is in the best interest of the State, and will not impair present and future beneficial uses. SWRCB Resolution 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code § 13304" empowers the RWQCBs to pursue the "complete cleanup of waste discharged and restoration of affected water to background conditions (i.e., the water quality that existed before the discharge)".

Federal and State water quality criteria and standards designed to protect human health and welfare, agricultural use, and aesthetics have been established in a wide range of references. Of all water quality criteria, only the United States Environmental Protection Agency's (U.S. EPA) and California Environmental Protection Agency's (Cal/EPA) primary Maximum Contaminant Levels (MCLs) set mandatory water quality criteria for drinking water. RWQCBs have established MCLs as minimum cleanup standards. However, MCLs have not

been developed for all chemical constituents. In such cases, the following water quality goals generally are used:

- California Safe Drinking Water and Toxic Enforcement Act (Proposition 65);
- Cal/EPA Office of Environmental Health Hazard Assessment Public Health Goals ;
- U.S. EPA Suggested No Adverse Response Level;
- National Toxic Rule; and
- California Toxic Rule.

Construction Storm Water General Permit

The applicant would need to obtain coverage under the General Construction Storm Water General Permit, issued by the SWRCB (Permit Order 99-08-DWQ) for the proposed construction activities. To comply with the general permit, the applicant would be required to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP is required to include the following elements: 1) identify the potential sources of storm water pollution at the Project Site; 2) identify, select, and implement BMPs to reduce the potential for storm water pollution; 3) train employees in storm water pollution prevention BMPs; and 4) regularly monitor and maintain the effectiveness of the selected BMPs through plan evaluation and annual storm water quality compliance certification.

5.5.3 Impact Analysis

5.5.3.1 Thresholds of Significance

CEQA Appendix G (Environmental Checklist) states that a significant water resource impact would occur if the project:

1. Substantially depletes groundwater supplies or interferes substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
2. Requires or results in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental issues; or,
3. Did not have sufficient water supplies available to serve the project from existing entitlements and resources;
4. Per State CEQA Guidelines, if a project were to substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
5. Any project-related exceedance of the water quality objectives of the Central Coast

Water Quality Control Plan;

6. Any project-related effect that would substantially reduce groundwater production of wells in the project area;
7. Substantially alter drainage patterns which would result in substantial erosion or siltation;
8. Substantially increase the rate or amount of surface run-off;
9. Expose people or structures to significant risk of loss, injury or death involving flooding; and,
10. Place structures in a 100-year flood hazard zone that would impede or redirect flood flows.

Short-Term Impacts

Impact HYD-1: Construction of the proposed project could result in short-term increases in erosion and sedimentation resulting from earth-moving operations and exposed soils.

Discussion: Construction of the project will require land clearing operations to construct several new soil pads for new facilities. Approximately 5.6 acres of land would be disturbed during the course of construction activities. During clearing operations, vegetation will be removed and soil will be exposed. Exposed sandstone-derived soil is vulnerable to erosion by rainfall runoff. Soil eroded from the project site could ultimately be deposited into Pismo Creek, which would increase turbidity and sedimentation.

Impact Category: Class 2

Thresholds of Significance: 7, 8

Mitigation Measure HYD-1:

A. In compliance with the Land Use Ordinance, the applicant will prepare and implement a Sediment and Erosion Control Plan (SECP) for the proposed project. The SECP will include:

- Slope surface stabilization measures, such as temporary mulching, seeding, and other suitable stabilization measures to protect exposed erodible areas during construction, and installation of earthen or paved interceptors and diversion at the top of cut of fill slopes where there is a potential for erosive surface runoff;
- Erosion and sedimentation control devices, such as energy absorbing structures or devices, will be used, as necessary, to reduce the velocity of runoff water to prevent polluting sedimentation discharges;
- Installation of mechanical and/or vegetative final erosion control measures within 30 days after completion of grading;

- Confining land clearing and grading operations to the period between April 15 and October 15 to avoid the rainy season consistent with the County Land Use Ordinance and SWPPP requirements;
- Minimizing the land area disturbed and the period of exposure to the shortest feasible time;
- The SECP will be prepared in accordance with the Land Use Ordinance; and,
- Install long-term drainage devices at new/modified pads, including headwalls, basins, culverts with down-drains and energy dissipating devices (riprap or diffusers).

B. In compliance with Section 23.05.020 – Grading, the applicant will prepare a grading plan for the project.

C. PXP will comply with the requirements under a general stormwater construction permit. Such requirements will include preparation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP shall include provisions for the installation and maintenance of Best Management Practices to reduce the potential for erosion of disturbed soils at the Project site.

Residual Impacts
Impact Category = Class 3. Implementation of this mitigation measure will reduce erosion and sedimentation impacts from construction activities to less than significant levels.

Long Term Impacts

Impact HYD-2: Discharge of treated water to Pismo Creek would affect stream geomorphology due to higher dry-season flows.

Discussion: During low flows in Pismo Creek, the proposed water reclamation facility would discharge 1.3 cfs and would approximately equal base flows measured in the Entrix report. The continuous discharge would approximately double the summer flow conditions. During prolonged drought, the discharge could constitute the only flow in the creek. During storm flows, the discharge would not be discernable in the large volume of streamflow. The results of hydrologic modeling conducted by Entrix indicates that the additional flow of 1.3 cfs would result in a minimal impact to the hydrologic conditions in Pismo Creek. With implementation of the mitigation measures HYD-4a, HYD-4b, and HYD-5, the increased summer flows are anticipated to result in a beneficial impact to fisheries and aquatic species within Pismo Creek (refer to Section 5.3 – biological resources). Additionally, erosion at the discharge point would be reduced by gunite applied to the rip-rap slope (see Figure 3-7). This is anticipated to be a less than significant impact.

Impact Category: Class 3

Thresholds of Significance: 2, 7

Mitigation Measure: Implement Mitigation Measures HYD-4a, HYD-4b, and HYD-5.

Residual Impacts

Impact Category = Class 3. Implementation of the above-referenced measures would reduce geomorphology impacts to a less than significant level.

Impact HYD-3: Groundwater supply may be impacted by the project.

Discussion: Water from the three onsite wells is used only for landscaping and domestic uses. This purpose would not change with implementation of the proposed project. All water used in steam injection comes from treating produced water. The proposed project would treat water produced from the oil-bearing formation and either discharge the water to Pismo Creek or utilize it beneficially on adjacent agricultural lands thereby reducing the amount of water pumped from the shallow aquifer. Up to 840,000 gallons per day would be discharged to Pismo Creek under the discharge only option. With either disposal method, the treatment and re-use or discharge of produced water would have a beneficial impact on the shallow alluvial aquifer along Pismo Creek down-stream of the oil field. This is considered a beneficial impact.

Impact Category: Class 4

Thresholds of Significance: 2, 3, 4

Mitigation Measure: None required.

Impact HYD-4. The proposed project could result in water discharges that exceed water quality objectives of the Central Coast Water Quality Control Plan or the California Toxics Rule.

Discussion: Based on a review of the water quality data for produced water samples supplied by PXP and correspondence between PXP and RWQCB, the primary water quality constituents of concern associated with the proposed water treatment facility include the following: pH, temperature, turbidity, dissolved oxygen, chlorides, sodium, sulfate, boron, non-ionic ammonia, 2-butanone, acetone, and phenol. Potential water quality impacts to sensitive aquatic species present in Pismo Creek and the Pismo Creek estuary include steelhead and tidewater goby. PXP's pilot test water quality data was reviewed to determine the anticipated water quality to be discharged from the proposed water treatment facility. Table 5.5-1 below presents the pertinent water quality analytical data from the untreated water samples (influent) and pilot study treated water samples (effluent).

Table 5.5-2 – Reported Pre- and Post-Treatment Concentrations of Constituent of Concern for PXP RO Water Treatment Facility
(all results reported in micrograms per Liter, µg/L, or parts per billion)

Constituent	Produced Water – Average (influent)[a]	Pilot Test Permeate (effluent)[a]	Applicable Regulatory Standard
2-butanone	860	56	--
Acetone	3,900	500	--
Benzene	12.1f	<0.50	1.0[b]
Ammonia	1500	280	25[c]
Phenol	86.67[f]	<5.0	1[d]
Arsenic	<10	<0.010	0.018[e]
Boron	7,440	730	--
Mercury	<0.2	NA	0.012[e]
Sodium	112,500	1,800	--
Chloride	500,000	6,900	--
Sulfate	13,000	1,700	--

Notes:

NA Not analyzed

-- Not applicable

a/ Pilot test data provided by PXP, 2006, except as noted.

b/ California Primary Maximum Contaminant Level (MCL) for drinking water.

c/ Basin Plan, expressed as NH_3 as N in receiving waters

d/ Central Coast Regional Water Quality Control Board, Basin Plan.

e/ National Toxics Rule

f/ Produced water sample analytical results, Entrix, Inc., January 2007.

-- No published state or federal regulatory standards.

A review of the pilot test data indicates that the proposed treatment technology would meet the applicable state and federal water quality criteria, including California Code of Regulations Title 22 criteria for organic and inorganic compounds in drinking water, for most of the key constituents analyzed during the pilot study.

Phenol. Phenol, also known as carbolic acid, is both a natural substance and a manufactured chemical. Phenol is a semi-volatile organic compound and is found in liquid form in many consumer products including mouth washes, cleaning products, and lozenges. Phenol has a distinct sickeningly sweet odor. Taste and smell of

phenol are possible at levels lower than those associated with effects that are harmful. Exposure to phenol in high amounts can result in skin burns, liver damage, dark urine, irregular heartbeat and, in some cases, death.

According to the applicant, phenol was not detected in effluent water samples collected during the pilot test study using the contract laboratory's analytical method detection limit of 5 µg/L. The analytical method detection limit by PXP's contract laboratory is higher than what is required by the RWQCB under the Basin Plan. Therefore, additional testing will be required to ensure that the discharged water meets the Basin Plan and other state and federal water quality standards.

A review of readily available literature and information supplied by PXP indicates that phenol can be removed from water through reverse osmosis. Phenol would not be substantially removed by air strippers due to its low Henry's Law constant (H_{cc}). This is considered a potential significant impact to aquatic species in Pismo Creek from the proposed discharge to Pismo Creek.

Table 3-7 in the Basin Plan provides specific water quality objectives for chlorides, sulfates, boron, and sodium for some of the sub-basins within the vicinity of the project. However, no specific water quality objectives have been adopted by the RWQCB for Pismo Creek.

The proposed project would be required to comply with applicable federal and state water quality standards regulated under the National Pollutant Discharge Elimination System (NPDES), which would ensure any discharges do not violate water quality objectives. However, to ensure compliance with NPDES regulations, mitigation is provided to reduce water quality impacts to a level of less than significant.

Impact Category: Class 2

Thresholds of Significance: 2, 4, 5

Mitigation Measure HYD-4:

A. Prior to operation, the applicant shall obtain an NPDES permit from the RWQCB. The requirements of the Permit shall be fully implemented including waste discharge limitations, and monitoring and reporting requirements.

B. ~~During operation, the applicant shall utilize granular activate carbon as a polishing unit to ensure that treated water does not contain phenol or other organic compounds that are present in concentrations in excess of RWQCB water quality standards but less than the contract laboratory's analytical method detection limit. The need for GAC treatment may be eliminated by the County in consultation with the RWQCB, CDFG, and NMFS, at such a time that analytical laboratory method limits can detect organic compounds at or below the RWQCB water quality standards.~~ During plant operations, the applicant shall report phenol concentrations ~~indicted~~ in effluent samples indicated above the method detection limits but less than quantitation limits. At such a time that laboratory analytical methods allow for lower quantitation limits, the applicant shall report phenol concentrations to the RWQCB to ensure compliance with the RWQCB's water quality standards.

Also refer to Mitigation Measure BIO-8 regarding proposed mitigation measures to ensure temperature and dissolved oxygen concentrations due not exceed ranges required for sensitive aquatic species.

Residual Impacts

Impact Category = Class 3. Implementation of this mitigation measure would reduce impacts to less than significant levels.

Impact HYD-5. An upset condition at the water treatment facility could result in the release of water not meeting water quality standards into Pismo Creek.

Discussion: The proposed project would include water quality monitoring devices that record water quality parameters and alarms for significant changes in water quality. Both automatic and operator controls would shut down the system in the event of an upset in water quality parameters.

Impact Category: Class 2

Thresholds of Significance: 5

Mitigation Measure HYD-5: The proposed water treatment system shall be constructed with sufficient holding capacity to contain water that fails to meet water quality per the NPDES permit or other agency permit conditions so that water not meeting specifications is not released to Pismo Creek.

Residual Impacts

Impact Category = Class 3. Implementation of this mitigation measure would reduce impacts to less than significant levels.

5.5.2.4 Cumulative Impacts

Project sites for the Spanish Springs project and Tract Map 2554 both appear to drain to Pismo Creek. As such, construction of these two projects may cause construction-related turbidity and sedimentation of Pismo Creek. Multiple projects near the creek could also increase erosion and increase creek sediment load, thus, resulting in a long-term impact for the area. However, the incremental contribution of the proposed project to this cumulative impact would be not substantial.

The proposed project will include the treatment of produced water to meet RWQCB discharge requirements per state and federal water quality standards for discharge to a surface water body containing sensitive aquatic species. The applicant does not propose to provide disinfection treatment as part of the water treatment system. Disinfection by-products, such as trihalo methanes, would not be allowable in the proposed water discharge to Pismo Creek. The water will not be disinfected, therefore, will not meet the criteria as a drinking water source. Therefore, the water is not anticipated to create growth-inducing impacts.

5.6 HAZARDS AND HAZARDOUS MATERIALS

5.6.1 Introduction

This section addresses the potential for impacts related to the presence and use of hazards/hazardous materials at the proposed project site.

5.6.2 Environmental Setting

The project is located in southern San Luis Obispo County, which is situated in the southern Coast Ranges geomorphic province of California. The Arroyo Grande Oil Field is located in Price Canyon in the southern portion of the San Luis Range.

The oldest rocks in the San Luis Range belong to the Jurassic-aged Franciscan formation, which forms the basement complex. The Franciscan formation is predominantly comprised of graywacke sandstone, with lesser amounts of shale, limestone, chert, and altered submarine volcanic rocks. Thickness of the Franciscan formation is estimated to be in excess of 25,000 feet. The Franciscan formation is unconformably overlain in the Arroyo Grande Oil Field by the Miocene-aged Monterey and Miocene/Pliocene-aged Pismo formations (ERCO 1981).

The Monterey formation is composed primarily of siliceous and porcelanous shales interbedded with dolomite/limestone, chert, and volcanic ash. The Monterey formation in the Arroyo Grande Oil Field is subdivided into four members: the Tuffaceous Member (Tmmt), the Siliceous Member (Tmmp), the Diatomaceous Member (Tmmd), and the Silty Member (Tmms) (ERCO 1981). Although no hydrocarbons are directly produced from the Monterey Formation, it is believed to be the source rock for the Arroyo Grande field reservoirs. The late Mio-Pliocene Pismo formation unconformably overlies the Monterey formation and consists of lenticular fine to coarse grained friable sandstone, calcareous siltstone, pebble conglomerate, and siliceous, cherty shale. The Pismo formation in the Arroyo Grande Oil Field area is subdivided into the Edna Member (late Miocene), an intermediate undifferentiated Member, and the Squire Member (Pliocene). The Edna Member is a massive buff to white coarse-grained bituminous sandstone, with layers of course pebble- or boulder-size components appearing randomly throughout the member.

Groundwater flow in the region is generally controlled by the local topography and geology. Groundwater in the site area follows the topographic gradient to the southwest, and is probably bounded by the local hills to the northwest and southeast. The majority of stored potable groundwater at the site is likely to be found in the shallow alluvial deposits associated with Pismo Creek.

The project site lies within an area of high fire hazard according to the County of San Luis Obispo Safety Element maps.

5.6.2.1 Current Site Conditions

The proposed project would be located within a developed area of the Arroyo Grande Oil Field. The proposed project site is located north of an existing separation facility and west of an existing natural gas treatment facility. The vicinity of the proposed project site has been utilized for petroleum production for many years and may contain areas of petroleum hydrocarbon-containing soil.

5.6.3 Regulatory Setting

The following section provides a brief description of some of the applicable state and federal regulations relating to the use, storage, and disposal of hazardous substances and petroleum.

5.6.3.1 Federal Laws/Regulations

Federal Water Pollution Control Act of 1972 (Clean Water Act). The Clean Water Act governs the control of water pollution in the United States. This Act includes the National Pollutant Discharge Elimination System (NPDES) program, which requires that permits be obtained for point discharges of wastewater. This Act also requires that storm water discharges be permitted, monitored, and controlled for public and private entities.

Resource Control and Recovery Act of 1974 (RCRA). RCRA was enacted as the first step in the regulation of the potential health and environmental problems associated with solid hazardous and non-hazardous waste disposal. RCRA, and the formation of the U.S. EPA to implement the RCRA, provide the framework for national hazardous waste management, including tracking hazardous wastes from point of origin to ultimate disposal.

Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). Under CERCLA, owners and operators of real estate where there is hazardous substances contamination may be held strictly liable for the costs of cleaning up contamination found on their property. No evidence linking the owner/operator with the placement of the hazardous substances on the property is required. CERCLA, also known as Superfund, established a fund for the assessment and remediation of the worst hazardous waste sites in the nation. Exceptions are provided for crude oil wastes that are not subject to CERCLA.

Hazardous and Solid Waste Amendments of 1984 (HSWA). The HSWA law was enacted to close RCRA loopholes and regulated leaking underground storage tanks (USTs) specifically. The SWRCB, the RWQCB, and the local County Division of Environmental Health, as a Certified Unified Program Agency (CUPA) program, oversee UST regulations and cleanup of leaking USTs.

Asbestos Hazard Emergency Response Act of 1986 (AHERA). The AHERA is the federal legislation that governs the management and abatement of asbestos-containing materials in buildings.

National Emission Standards for Hazardous Air Pollutants; Asbestos, 40 CFR Part 61. This regulation requires the assessment and proper removal of asbestos-containing materials that could release asbestos when disturbed prior to the demolition of buildings.

Clean Air Act. The regulatory programs that govern stationary sources of air pollution apply to any facility that emits or has the potential to emit conventional pollutants: oxides of nitrogen and sulfur, carbon monoxide, VOCs or particulate matter. It may also apply to emission sources of certain toxic chemicals. In addition to the existing air district permitting programs required by state law and district rules, a new federal operating permit program must be implemented to meet EPA regulations adopted pursuant to Title V of the 1990 amendments of the Clean Air Act. Locally the Clean Air Act regulations are implemented and enforced by the San Luis Obispo APCD.

5.6.3.2 California Laws/Regulations

Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code). The Porter-Cologne Act established a regulatory program to protect water quality and protect beneficial uses of the state's waters. The Porter-Cologne Act also established the State Water Resources Control Board and nine regional boards as the main state agencies responsible for water quality in the state. Discharges of wastes (including spills, leaks, or historical disposal sites) where they may impact the waters of the state are prohibited under the Porter-Cologne Act, including the discharge of hazardous wastes and petroleum products. The assessment and remediation of these waters are regulated by the regional boards, the RWQCB administers such waters in the vicinity of the proposed project.

Title 22, California Code or Regulations. Title 22 of the CCR regulates the use and disposal of hazardous substances in California. It contains regulatory thresholds for hazardous wastes which are more restrictive than the federal hazardous waste regulations.

California Health and Safety Code Sections 25500 et seq. The California community right-to-know hazardous material law applies to any facility that handles any hazardous material (chemical, chemical-containing products, hazardous wastes, etc.) in a quantity that exceeds reporting thresholds. The most common thresholds that trigger regulation based on that state statute are 500 pounds of solid, 55 gallons of liquid, and 200 cubic feet of compressed gas, based on the presence of individual chemicals. The basic requirements of hazardous materials and community right-to-know regulations for covered facilities include:

- Determining whether the facility handles hazardous materials;
- Immediate reporting of releases of hazardous materials;
- Submission and update of a Hazardous Materials Business Plan (including a accurate chemical inventory, site map showing hazardous materials storage locations, emergency response plan, and notification procedures) as required by the local administering agency;

- Notification of the local administering agency of the handling of specified quantities of acute hazardous materials and submission of a Risk Management Plan (RMP) as required;
- Annual submission for manufacturing facilities of a Toxic Chemical Release Report (Form R) if threshold amounts of certain toxic chemicals are made, or processed for use; and,
- Requirements for hazardous materials storage imposed by local administering agencies, fire departments, and California Occupational Safety and Health Administration (Cal/OSHA) standards.

California Air Resources Board - Air Toxics Control Measure. Under the California Air Resources Board Air Toxics Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations, prior to construction permit issuance, a geologic evaluation is required to determine the presence or absence of naturally-occurring asbestos. If naturally occurring asbestos is found at the site, the applicant must comply with all requirements outlined in the Asbestos ATCM before grading may begin. These requirements may include, but are not limited to, 1) preparation of an "Asbestos Dust Mitigation Plan," which must be approved by APCD before grading begins; and 2) an "Asbestos Health and Safety Program", as determined necessary by APCD.

California Fire Code. The 2001 California Fire Code has been adopted by CDF/County Fire, which is the fire agency with jurisdiction over the project site. The California Fire Code contains minimum standards for many aspects of fire prevention and suppression activities. These standards include provisions for access, water supply, fire protection systems and fire resistant building materials. The California Fire Code also includes provisions for required setbacks for oil wells from buildings, storage tanks, and streets and railways.

5.6.3.3 County of San Luis Obispo Regulations

Energy Element. In 1995, the County of San Luis Obispo adopted the Energy Element as part of the County's General Plan. The Energy Element contains a goal of protecting public health, safety and environment, and several policies that promote the stated goal. Applicable policies are summarized below:

Policy 56. Encourage existing and proposed facilities to focus on measures and procedures that prevent oil, gas, and other toxic releases into the environment. This policy is to ensure that facilities: (1) take measures to prevent releases and spills, (2) prepare for responding to a spill or release, and 3) provide for the protection of sensitive resources. A review of a facilities spill response plan, or reports from other agencies, should be completed to monitor compliance.

Policy 64. Guideline 64.1. To reduce the possibility of injury to the public, facility employees, or the environment, the applicant shall submit an emergency response plan which details response procedures for incidents that may affect human health and safety or the environment. The plan shall be based on the results of the comprehensive risk

analysis. In the case of a facility modification, the existing response plan shall be evaluated by the safety review committee and revisions made as recommended.

5.6.4 Impact Analysis

5.6.4.1 Thresholds of Significance

For the purposes of the EIR, a potential impact related to the presence of hazardous materials and/or risk of upset impact of hazardous materials is identified as significant based on the following thresholds:

1. Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials;

2. Create a significant hazard to the public or the environment through the reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

3. Emit hazardous emissions or handle hazardous or acutely hazardous materials within one-quarter mile of an existing or proposed school;

4. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (Cortese List) and, as a result, would create a significant hazard to the public or the environment;

5. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area;

6. For a project within the vicinity of a private airstrip, would the project result in the safety hazard for people residing or working in the project area;

7. Impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; and,

8. Expose people or structures to a significant risk or loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

5.6.4.2 Project Impacts

Impact HAZ-1. Operation of the proposed water treatment facilities would include the use of containing hazardous chemicals which could potentially impact the project site, Price Canyon Road, and potentially Pismo Creek if ruptured during an upset condition.

Discussion: Operation of the proposed water treatment facilities would include the use of hazardous chemicals, including soda ash, caustic soda, sulfuric acid, and anti-scaling

additives. These chemicals would be stored on-site and used in the treatment system on a regular basis. The anticipated volumes of hazardous chemicals used or stored on-site would be limited to adequate amounts needed for the water treatment system. The use of these materials is not anticipated to result in a significant impact due to hazards to employees, the public, or the environment. No hazardous wastes are anticipated to be generated from the proposed project activities. The applicant would be required to submit an amended Hazardous Materials Business Plan with the County of San Luis Obispo Division of Environmental Health (SLODEH). See Impact AQ-2 (Section 5.2) for a discussion of hazardous emissions from the proposed air strippers.

Impact Category: Class 2

Thresholds of Significance Criteria: 3

Mitigation Measures: HAZ-1: Prior to system start-up, the applicant shall submit an amended Hazardous Materials Business Plan to the San Luis Obispo Division of Environmental Health for review and approval.

Residual Impacts

Impact Category = Class 3. Residual impacts would be less than significant.

Impact HAZ-2. Petroleum hydrocarbon-containing soil may be encountered during project construction activities.

Discussion: The project site is located within a developed area of the existing oil field that may contain contaminated soils. Contaminated soils could be disturbed during construction activities which may pose a risk to on-site workers. Off-site disposal of contaminated soils could pose a safety risk to the public if not disposed in a licensed disposal facility. In addition to the implementation of Mitigation Measure HAZ-2A, HAZ-2B addresses APCD requirements with regards to hydrocarbon-containing soils.

Impact Category: Class 2

Thresholds of Significance Criteria: 1, 2

Mitigation Measure:

HAZ-2A: The applicant shall complete an environmental site assessment of areas to be utilized for the proposed project to determine whether the project site has been impacted with petroleum or hazardous substances. The site assessment work plan shall be prepared by a registered professional and submitted to the SLODEH for review and approval prior to implementation. The site assessment activities shall include the advancement of drill holes and collection of soil and, if contamination is present, groundwater samples for chemical analyses. A site assessment report shall be submitted to SLODEH for review and approval. If necessary, a corrective action plan

shall be submitted to SLODEH for the proper management of contaminated soil and groundwater that may be disturbed as part of the proposed project grading activities. Corrective actions shall be completed at the project site to the satisfaction of SLODEH prior to implementation of the proposed grading activities. Corrective actions, other than compliance with the RWQCB's beneficial reuse provisions for crude oil-containing soil excavated during the course of project construction activities, shall not be required for naturally-occurring petroleum hydrocarbon containing soils present at the project site.

HAZ-2B: Should hydrocarbon contaminated soil be encountered during construction activities, the APCD must be notified as soon as possible and no later than 48 hours after affected material is discovered to determine if an APCD Permit would be required. In addition, the following measures shall be implemented immediately after contaminated soil is discovered:

- Covers on storage piles shall be maintained in place at all times in areas not actively involved in soil addition or removal;
- Contaminated soil shall be covered with at least six inches of packed uncontaminated soil or other TPH -non-permeable barrier such as plastic tarp. No headspace shall be allowed where vapors could accumulate;
- Covered piles shall be designed in such a way to eliminate erosion due to wind or water. No openings in the covers are permitted;
- During soil excavation, odors shall not be evident to such a degree as to cause a public nuisance; and,
- Clean soil must be segregated from contaminated soil.

Crude oil-containing soil excavated during the course of project construction activities shall be handled and reused on-site in accordance with the RWQCB's Beneficial Reuse Order #R3-2005-005. The notification and permitting determination requirements shall be directed to Karen Brooks of the APCD Enforcement Division at (805) 781-5912.

Residual Impacts:

Impact Category = Class 3. Residual impacts would be less than significant.

Impact HAZ-3. Location of the project within a high fire hazard could result in additional fire risk for the project area.

Discussion: The project site is located within an area of high fire hazard, as shown on the County of San Luis Obispo's Natural Hazard Disclosure Maps - Fire Hazard Map (http://landarch.larc.calpoly.edu/slocounty/nhd.htm). The applicant maintains an emergency response plan which includes fires occurring at the oil field property. The applicant would incorporate the operation of the water treatment facility into existing fire safety plans and emergency response procedures.

Impact Category: Class 2

Thresholds of Significance Criteria: 8

Mitigation Measure HAZ-3:

HAZ-3A - The applicant shall submit a Fire Hydrant System plan to County/CALFIRE for approval prior to construction. This plan shall be implemented before construction commences.

HAZ-3B - The applicant shall submit a vegetation management plan to County/CALFIRE for approval prior to issuance of construction permits. This would identify measures to minimize the risk of wildfires due to operation of existing and proposed facilities. It would also make recommendations for protection of such facilities from a wildfire.

Residual Impacts:

Impact Category = Class 3. Residual impacts would be less than significant.

5.6.4.3 Remaining Hazards Issue Areas

The proposed project is not within one-quarter mile of an existing or proposed school. The project site is not included on the Cortese list of hazardous materials sites. The project site is not located within the regulated area of an adopted airport land use plan, or within two miles of a public airport or private airstrip. The project site is located adjacent to Price Canyon Road, and would not impair the implementation of or interfere with an adopted emergency response or evacuation plan.

5.6.4.4 Cumulative Impacts

The project site lies within the Arroyo Grande Oil Field which is an active oil production facility. Hazards impacts are anticipated to be localized in nature. Therefore, projects would not contribute to project-specific hazardous materials impacts, and cumulative impacts would be significant but mitigable.

CHAPTER 6.0
PROJECT ALTERNATIVES

The California Environmental Quality Act (CEQA) requires that EIRs review a range of alternatives that might reduce or avoid the significant impacts of a proposed project. This chapter reviews the range of alternatives that were considered in developing this EIR. Some alternatives were rejected from analysis because they did not reduce environmental effects, were infeasible, or did not meet the project goals.

Alternatives are considered in an EIR to assist the public and decision-makers in considering the environmental consequences of a proposed project. The purpose of the alternatives analysis is to consider reasonable feasible options to reduce or avoid the significant impact of a proposed project. The range of alternatives to the proposed project is governed by the rule of reason. CEQA Guidelines, Section 15126.6(a) states: "An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." Further, Section 15126.6(b) states: "...the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.

The CEQA Guidelines Section 15126.6(c) states that "The range of potential alternatives to the project shall include those that could feasibly accomplish most of the basic objectives of the proposed project and could avoid or substantially lessen one or more of the significant effects. The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination." Factors to be used to discard alternatives are "(i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts.

The "feasibility" of an alternative is evaluated by taking into account various factors, such as site suitability, economic viability, availability of infrastructure, consistency with government-approved plans and regulatory limitations, jurisdictional boundaries, and by assessing whether the alternative, if it is at another location, is on land that can be reasonably acquired. The range of alternatives that must be studied in detail in an EIR includes a reasonable range of options that are both "feasible" and result in less adverse environmental impacts than the proposed project.

6.1 ALTERNATIVES DELETED FROM FURTHER CONSIDERATION

Eight water-disposal options (hereinafter, referred to as alternatives) were evaluated as part of the proposed project, but were deleted from further consideration because they were not considered feasible, as they would not substantially reduce project impacts to attain most of the alternatives to fully meet the project objectives either in the short-term or long-term. The discussion of the eliminated alternatives is derived from the *Supplemental Information to Land Use Application* (Entrix, 2006), and the *Reasonable Potential Analysis and Options Analysis* (Entrix, 2007). These are summarized briefly below:

6.1.1 Onsite Injection

PXP evaluated numerous potential areas to inject the produced water into the subsurface without adversely impacting the steam drive oil production enhancement program. Several areas were evaluated and found to be infeasible due to DOGGR requirements, potential adverse effect on the steam drive due to connectivity to the producing zones, and the prohibitive cost of acquiring land in the Oak Park area (southeast of the oil field), which is undergoing residential development. The design calls for injection of the reject water produced by the treatment process into the producing zones. Further injection of water other than the reject water would reduce the efficiency of the steam drive and reduce oil production.

6.1.2 Surface Discharge

An evaluation of surface discharge by Entrix onto the oilfield itself concluded that any water that could be percolated would quickly encounter shallow bedrock and remerge as surface flow into Pismo Creek. The area is also subject to landslide, and further loading by infiltration could increase incidence of landsliding; therefore, the amount of reclaimed water that could be accommodated would be small and have the potential for adverse impacts. Furthermore, this alternative could only be applied in the dry season, as during the wet season the soils are already at the infiltration capacity.

Surface water discharge, which would eventually flow to Arroyo Grande Creek, was also analyzed as an option by Entrix and eliminated owing to insufficient land available for percolation of the required amount of water. Furthermore, additional infrastructure for a delivery system would increase the amount of adverse environmental affects.

6.1.3 Irrigation of Edible Crops

PXP communicated with wineries in the Edna Valley and with growers in the area regarding use of the reclaimed water for irrigation of edible crops. Due to potential public health issues, the California Department of Health Services places limitations on the use of reclaimed water on edible crops, including additional treatment by oxidation, chlorination, coagulation, clarification, and filtration. Furthermore, boron levels in the water are relatively high and may adversely affect the crops. No potential users were willing to undertake the additional treatment of the water, and there was no further negotiation.

6.1.4 Irrigation of Non-Edible Crops (No Disposal to Pismo Creek)

This option would involve limiting discharge of treated water to only nearby non-edible crop agricultural water users. There would be no discharge of water to Pismo Creek. Due to constraints related to lack of re-use agreements with neighboring properties, and the limited amount of water that would be released for re-use, production at the oil field would be very limited. Additionally, water needs would not be consistent throughout the year and would not be able to accommodate the amount of water which would be released for re-use. Thus, this alternative has been eliminated as it would not achieve project objectives.

6.1.5 Onsite Disposal via Evaporation/Percolation Ponds

This option would consist of disposing the treated water into on-site ponds, which would evaporate and percolate. As percolation tests indicate that infiltration capacity would result in very low percentages of percolation, very large areas would be required for evaporation. Potential biological impacts due to the large areas of disturbed land would result (i.e., oak

woodland, Pismo clarkia, chaparral, etc.); therefore, this alternative would be environmentally inferior.

6.1.6 City of Pismo Beach Wastewater Reclamation Facility and Ocean Outfall

With this alternative, a new pipeline would need to be constructed to connect to the City of Pismo Beach's wastewater reclamation facility (WWTF). This option would be infeasible for the following reasons: 1) there are currently capacity constraints at the existing WWTF, and 2) City of Pismo Beach policy currently prohibits accepting wastewater from outside the city limits. The latter would require a City Council approval in change of policy. By themselves, these two reasons represent a significant constraint on this option, rendering it infeasible. In addition, the NPDES permit for the ocean outfall would require revision to accept additional water.

6.1.7 Displacement of Existing Groundwater Use at the Oil Field

Currently, groundwater is used in landscaping, non-potable water use, and in rare cases as makeup water for steam production. This re-use option involves reducing or eliminating uses of groundwater on the oil field, and replacing the groundwater with the produced treated water. Although this option was considered to be a viable beneficial re-use of the water, it was determined that the amount of water replaced would be very small, and therefore would not meet project objectives. Furthermore, this replacement of water would limited to the dry season when landscaping irrigation is needed.

6.1.4 Landfill Dust Control

This option would entail construction of a new pipeline and delivery of water to Cold Canyon Landfill for use as a dust suppressant during the summer; however, the landfill has limited needs for water (approximately 100,000 gallons per day). As such, this alternative would represent a "reduced project" option. Although a reduced project with limited produced water release is feasible, it is possible that the level of reduction in water release may not be able to achieve project objectives in the long-term. Additionally, the Landfill would only be able to use the water during the dry season, and thus would require an alternate disposal method during the wet season. Furthermore, the construction of a new pipeline to the Landfill would most likely create additional environmental impacts. Therefore, while implementation of this alternative is feasible, the drawbacks previously noted represent a significant constraint, such that project objectives would not be met.

6.2 ALTERNATIVES ANALYZED

Three alternatives were analyzed in lieu of the proposed project. These include: (1) No Project Alternative, (2) Reduced Project Alternative, and a (3) Fully-Mitigated Alternative. Table 6-1 provides a qualitative comparison of the three alternatives with respect to each issue area analyzed in Chapter 5.0.

6.2.1 Alternative 1 – No Project Alternative

The No Project alternative would not involve any new construction, nor introduce any new significant environmental effects. It would allow the existing operations of the Phase IV project to continue as it is currently configured but would not allow any expansion of the Arroyo Grande Field to include a water treatment facility. It would avoid all of the impacts of the proposed project; however, the No Project alternative would not achieve the project objectives.

6.2.1.1 Land Use

Under this alternative, there would be no introduction of water treatment facilities for produced water. Current operations are consistent with the San Luis Obispo General Plan, San Luis Obsipo Land Use Ordinance, and the San Luis Obispo Energy Element. There would be fewer impacts to several resources, including the aesthetics, air quality, biological, cultural, and paleontological associated with this alternative. As such, this alternative would be more consistent with existing plan and policies.

6.2.1.3 Aesthetics

Aspects of current operations are visible to some degree to motorists traveling along Price Canyon Road. This includes partial views to the existing steam generators, well pumper units, and ancillary facilities, such as flowlines. Under the No Project alternative, there would be no construction of new water treatment facilities (e.g. air-stripper towers). As such, the impacts to aesthetics would be less under this alternative.

6.2.1.4. Air Quality

There would be no new impacts to air quality under this alternative, since there would be no new facilities or changes in operation of facilities.

6.2.1.5 Biological Resources

Under this alternative, there would be no introduction of treated produced water into Pismo Creek. It would allow the existing Phase IV project to continue as proposed. Because this alternative would result in no additional development, impacts on existing biological resources would be less under this alternative.

6.2.1.6 Cultural Resources

Under this alternative, there would be no new construction activities or installation of new facilities, thus impacts on existing cultural resources would be less under this alternative.

6.2.1.7 Geology and Soils

Impacts to geology and soils under this alternative would be less than the proposed project, since there would no construction activities. There would be fewer long-term impacts associated with exposed soils, since there would no removal of coast live oak woodland habitat and manzanita. As discussed in the *Supplemental Information to Land Use Application* prepared by PXP by Entrix (2006), onsite geology primarily consists of formations not capable of accepting additional re-injected water; therefore, the No Project alternative would not achieve the intended objectives of the Phase IV EIR.

Table 6-1. Qualitative Comparison of Project Alternatives

Alternative	Issue Area										
	Land Use	Traffic & Circulation	Aesthetics	Air Quality	Biological Resources	Cultural Resources	Geology & Soils	Hydrology & Water Quality	Paleo Resources	Noise	Hazards
Proposed Project	2	2	2	1	1	2	2	1	2	2	1
1 – No Project	6	6	6	6	6	6	6	6	6	6	6
2 – Reduced Project	4	4	4	3	3	4	4	3	4	4	3
3- Fully Mitigated	5	5	5	5	5	5	5	5	5	5	5

Note: Impacts quantified on a scale of 1 through 5 with 1 = Greatest Impact and 5 = Lowest Impact. No impacts were given a value of 6.

6.2.1.8 Hydrology and Water Quality

Under this alternative, there would be no introduction of treated produced water into Pismo Creek. It would allow the existing Phase IV project to continue as proposed. Because this alternative would result in no additional development, no new impacts to hydrology and water quality would occur.

6.2.1.9 Paleontological Resources

Under this alternative, there would be no new impacts to paleontological resources.

6.2.1.10 Noise

As there would be no new construction, there would be no additional noise impacts.

6.2.1.11 Hazards/Risk of Upset

Because there would be no new construction under this alternative, there would be no added potential for hazards/risk of upset impacts to workers, the public, or wildlife.

6.2.3 Alternative 2 - Reduced Project Alternative

Alternative 2 consists of a reduced project alternative by proposing construction of a 10,000 barrel per day (1.25 acre feet per day or 420,000 gallons per day) water reclamation facility rather than 20,000 barrel per day facility as in the proposed project. For the purposes of this section, Alternative 2 can also be defined as a "reduced project" in terms of total output of treated water into Pismo Creek and overall area of disturbance. More simply, it is the proposed project as intended for implementation, but reduced in overall size and scope with the intention of reducing project-related impacts. In a conceptual sense, this alternative would minimize the footprint of disturbance and the overall daily output of treated water to Pismo Creek by 50 percent (i.e., 0.65 cfs).

6.2.2.1 Land Use

Because there would be less treated water output and overall land disturbance associated with this alternative, it could have less of an impact on the aesthetic value of the project area than the proposed project. For example, the air stripper towers would be reduced in number and lowered to accommodate less water. Furthermore, the water tanks would be reduced in size, and thereby have a smaller footprint and subsequent area of disturbance. Thus, this alternative would be more compatible with the County's Rural Lands land use category and with County plans and policies that protect scenic resources than the proposed project. By reducing the overall project area disturbance with this alternative, it would be possible to avoid any additional visual impacts from Price Canyon Road.

6.2.2.2 Traffic and Circulation

Short-term

This alternative would generate somewhat less traffic during the construction phase, since less construction personnel and construction material deliveries would be required. In addition, trip generation during the construction phase would be of shorter duration since the overall size of the facility would be reduced and only one 10,000-gallon tank would be constructed.

Long-term

As with the proposed project, this alternative would likely require an additional six or seven full-time workers at the water reclamation facility as operations would essentially be the same. As such, trip generation associated with on-going operations under this alternative would not be appreciably less than for the proposed project.

Mitigation Measures

Measures to mitigate the impacts of this alternative would be the same as for the proposed project. Residual impacts would be less than the proposed project.

6.2.2.3 Aesthetics

Short-term

There would be one less storage tank and fewer (or shorter) air stripping towers associated with this alternative, thus, it could have less of an impact on the aesthetic quality of the project area than would the proposed project. Further, the construction of the facility would not be as intensive as the proposed project, thus, there would be less shot-term impacts to visual resources.

Long-term

There would be less of a visual impact related to the air strippers associated with this alternative due to the reduced amount of treated water output which would potentially allow for fewer as well as shorter towers, thus reducing the level of visibility to motorists traveling along Price Canyon Road.

Mitigation Measures

Although it is highly unlikely there would be any potentially significant impact to the visual quality of the area as a result of the air strippers, Mitigation AES-1 would still be applied as part of standard practice. Residual impacts would be less than the proposed project.

6.2.2.4 Air Quality

Short-term

With the reduced alternative, the overall project footprint and expected duration of construction activities would be reduced, therefore, project implementation would be expected to result in slightly less emissions than the proposed project. However, construction emissions would still be expected to exceed the APCD's thresholds for NOx, although potentially to a lesser degree, and would be considered a significant short-term impact to regional air quality.

Long-term

Long-term air quality impacts would be associated with emissions of ROGs and ammonia from the air strippers. Although the size or number of the air strippers would be reduced in combination with the production of less water, it is anticipated that emissions would still need to be controlled through mitigation provided to ensure less than significant impacts.

6.2.2.5 Biological Resources

Short-term

The reduced project footprint and amount of water produced under this alternative could potentially reduce significant impacts to biological resources associated with the construction of the water reclamation facility. As with the proposed project, this alternative would result in impacts to special-status plant and animal species and require mitigation (as discussed in detail in Section 5.3). The specific locations of building pads and other construction activity would be no different than the proposed project; however, it is expected that with a smaller footprint, there would be fewer impacts to sensitive plant communities and special-status animal species (e.g., Pismo's clarkia, Well's manzanita, California horned lizard, etc.), and nesting birds. Further, the outfall structure to Pismo Creek could be reduced in size. Thus, short-term impacts to biological resources throughout the site would still be likely, but are expected to be reduced overall.

Long-term

Because the overall area of additional disturbance would be reduced, the potential long-term impacts to biological resources are also expected to be less under this alternative. Specifically, there would only be one 10,000-gallon tank and presumably less air strippers, etc. under this alternative. Thus, the permanent loss of existing habitat (e.g., oak woodland, coyote brush scrub, etc.) would be less than under the proposed project. Moreover, the extant of habitat fragmentation and long-term impacts to special-status species associated with these habitats would be reduced. Additionally, as discharge levels to the creek would be reduced by 50%, potential impacts to steelhead due to "stranding" in Pismo Creek would be reduced as less produced water would be introduced into the watershed. As such, the potential impact to biological resources would be substantially reduced with this alternative.

However, this alternative has the potential to prolong operations at the oil field, since a reduced water reclamation facility would result in a lower oil production rate than the proposed project. This in turn, would extend the duration of impacts to biological resources caused by operations at the oil field.

Mitigation Measures

The majority of the recommended measures included in the proposed project would apply to this alternative and would be recommended for inclusion. However, the need for a Steelhead Stranding Plan to assure potential impacts to steelhead when flows to the Pismo Creek are intentionally shut-down for maintenance or to divert to adjacent landowners would presumably not be required for this alternative. This is due to the lack of sustainable flows in the channel during periods of drought which would provide beneficial habitat to steelhead. Residual impacts would be less than the proposed project.

6.2.2.6 Cultural Resources

There would be no difference in impacts to cultural resources under this alternative as long as recorded archaeological sites (discussed in Section 5.1) would be avoided and

no work (i.e. construction and maintenance) is conducted within the 150-foot buffer zones. Mitigation measures applicable to the proposed project would also be applicable to this alternative.

6.2.2.7 Geology and Soils

Under Alternative 3, short-term and long-term impacts would be the same as for the proposed project, as project components would not be significantly different between the two alternatives. Mitigation Measure GEO-2 would also be applicable to the reduced project alternative.

6.2.2.8 Hydrology and Water Quality

Short-term

The reduced project footprint and amount of water produced under this alternative could potentially reduce significant impacts to hydrology and water quality associated with the construction phase of the water reclamation facility. As with the proposed project, this alternative would result in short-term construction impacts to site hydrology and water quality due to sedimentation and erosion. The specific locations of building pads and other construction activity would be no different than the proposed project; however, it is expected that with a smaller footprint, there would fewer water quality impacts due to the overall reduced scope. Further, the outfall structure to Pismo Creek could be reduced in size thereby further reducing the footprint of disturbance along Pismo Creek and potential for secondary impacts to water quality due to erosion and sedimentation. Thus, short-term impacts to hydrology and water quality throughout the site would still be likely, but are expected to be reduced overall.

Long-term

As discharge levels to the creek would be reduced by 50%, potential impacts to water quality in Pismo Creek would be reduced as less produced water would be introduced into the watershed. As such, the potential impacts to water quality would be reduced with this alternative, however mitigation would still be required as per the proposed project with emphasis on HYD-4 and HYDS-5 to ensure that appropriate water quality standards are being met and that the facility is designed with adequate secondary containment to ensure that untreated water is not released to Pismo Creek.

However, this alternative has the potential to prolong operations at the oil field, since a reduced water reclamation facility would result in a lower oil production rate than the proposed project. This in turn, would extend the duration of potential impacts to water quality criteria exceedances caused by overall operations at the oil field.

Mitigation Measures

The majority of the recommended measures included in the proposed project would apply to this alternative and would be recommended for inclusion. Residual impacts would be less than the proposed project.

6.2.2.9 Paleontological Resources

Under the reduced project alternative, short-term and long-term impacts would be the same as for the proposed project, as project components would not be substantially

different between the two alternatives. Mitigation Measure PAL-1 would also be applicable to the reduced project alternative.

6.2.2.10 Noise

Under the reduced project alternative, short-term and long-term impacts would be the same as for the proposed project, as project components would not be substantially different between the two alternatives. Mitigation Measure NOI-1 would also be applicable this alternative.

6.2.2.11 Hazards/Risk of Upset

Under the reduced project alternative, short-term and long-term impacts would be the same as for the proposed project, as project components would not be substantially different. Mitigation Measures HAZ-2 and HAZ-3 would also be applicable to the reduced project alternative.

6.2.2 Alternative 3 – Fully-Mitigated Alternative

The Fully Mitigated Project is an alternative whereby the mitigation measures identified in Chapter 5.0 to reduce significant or potentially significant impacts to less-than-significant levels are factored into the project. With the mitigation measures included in the project as proposed, the project becomes an entity that is defined differently than originally proposed.

6.2.2.1 Land Use

This alternative would have fewer impacts to resources, including water quality, air quality, biological, noise, and traffic through the inclusion of mitigation measures. It would also have less of an impact on the visual quality of the project area than the proposed project. This alternative would be more compatible with the County's land use category Rural Lands and with County plans and policies that protect scenic resources than the proposed project.

Mitigation Measures

This alternative would include all measures to mitigate impacts. Residual impacts would be less than the proposed project.

6.2.2.2 Traffic and Circulation

Short-term

Impacts to traffic and circulation resulting from construction trips under this alternative would not significantly affect the Level of Service (LOS) on area roadways as this alternative would include mitigation measures to minimize degradation of traffic safety resulting from entering and exiting trucks on Price Canyon Road during construction activities. As such, impacts to traffic would be less than the proposed project.

Long-term

Trip generation associated with on-going operations of the water reclamation facility would not be substantially more than current trips associated with the Phase IV project. Long-term trips would generally be isolated to facility roadways and be limited to maintenance/repair trips.

Mitigation Measures

This alternative would include all measures to mitigate impacts.

6.2.2.3 Aesthetics

Short-term

Construction-related visual impacts to motorists traveling along Price Canyon Road, nearby residences, and passengers on Amtrak passenger trains traveling along the Union Pacific Railroad would be essentially the same under this alternative as the proposed project.

Long-term

Impacts associated with the air strippers would be the less than under the proposed project due to implementation of the painting requirement to blend in with existing slopes and oak woodland vegetation. Additionally, potential long-term impacts to aesthetics associated with removal of trees would be less under this alternative, since protective measures to avoid and/or minimize impacts to oak trees would be incorporated into the project.

Mitigation Measures

This alternative would include all measures to mitigate impacts.

6.2.2.4 Air Quality

Short-term

Short-term construction equipment emissions would be less than the proposed project through incorporation of equipment emission control measures, such as installation of a NOx reducing catalyst/catalyzed diesel particulate filter system. Fugitive dust resulting from construction would also be less through the incorporation of dust control measures, such as use of water trucks or sprinkler systems during construction. Impacts would be further reduced through incorporation of measures to offset impacts by contributing to an off-site mitigation fund.

Long-term

Over the long-term, operation of the proposed water treatment facility would result in less emissions of ROGs, ammonia, and other TACs from the air strippers than the proposed project due implementation of the applicable APCD rules and regulations, and proposed mitigation measures to satisfy APCD permit requirements. This would include the use of scrubbers as necessary to remove additional constituents. It should be noted that these measures are required as part of permitting by the APCD and may not be considered optional or recommended mitigation.

Mitigation Measures

This alternative would include all measures to mitigate impacts.

6.2.2.5 Biological Resources

Short Term

Short-term impacts to biological resources would be less under this alternative through the inclusion of several mitigation measures designed to reduce impacts. Such measures will avoid and/or minimize impacts to nesting migratory birds, special-status plant and animal species, and special-status species occurring within Pismo Creek and associated tributaries.

Long-term Impacts

Long-term impacts to biological resources would be less under this alternative through the inclusion of several mitigation measures designed to reduce impacts. These include protective measures to avoid and/or minimize impacts to oak trees designated for long-term preservation, measure to compensate for the permanent loss of vegetation resulting from project implementation and potential long-term degradation of adjacent habitat areas from projected long-term utilization of the site, and measures to address impacts associated with disposal of treated water to Pismo Creek including development of a Steelhead Stranding Plan.

Mitigation Measures

This alternative would include all measures to mitigate impacts.

6.2.2.6 Cultural Resources

Short-term

Through the inclusion of measures to avoid existing cultural resource sites SLO-353, SLO-652, and SLO-1266, there would be no new impacts to cultural resources. Such measures also require that in the event that unknown cultural remains are encountered anywhere within the project area during construction, activities shall be redirected to another area until a qualified archaeologist can be retained to evaluate the potential significance of the finds in a Phase 2 archaeological significance investigation.

Long-term

There would be no long-term impacts to cultural resources associated with this alternative.

Mitigation Measures

This alternative would include all measures to mitigate impacts.

6.2.2.7 Geology and Soils

Short-term

There would be less short-term increases in erosion and sedimentation, through inclusion of mitigation measures requiring the applicant to prepare and implement a Sediment and Erosion Control Plan (SECP) and a grading plan for the proposed project.

Long-term

Potential long-term impacts associated with this alternative including construction of newly graded pads and the proposed detention pond modifications, which could result in unstable slopes prone to failure during a seismic event, would be less than the proposed project due to mitigation measures including a geotechnical report for submittal to the County and implementation of all recommendations contained therein.

Mitigation Measures

This alternative would include all measures to mitigate impacts. Residual impacts would be less than the proposed project.

6.2.2.8 Hydrology and Water Quality

Short-term

As discussed under 6.2.2.7 Geology and Soils above, there would be less short-term increases in erosion and sedimentation, through inclusion of mitigation measures requiring the applicant to prepare and implement a Sediment and Erosion Control Plan (SECP) with this alternative. This would reduce the potential for short-term impacts to surface water quality as a result of construction activities at the site. Further, inclusion of measure BIO-4D, which would include PXP to prepare and implement a Spill Contingency Plan would greatly reduce the potential for water quality impacts to Pismo Creek to occur during construction operations.

Long-term Impacts

The fully-mitigated alternative would include provisions that PXP shall obtain an NPDES permit from the RWQCB (Mitigation Measure HYD-4). The permit requirements would be fully implemented including waste discharge limitations, and monitoring and reporting requirements. Further this alternative would include construction of a facility with sufficient holding capacity to contain water that fails to meet water quality per the NPDES permit or other agency permit conditions so that water not meeting specifications is not released to Pismo Creek (Mitigation Measure HYD-5). These combined measures would result in a substantial reduction in potential long-term impacts to water quality compared to the proposed project.

Mitigation Measures

This alternative would include all measures to mitigate impacts.

6.2.2.9 Paleontological Resources

Short-term

Impacts to paleontological resources would be reduced under this alternative through the inclusion of a mitigation measure requiring the applicant to implement the provisions of the paleontological mitigation monitoring plan to minimize impacts to paleontological resources.

Long-term

The proposed project will not entail excavation of land during operations. Consequently, no impacts to paleontological resources are anticipated as long as maintenance

activities do not involve surface disturbance. If such disturbance were to occur, then mitigation measure PAL-1 would apply.

Mitigation Measures

This alternative would include all measures to mitigate impacts.

6.2.2.10 Noise

Short-term

Noise impacts associated with construction would be less under this alternative through incorporation of mitigation measures, including restricting the use of heavy equipment or heavy-duty trucks from 7 a.m. to 7 p.m. drilling activities.

Long-term

Long-term noise impacts would be similar as the proposed project, because no mitigation is required for long-term operations of the project.

Mitigation Measures

This alternative would include an additional measure to mitigate noise impacts. Residual impacts would be less than the proposed project.

6.2.2.11 Hazards/Risk of Upset

Short-term

Under this alternative, petroleum hydrocarbon-containing soil may be encountered during project construction activities as with the proposed project. However, this alternative includes completion of an environmental site assessment and procedures to appropriately handle and dispose of contaminated soils during construction activities to reduce the potential risk to workers (Mitigation Measure HAZ-2). Therefore, this alternative would result in less than significant impacts due to risk of upset than the proposed project.

Long-term

Long-term impacts would be limited to risks associated with high fire hazards for the project area. With inclusion of Mitigation Measure HAZ-3, this alternative would implement a Fire Hydrant Plan and vegetation management plan and would incorporate the water treatment facility into existing PXP safety plans. As such, long-term impacts associated with fire hazards would be less than the proposed project.

Mitigation Measures

This alternative would include all measures to mitigate impacts. Residual impacts would be less than the proposed project.

6.3 Environmentally Superior Alternative

CEQA Guidelines (Section 15126.6(a) and (e)(2)) require that an EIR's analysis of alternatives identify the "environmentally superior alternative" among all of those considered. In addition, if the No Project Alternative is identified as environmentally superior, then the EIR also must identify the environmentally superior alternative among the other alternatives.

Under CEQA, the goal of identifying the Environmentally Superior Alternative is to assist decision-makers in considering project approval. CEQA does not, however, require an agency to select the environmentally superior alternative (CEQA Guidelines Sections 15042-15043).

In the comparison presented in Table 6-1, it is apparent that Alternative 2 - Reduced Project Alternative and Alternative 3 – Fully-Mitigated Alternative would each reduce impacts from the proposed project and neither of them would have greater impacts on any resource than the proposed project. However, it should be noted that the same County air quality significant thresholds that would be exceeded by the proposed project would also be exceeded (albeit somewhat less) with Alternative 2. More importantly, Alternative 2 has the potential to benefit biological, paleontological, land use, and visual resources if, with a reduced construction footprint and fewer facilities (i.e., air stripping towers), it would be easier to avoid impacts to environmentally sensitive habitats and/or special-status species, as well as the view shed from travelers on Price Canyon Road. Further, the Reduced Project Alternative has the potential to further minimize impacts to Pismo Creek by potentially reducing the overall size of the outfall structure as well as decreasing the output from 1.3 cfs to 0.65 cfs, respectively. The decreased output would have less of a potential to support steelhead during low flow periods and in turn would reduce the potential for steelhead stranding during maintenance, emergency shut-downs, or water transfers to adjacent landowners. In summary, Alternative 2 represents only a marginal improvement by further avoiding and/or minimizing impacts to resources of the project area.

Alterative 3 – Fully-Mitigated Alternative is identified as the Environmentally Superior Alternative because it would better meet County policies than Alternative 2, meet all of the project objectives consistent with the Master Plan for the Arroyo Grande oil field, and minimize the majority of the project impacts. Although Alterative 1 - No Project Alternative would have less impacts than the Alternative 3, it would not meet any of the objectives of the project and is not consistent with the Master Plan for the oil field. As such, the EIR found that the Alternative 3 – Fully Mitigated Project that includes all mitigation measures factored into the project as the Environmentally Superior Alternative.

THIS PAGE LEFT INTENTIONALLY BLANK

CHAPTER 7.0
GROWTH INDUCEMENT AND SIGNIFICANT IRREVERSIBLE IMPACTS

7.1 GROWTH-INDUCING IMPACTS

Section 15126.2 of the California Environmental Quality Act (CEQA) requires a discussion of the ways in which a project may induce growth in an area. Growth-Inducement, as defined by the CEQA Guidelines, concerns consequences of a proposed project that "...could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are project which would remove obstacles to population growth..." Population growth, in turn, can tax community facilities and may require construction of new infrastructure that could cause significant environmental effects at a later time. However, growth should not be assumed to be necessarily beneficial, detrimental, or of little significance to the environment.

Typically, the growth-inducing potential of a project would have a significant impact if it either fostered growth or created a capacity to accommodate growth above and beyond levels expected in the absence of the project. Of particular concern are those projects that, when constructed, serve to remove an existing barrier to growth, such as a major upgrade to a wastewater treatment facility, construction of a new road in an undeveloped area, or the provision of sewer, water, or other utility lines with excess capacity that could accommodate substantial local development. However, the creation of growth-inducing potential does not automatically lead to growth, because growth at the local level is controlled by a variety of different influences, including economic market forces, local politics, and existing development conditions.

As discussed in Chapter 3.0, Project Description, the proposed project would be an accessory facility to an approved oil development expansion project (Phase IV) designed to increase crude oil production of the Price Canyon Unit's Arroyo Grande Oil Field, which has occurred in the project area since 1906. The proposed project itself would not specifically expand oil development activities, but rather would serve to address the production and disposal of water produced under a previously-approved expansion. In summary, the project would not introduce a new land use into the area, nor would it cause a conversion of surrounding land uses (which are primarily agricultural) to more intensive land uses.

The employment generated by the project would not induce growth in the community. PXP currently employs 30 permanent and contract employees consisting of a supervisor, an office clerk, engineers, and maintenance and operation employees. The proposed project will require six or seven new permanent employees during operation. The workers needed during the construction phase would be drawn from the San Luis Obispo area. The project would not create additional public infrastructure, (i.e. public roads), and would not extend existing utility lines, including water and sewer.

7.2 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL IMPACTS

Section 15126.2 of the CEQA Guidelines requires a discussion of irreversible environmental changes that would occur as a result of project implementation. According to Section

15126.2(c) of the CEQA guidelines, "...uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such consumption is justified." The RO Produced Water project would result in the following irreversible environmental changes:

- Use of nonrenewable resources in the construction of the proposed facilities;
- Long-term commitment of land for the new well pads; and,
- Greater long-term use of nonrenewable resources through the oil development operations.

The following sections describe both the direct and indirect irreversible changes that would result from project implementation, as well as the justification for the approval of such changes at this time.

7.2.1 USE OF NATURAL RESOURCES BY THE PROJECT

Project implementation would consume non-renewable resources for four main purposes:

- The mobilization of equipment, supplies, and manpower at construction sites;
- The use of natural resources as construction material for the project components;
- The consumption of resources in the course of long-term project operations and maintenance; and,
- Such use would not be wasteful and would be focused on achieving the worthwhile goal of energy production.

7.2.2 IRREVERSIBLE COMMITMENT OF LAND

The proposed project would not involve the additional irreversible commitment of land for construction of the proposed project beyond that which has previously been committed under the Phase IV project. The project will be conducted in an existing oil production area that has been in operation since 1906. Construction of tanks and other infrastructure is reversible, such that they may be abandoned and demolished after the life of the project.

7.2.3 INCREASED USE OF NON-RENEWABLE RESOURCES

If the proposed project is not implemented, current oil production rates and associated activities approved under the Phase IV expansion will be limited. The amount of non-renewable resources consumed under the Phase IV Expansion project, in addition to the currently proposed project which consists of natural gas for operation of the steam generators, is outweighed by the resources that will be developed as a result of this project. The main goal of the proposed project is to develop a disposal system for produced water generated by oil extraction, and thus increase the amount of oil that can be obtained under the approved Phase IV expansion. Therefore, the non-renewable resources demand by the proposed project itself is not considered significant.

The proposed project would indirectly increase the volume of oil and gas extracted and produced locally, but would not increase the net consumption of oil and gas. The production levels facilitated by implementation the water reclamation facility would be used to satisfy existing demand.

The proposed project could result in environmental accidents (e.g., produced water, oil and fuel spills) that have the potential to create irreversible impacts to biological resources if local populations of special-status plant and wildlife species were to be reduced below self-sustaining levels; however, a Spill Contingency Plan (see Mitigation Measure BIO-4D) has been built in to address this potential threat through the use of contingency measures. Additionally, potential impacts can be reduced through the use of adequate water reclamation facility design and operating procedures and effective emergency response plans specifying staffing and equipment needs. However, as the proposed project facilitates build-out of the Phase IV Expansion, the potential remains for irreversible damage as an unlikely upset associated with the operation of the proposed project.

THIS PAGE LEFT INTENTIONALLY BLANK

CHAPTER 8.0
CUMULATIVE ANALYSIS

8.1 INTRODUCTION

CEQA Guidelines (Office of Planning and Research, 1999) refer to cumulative impacts as "...two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.

a. The individual effects may be changes resulting from a single project or a number of separate projects.

b. The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other costly related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." (CEQA Guidelines Section 15355).

The Guidelines require a discussion of significant cumulative impacts, the severity of the impacts, and the likelihood of occurrence; however, the discussion need not provide as great a detail as is provided of the effects attributable to the project alone. The discussion of cumulative impacts should be guided by "standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact. The cumulative analysis must include the following:

a. A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or

b. A summary of projects contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or areawide conditions contributing to the cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency.

8.2 DISCUSSION

The cumulative analysis of this EIR is based on a list of 11 projects that are located near the project area, and are in various stages of project planning or development. The list was compiled on the basis of the environmental resources that could potentially be affected by each project, the type of project, and the location of the impact relative to the proposed project. These projects are summarized below:

8.2.1 Tract Map 2388 – Spanish Springs

The 470-acre Spanish Springs Ranch (King Ventures) is located along Price Canyon Road northeast of the Pismo Beach city limits (see Figure 8-1). The site is currently designated Agricultural by the County of San Luis Obsipo General Plan, which allows a total of 47 dwelling units on ten-acre parcels.

The Spanish Springs Ranch site has been included within an areawide planning analysis *City of Pismo Beach, Price Canyon Constraints and Opportunities Study (2002).* This study is incorporated by reference into this document. As indicated therein, one alternative for the 470-acre Spanish Ranch includes: a) 103 acres of rural residential/visitor-serving uses that may include as many as 400 hotel or resort-type units, b) 22 acres of rural residential use containing a total of 29 low density residential dwelling units, c) 62 acres of agricultural/recreation uses involving a combination of vineyards, a visitor's center, public trails, and an extension of a golf course from an adjacent parcel. The King South Ranch is also identified on the Land Use Element of the City of Pismo Beach General Plan for the following uses: an 18 to 27 hole golf course, a clubhouse, restaurant and other recreational uses (tennis courts, sports facilities, trails, etc.). As of the preparation of this document, the vineyards have been planted.

On-site topography ranges from steep slopes and hillsides that generally run parallel to Price Canyon Road. These heavily-wooded north- and west-facing slopes contain dense oak woodland habitat. Lower elevations of the site contain stands of oaks, sycamores, cottonwoods, eucalyptus and other large tree species. Gently sloping to flat areas contain sage scrub, chaparral, and native grassland vegetation.

The April 2002 Sphere of Influence Update for the City of Pismo Beach concluded that the Spanish Springs Ranch would be an appropriate addition to the City's Sphere of Influence to provide orderly planning and expansion of the community.

8.2.2 Tract Map #2554 (PVP Investments)

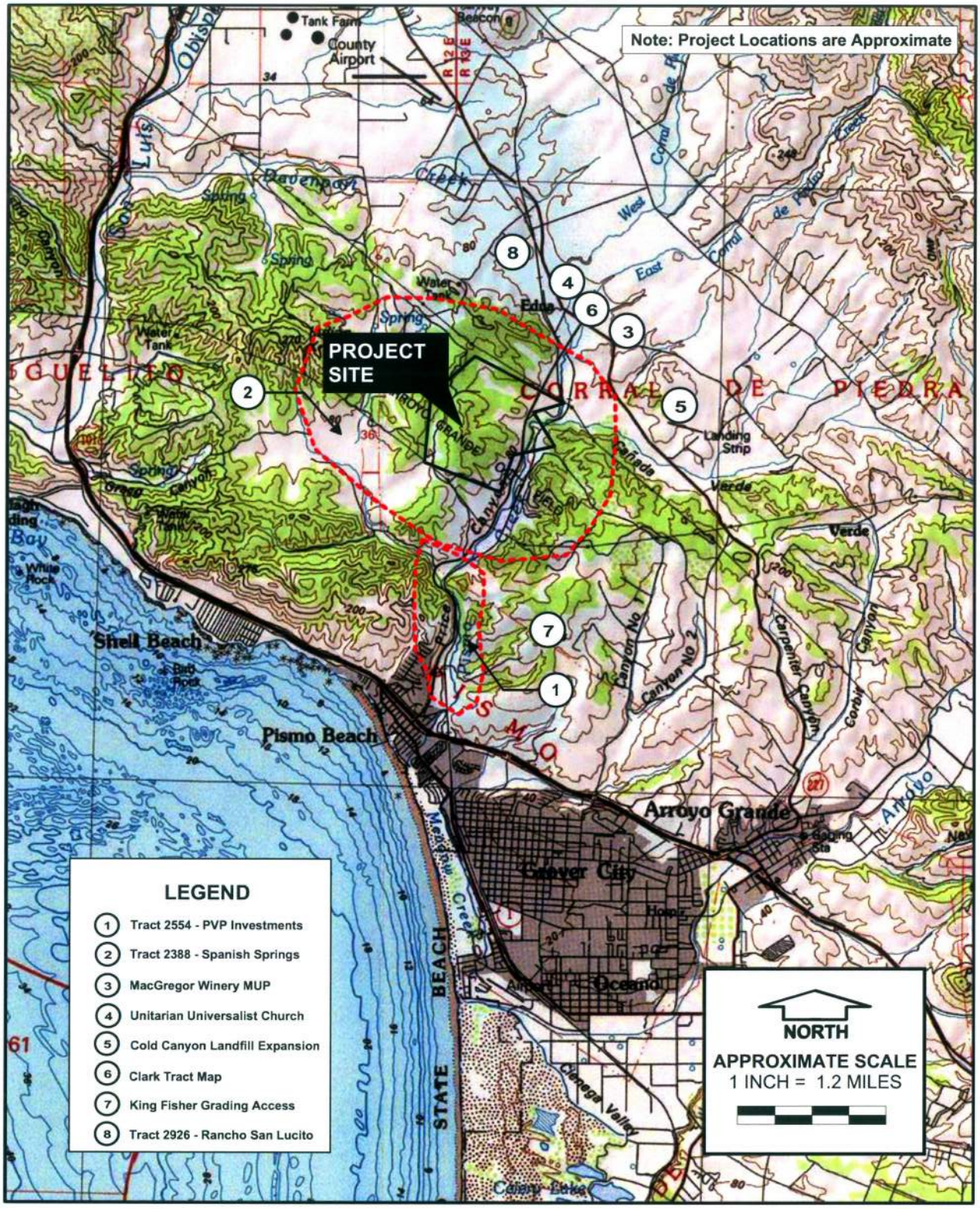
This project involves the subdivision of a 1,022-acre site into sixteen lots ranging in size from 20.0 acres to 28.7 acres, an agricultural lot of 470 acres and a remainder parcel of 204 acres, including construction of roads, and water storage tank. The property is located in the County of San Luis Obispo on the west side of Price Canyon Road, approximately ½-mile north of the City of Pismo Beach (see Figure 8-1). The project was approved by the SLOPC on April 19, 2002 and has been since annexed into the City of Pismo Beach.

Potential impacts include impacts to visual resources, biological resources, cultural resources, and traffic.

8.2.3 Additional Projects

Other projects located in the vicinity of the Arroyo Grande Oil Field include the following (see Figure 8-1):

- MacGregor Winery MUP (Approved);
- Unitarian Universalist Church on Highway 227 (Approved);
- Cold Canyon Landfill Expansion and fill material project (In process);
- Clark Tract Map – 8 lots (On hold);
- King Fisher Grading for emergency access (In process);
- Tract 2926 – Rancho San Lusito 11 Lots (Received); and,



Source: TOPO! c 2001 National Geographic Holdings (www.topo.com)

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

CUMULATIVE PROJECTS MAP

FIGURE 8-1

8.3 Impact Analysis

Implementation of the Spanish Springs and PVP Investments projects would result in the development of a cumulative total of 1,492 acres. New development will affect a number of resources, most notably biological resources, air quality, hydrology/water quality, noise, and visual resources. The cumulative effects of these projects are detailed in each resource chapter.

Although the additional projects listed in Section 8.2.3 would have less of a cumulative impact with the proposed project than the projects noted above, they are located within the watershed; thus, there would be a minor, but cumulative impact - most likely to biological resources and hydrology/water quality.

Because implementation of the proposed project would facilitate build-out of the Phase IV Expansion Plan, the cumulative impacts likely to have the greatest long-term impacts include air quality, biological resources, and hydrology/water quality.

THIS PAGE LEFT INTENTIONALLY BLANK

CHAPTER 9.0
RESPONSE TO COMMENTS

Comments from the following individuals, organizations and governmental agencies listed below were received on the Draft EIR. The Response to Comments Matrix is contained in Appendix G, along with copies of the letters with individually numbered comments

Private Organizations

1. Plains Exploration and Production (PXP)
2. Central Coast Salmon Enhancement
3. Hollister & Brace Law Corporation (on behalf of PXP)

Governmental Agencies

4. San Luis Obispo Air Pollution Control District
5. California Regional Water Quality Control Board

THIS PAGE LEFT INTENTIONALLY BLANK

CHAPTER 10.0
REPORT PREPARERS

The following persons were responsible for the preparation of this Public Draft SEIR:

San Luis Obispo County

Jeff Oliveira, Planning and Building Department
Murry Wilson, Planning and Building Department

Padre Associates, Inc.

Simon Poulter (Principal-in-Charge)
Eric Snelling (San Luis Obispo Office Manager)
Matt Ingamells (Quality Control/Quality Assurance)
Brian Dugas (Project Manager)
Rob Linn (Assistant Project Manager)
Jessica Peak
Ken Gilliland
Chris Santala
Scott Santala

HydroTerra Consulting (Steelhead Survey and Habitat Assessment)

Freddy Otte

MapSmith (GIS Graphics)

Andrea Miller

THIS PAGE LEFT INTENTIONALLY BLANK

CHAPTER 11.0
REFERENCES

3.0 PROJECT DESCRIPTION

County of San Luis Obispo. 1981. *Final Environmental Impact Report. Arroyo Grande Thermal Project.* Prepared by Energy Resources Company, Incorporated. La Jolla, CA.

County of San Luis Obispo. 1994. *Final Supplemental Environmental Impact Report. Shell Western Development Plan.* Prepared by Science Applications International Corporation. Santa Barbara, CA.

Plains Exploration and Production. 2002. Development Plan Application for Phase IV Development Plan / D010386D.

Plains Exploration and Production. 2006. Conditional Use Permit and Land Use Application for Produced Water Reclamation Facility / ED06-133, DRC2005-00252.

Salway, Candace. Comments on Project Description. Manager, EH&S. Plains Exploration and Production.

Entrix, Inc. 2006. *Supplemental Information to Land Use Application.* Prepared for Plains Exploration and Production Company (PXP).

____. 2007. Reasonable Potential Analysis and Options Analysis for Produced Water Reclamation Facility. Prepared for PXP.

____. 2006. *Revised Hydrologic, Water Quality, and Biological Characterization of Pismo Creek.* Prepared for PXP.

____. 2006. Response letter to request for additional information for Produced Water Reclamation Facility.

ADAIR Engineering, Inc. 2007. Property, Site Area and Facility Plans. Prepared for PXP.

4.0 PHYSICAL SETTING AND LAND USE POLICY CONSISTENCY

County of San Luis Obispo. 2002. *Adopted Land Use and Circulation Elements – San Luis Bay Inland Planning Area* (Adopted by San Luis Obispo County Board of Supervisors on September 22, 1980 [Resolution 80-350], as Amended through May 2, 2002. San Luis Obispo, CA.

County of San Luis Obispo. 2002. *Adopted Land Use Ordinance* (Adopted by San Luis Obispo County Board of Supervisors on December 18, 1980 [Resolution 2002-454], as Amended through November 5, 2002. San Luis Obispo, CA.

County of San Luis Obispo. 2003. *Adopted Agriculture and Open Space Element* (Adopted by San Luis Obispo County Board of Supervisors on December 15, 1998 [Resolution 98-495]. San Luis Obispo, CA.

County of San Luis Obispo. 1995. *Energy Element* (Adopted by San Luis Obispo County Board of Supervisors on April 25, 1995 [Resolution 95-168]. San Luis Obispo, CA.

County of San Luis Obispo. 1998. *Framework for Planning (Inland)* (Adopted by San Luis Obispo County Board of Supervisors on September 22, 1980 [Resolution 80-350], as Amended through November 18, 1999. San Luis Obispo, CA.

Science Applications International Corporation. 1994. *Final Supplemental Environmental Impact Report. Shell Western Development Plan*. Prepared for the County of San Luis Obispo, Office of the Environmental Coordinator. Santa Barbara, CA.

Padre Associates, Inc. 2004. *Final Environmental Impact Report – Phase IV Expansion Plan.* Prepared for the County of San Luis Obispo, CA.

5.0 ENVIRONMENTAL IMPACTS

5.1 Issues Previously Addressed

Associated Transportation Engineers. 2001. *Traffic and Circulation Study. Stocker Resources, Arroyo Grande Oil Field Phase IV Project.* San Luis Obispo, CA.

California Department of Transportation. 2000. *Caltrans Noise Model.*

Gibson, Robert O. 1992. *Phase One Archaeological Surface Survey for the Shell Western E&P Project, Price Canyon Oil Field.* San Luis Obispo, CA.

Hoover, R. L. 1977. *Archaeological and Historical Resource Evaluation, Edna Tar Sands Project.* San Luis Obispo, CA.

_____. 1978. Letter Report on file at Central Coast Information Center, UCSB.

_____. 1986. *Archaeological Survey Report for the Proposed Shell-Union Pipeline Connection*, Price Canyon Facility, San Luis Obispo, CA.

Padre Associates, Inc. Reconnaissance-level Site Visits. April 13, May 22, 2007.

_____. 2004. *Final Plains Exploration and Production Phase IV Development Plan Environmental Impact Report.* Prepared for the County of San Luis Obispo.

5.2 Air Quality

San Luis Obispo County Air Pollution Control District. 2003. *CEQA Air Quality Handbook, A Guide for Assessing the Air Quality Impacts for Projects Subject to CEQA Review.*

San Luis Obispo County Air Pollution Control District. 2002. *2001 Clean Air Plan, San Luis Obispo County.*

California Air Resources Board website. Air Quality Data Statistics. Accessed June 2007 at http://www.arb.ca.gov/adam/welcome.html

Salway, Candace. Comments on Project Description and Construction Equipment Specificato. Manager, EH&S. Plains Exploration and Production.

U.S. Environmental Protection Agency. 1991. *Nonroad Engine and Vehicle Emission Study.* EPA 460/3-91-02.

U.S. Environmental Protection Agency. 1995a. *Compilation of Air Pollutant Emission Factors* (AP-42), Volume I. Section 1.4, Natural Gas Combustion, revised July 1998.

U.S. Environmental Protection Agency, Office of Transportation and Air Quality. 2004. Median Life, Annual Activity, and Load-Factor Values for Nonroad Emissions Modeling Report.

Guise, Melissa. 2007. Air Pollution Control District. personal communication.

Ontario Ministry of the Environment website. List of Volatile Organic Compounds (VOCs). Website accessed July 2007 at http://www.ene.gov.on.ca/envision/monitoring/VOC_List.pdf

5.3 Biological Resources

California Air Pollution Control Officers Association and California Air Resources Board. 1999. *California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities.*

California Air Resources Board. 1990. *Emission Inventory Guidance Document, Section 4.2, Oil & Gas Production Valves and Fittings.*

California Coastal Commission. 1981. Appendix D: Technical Criteria for Identifying and Mapping Wetlands and Other Wet Environmentally Sensitive Habitat Areas. *In: Statewide Interpretive Guidelines.* San Francisco, California.

California Coastal Commission. 1994. *Procedural Guidance for the Review of Wetland Projects in California's Coastal Zone.* Oakland, California.

California Department of Fish and Game. 1988. *A Guide to Wildlife Habitats of California.* Sacramento, CA.

California Department of Fish and Game, Inland Fisheries Division. 2002. *California Salmonid Stream Habitat Restoration Manual.*

California Native Plant Society. 2001. *Inventory of Rare and Endangered Plants.*

California Natural Diversity Data Base (CNDDB). 2007. Database records search of Rarefind for USGS 7.5-minute quadrangles. California Department of Fish and Game. Sacramento, California.

California Regional Water Quality Control Board. 2004. Central Coast Region, *Water Quality Control Basin Plan.*

County of San Luis Obispo. 2002. *Adopted Land Use and Circulation Elements – San Luis Bay Inland Planning Area* (Adopted by San Luis Obispo County Board of Supervisors on September 22, 1980 [Resolution 80-350], as Amended through May 2, 2002. San Luis Obispo, CA.

County of San Luis Obispo. 2003. Adopted Agriculture and Open Space Element (Adopted by San Luis Obispo County Board of Supervisors on December 15, 1998 [Resolution 98-495]. San Luis Obispo, CA.

County of San Luis Obispo. 1981. *Final Environmental Impact Report. Arroyo Grande Thermal Project.* Prepared by Energy Resources Company, Incorporated. La Jolla, CA.

Cowardin, Lewis M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States.* U.S. Fish and Wildlife Service. Washington, D.C.

DWE Principle Ecologists. 2006. PXP Phase IV biological Resources Mitigation Monitoring Report 2006-1.

Entrix, Inc. 2006. Revised Hydrologic, Water Quality, and Biological Characterization of Pismo Creek, PXP Arroyo Grande Oil Field Produced Water Reclamation Facility.

Firma Consultants. 2007. PXP Arroyo Grande Oil Field Environmental Constraint Map.

Hickman, J. (ed.). 1993. *The Jepson Manual of the Higher Plants of California*. University of California Press. Berkeley, CA.

Hoshovsky, M. 2000. *Significant Natural Areas of California*. California Department of Fish and Game. Sacramento, CA.

Jennings, M. and M. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. California Department of Fish and Game, Inland Fisheries Division. Rancho, Cordova, CA.

Levine Fricke. 2000. *Sensitive Species Surveys for Stocker Resources Facility Expansion*. Prepared for Firma. San Luis Obispo, CA.

Levine Fricke. 2001. *Focused Well Pad Botanical Surveys for Proposed Expansion Activities*. Prepared for Firma. San Luis Obispo, CA.

Levine Fricke. 2002. *Final Assessment of Coast Live Oak and Wells's Manzanita Impacts for Focused Well Pad Botanical Surveys for Proposed Expansion Activities*. Prepared for Firma. San Luis Obispo, CA.

McEwan, D. and T.A. Jackson. 1996. *Steelhead restoration and management plan for California. Resources Agency*, California Department of Fish and Game, Sport Fish Restoration Program, Sacramento, California.

McGoogan, Matthew. July 19, 2007. *Personal Communication*. National Marine Fisheries Service.

Morro Group. 2001. Draft Environmental Impact Report. Pismo Beach Wastewater Treatment Facilities Upgrade. Prepared for the City of Pismo Beach. San Luis Obispo, CA.

Moyle, P. and J. Ellison. 1991. *A Conservation-Oriented Classification System for the Inland Waters of California*. California Fish and Game 77(4): 161-180.

National Oceanic and Atmospheric Administration; National Marine Fisheries Service 1994. *Threatened Marine and Anadromous Species*. Federal Register (59) 5494.

National Oceanic and Atmospheric Administration; National Marine Fisheries Service 1997. *Threatened Marine and Anadromous Species*. Federal Register (62) 43937.

National Oceanic and Atmospheric Administration; National Marine Fisheries Service 2005. *Threatened Marine and Anadromous Species*. Federal Register (50) 226.

National Oceanic and Atmospheric Administration; National Marine Fisheries Service 2006. *Threatened Marine and Anadromous Species*. Federal Register (71) 834.

National Marine Fisheries Service. 2003. News article. website: http://www.nwr.noaa.gov/1press/CHdecree.htm

Padre Associates, Inc. 2003. *Results of Spring Botanical Survey at PXP Produced Water Reclamation Facility*.

Padre Associates, Inc. 2007. *Results of Spring Botanical Survey at PXP Produced Water Reclamation Facility.*

Raleigh, R.F., T. Hickman, R.C. Solomon, and P.C. Nelson. 1984. Habitat suitability information: rainbow trout. U.S. Fish and Wildlife Service FWS/OBS-82/10.60.

San Luis Obispo County Air Pollution Control District. 1997. *CEQA Air Quality Handbook, A Guide for Assessing the Air Quality Impacts for Projects Subject to CEQA Review.*

San Luis Obispo County Air Pollution Control District. 2002. *2001 Clean Air Plan, San Luis Obispo County.*

Sawyer, J. and T. Keeler-Wolf. 1995. *A Manual of California Vegetation.* California Native Plant Society, Sacramento, CA.

Science Applications International Corporation. 1994. *Final Supplemental Environmental Impact Report. Shell Western Development Plan.* Prepared for the County of San Luis Obispo, Office of the Environmental Coordinator. Santa Barbara, CA.

Skinner, M.W. and B.M. Pavlik (eds.). 1994. *Inventory of Rare and Endangered Vascular Plants of California.* 5th edition. Special Publication No. 1. California Native Plant Society. Sacramento, California. 336 pp.

Swenson, R.O. 1999. The ecology, behavior, and conservation of the tidewater goby, Eucyclogobius newberryi. Environmental Biology of Fishes 55:99-119.

National Marine Fisheries Service. 1999, 2003 . *Magnusun-Stevens Act of 1996.* 16 U.S.C. 1801.

U.S. Code. *Migratory Bird Treaty Act of 1918.* Title 16, Chapter 7, Subchapter II.

U.S. Army Corps of Engineers. 2001. *Definition of the Waters of the United States.* 33 CFR 328(e).

U.S. Environmental Protection Agency. 1991. *Nonroad Engine and Vehicle Emission Study.* EPA 460/3-91-02.

U.S. Environmental Protection Agency. 1995a. *Compilation of Air Pollutant Emission Factors* (AP-42), Volume I. Section 1.4, Natural Gas Combustion, revised July 1998.

U.S. Environmental Protection Agency. 1995b. *Protocol for Equipment Leak Emission Estimates.* EPA-453/R-95-017.

U.S. Fish and Wildlife Service. 1997. Guidance on Site Assessment and Field Surveys for California Red-Legged Frog.

U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998b. Endangered Species Consultation Handbook: Procedures for Conducting Section 7 Consultations and Conference Activities Under Section 7 of the Endangered Species Act.

U.S. Fish and Wildlife Service. 2005. Revised Guidance on Site Assessment and Field Surveys for California Red-Legged Frog.

U.S. Fish and Wildlife Service. 2003. Species Account: Morro shoulderband snail. Website: http://ventura.fws.gov/speciesaccount/invertebrates/shourlderband_snail.htm.

U. S. Fish and Wildlife Service. 2005. *Recovery Plan for the Tidewater Goby (Eucyclobius newberryi)*. Portland, Oregon.

Vandersande, Matthew. July 19, 2007. *Personal Communication*. U. S. Army Corps of Engineers, Ventura Field Office.

Whittaker Jr., John O. 1998. National Audubon Society Field Guide to North American Mammals. New York, NY

Zeiner, D.C., W.F. Laudenslayer, Jr., and K.E. Mayer. 1988. *California's Wildlife Volume I: Amphibians and Reptiles*. California Statewide Wildlife Habitat Relationships System, California Department of Fish and Game. Sacramento, CA.

Zeiner, D.C., W.F. Laudenslayer, Jr., and K.E. Mayer. 1988. *California's Wildlife Volume III: Mammals*. California Statewide Wildlife Habitat Relationships System, California Department of Fish and Game. Sacramento, CA.

Zeiner, D.C., W.F. Laudenslayer, Jr., and K.E. Mayer. 1990a. *California's Wildlife Volume II: Birds*. California Statewide Wildlife Habitat Relationships System, California Department of Fish and Game. Sacramento, CA.

Zeiner, David C., William Laudenslayer, Jr., and Kenneth E. Mayer, editors. 1990b. *California's Wildlife Volume II: Birds*. California Fish and Game. Sacramento, California.

5.4 Geology and Soils

Dames & Moore. 1986. Final Geologic, Hydrogeographic, and Environmental Assessment, Arroyo Grande Field and Vicinity, San Luis Obispo County, California. Prepared for Shell California Production, Inc.

ERCO (Energy Resources Co. Inc.). 1981. *Phase II operations, Arroyo Grande Thermal Project, Grace Petroleum Corporation, Final EIR*. Prepared for San Luis Obsipo, Office of the Environmental Coordinator.

Hallmark, F.O. 1980. *Unconventional Petroleum Resources in California*, California Division of Oil and Gas, Publication No. TR25.

Lawrence, E.D. 1958. *Arroyo Grande (Edna) Oil Field, in Summary of Operations*, California Oil Fields, Vol. 44, No 1, pp. 41-46.

Norris, R.M., Webb, R.W. 1976. *Geology of California*, John Wiley & Sons, pp 245-288.

Science Applications International Corporation. 1994. *Final Supplemental Environmental Impact Report. Shell Western Development Plan*. Prepared for the County of San Luis Obispo, Office of the Environmental Coordinator. Santa Barbara, CA.

U.S. Department of Agriculture, Soil Conservation Service. 1984. *Soil Survey of San Luis Obispo County, California, Coastal Part*.

5.5 Hydrology and Water Quality

California Department of Water Resources, *California Groundwater Bulletin 118 – San Luis Obispo Valley Groundwater Basin.*

California Regional Water Quality Control Board, 2004, Central Coast Region, *Water Quality Control Basin Plan.*

County of San Luis Obispo Public Works Department, *Hydrologic Report* (for the Years 2001 through 2003).

County of San Luis Obispo, 2005, Resource Management System, Annual Report.

Entrix, Inc. 2006, *Revised Hydrologic, Water Quality and Biological Characterization of Pismo Creek,* Prepared for Plains Exploration and Production Company, Revised July 11.

_____. 2006. *Supplemental Information to Land Use Application.* Prepared for Plains Exploration and Production Company (PXP).

____. 2007. Reasonable Potential Analysis and Options Analysis for Produced Water Reclamation Facility. Prepared for PXP.

5.6 Hazards/Risk of Upset

Entrix, Inc. 2006. *Supplemental Information to Land Use Application.* Prepared for Plains Exploration and Production Company (PXP).

ERCO (Energy Resources Co. Inc.). 1981. *Phase II operations, Arroyo Grande Thermal Project, Grace Petroleum Corporation, Final EIR.* Prepared for County of San Luis Obispo, Office of the Environmental Coordinator.

Plains Resources, Inc., AB 2185 Business Plan, Arroyo Grande Field, Revised 2002.

_____, Emergency Response Action Plan, Arroyo Grande Production Facilities, April 2003.

_____, Spill Prevention, Control, and Countermeasures Plan, Arroyo Grande Production Facilities, April 2003.

Science Applications International Corporation. 1994. *Final Supplemental Environmental Impact Report. Shell Western Development Plan.* Prepared for the County of San Luis Obispo, Office of the Environmental Coordinator. Santa Barbara, CA.

Uniform Fire Code, 1991 Edition, Sections 79.1006 et seq.

6.0 PROJECT ALTERNATIVES

County of San Luis Obispo. 1995. *Energy Element* (Adopted by San Luis Obispo County Board of Supervisors on April 25, 1995 [Resolution 95-168]. San Luis Obispo, CA

Salway, Candace. Comments on Project Description. Manager, EH&S. Plains Exploration and Production.

Entrix, Inc. 2006. *Supplemental Information to Land Use Application.* Prepared for Plains Exploration and Production Company (PXP).

____. 2007. Reasonable Potential Analysis and Options Analysis for Produced Water Reclamation Facility. Prepared for PXP.

8.0 CUMULATIVE IMPACT ANALYSIS

Padre Associates, Inc. 2004. *Final Environmental Impact Report – Phase IV Expansion Plan.* Prepared for the County of San Luis Obispo, CA.

Wilson, Murry. 2007. Personal communication with County of San Luis Obispo regarding Cumulative Project List.

THIS PAGE LEFT INTENTIONALLY BLANK

APPENDIX A
NOTICE OF PREPARATION

THIS PAGE LEFT BLANK INTENTIONALLY

COUNTY OF SAN LUIS OBISPO
DEPARTMENT OF PLANNING & BUILDING
ENVIRONMENTAL DIVISION

NOTICE OF PREPARATION

DATE: April 3, 2008

TO:

FROM:
Environmental Division
Department of Planning and Building
County Government Center, Room 310
San Luis Obispo, CA 93408

SUBJECT: NOTICE OF PREPARATION OF A SUBSEQUENT ENVIRONMENTAL IMPACT REPORT (SEIR) FOR THE PLAINS EXPLORATION AND PRODUCTION – PRODUCED WATER RECLAMATION FACILITY.

San Luis Obispo County (County) will be the Lead Agency and will prepare a Subsequent Environmental Impact Report (SEIR) for the project identified above. We need to know the views of your agency as to the scope and content of the environmental information that is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the SEIR prepared by our agency when considering your permit of other approval for the project.

PLEASE provide us the following information at your earliest convenience, but not later than the 30-day comment period which will begin with your agency's receipt of the NOP.

1. **NAME OF CONTACT PERSON**. Murry Wilson – (805) 788-2352
976 Osos Street, Room 300
San Luis Obispo, CA 93408

2. **PERMIT(S) or APPROVAL(S) AUTHORITY**. Please provide a summary description of these and send a copy of the relevant sections of legislation, regulatory guidance, etc.

3. **ENVIRONMENTAL INFORMATION**. What environmental information must be addressed in the SEIR to enable your agency to use this documentation as a basis for your permit issuance or approval?

4. **PERMIT STIPULATIONS/CONDITIONS**. Please provide a list and description of standard stipulations (conditions) that your agency will apply to features of this project. Are there others that have a high likelihood of being applied to a permit or approval for this project? If so, please list and describe.

5. **ALTERNATIVES**. What alternatives does your agency recommend be analyzed in equivalent level of detail with those listed below?

6. **REASONABLY FORESEEABLE PROJECTS, PROGRAMS or PLANS**. Please name any future project, programs or plans that you think may have an overlapping influence with the project as proposed.

7. **RELEVANT INFORMATION**. Please provide references for any available, appropriate documentation, or specific documents you believe may be useful to the county in preparing the SEIR. **Any information relating to the "capacity" or existing "constraints" relevant to your agency's charge would be extremely helpful.**

8. **FURTHER COMMENTS**. Please provide any further comments or information that will help the county to scope the document and determine the appropriate level of environmental assessment.

The project description, location, and the probable environmental effects are contained in the attached materials.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date, but not later than **30 days** after receipt of this notice.

Please send your response to **Murry Wilson** at the following address:

Murry Wilson, Environmental Resource Specialist
County of San Luis Obispo
976 Osos Street, Room 300
San Luis Obispo, CA 93408

We will need the name of a contact person in your agency.

PROJECT TITLE: Plains Exploration and Production Company-
Produced Water Reclamation Facility

PROJECT APPLICANT: Plains Exploration and Production Company

Responses due by: **June 28, 2007**

_____
Murry Wilson

Telephone: (805) 788-2352
Email: mwilson@co.slo.ca.us

Reference: California Administrative Code, Title 14, Section 15082.

COUNTY OF SAN LUIS OBISPO
NOTICE OF PREPARATION OF A SUBSEQUANT ENVIRONMENTAL IMPACT REPORT

PLAINS EXPLORATION AND PRODUCTION COMPANY PRODUCED WATER RECLAMATION FACILITY PROJECT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

---

1. PROJECT OBJECTIVES

The primary purpose of the proposed project is to enhance the recovery of oil reserves via treatment of excess produced water. Inherent to this enhanced recovery is dewatering the oil-bearing formation by reducing return water flows from the existing oil-water separation process.

2. PROJECT LOCATION

The Arroyo Grande oil field is located in Price Canyon about 3 miles northeast of Pismo Beach in San Luis Obispo County, California. The project site is located east and west of Price Canyon Road near its intersection with Ormonde Road, between Highway 101 and Highway 227. The Project lies within the 264-acre Phase III development project approved by the San Luis Obispo Planning Commission (SLOPC) in Resolution 94-49, Development Permit No. D910026D, which was delineated in the 1994 Shell Western Development Plan EIR (1994 EIR). This site lies primarily within the 320-acre Arroyo Grande oil field, which is within the larger 1,480-acre Price Canyon Unit as defined by the California Division of Oil, Gas & Geothermal Resources (DOGGR).

3. PROJECT COMPONENTS

- Construction of infrastructure for water reclamation on five building pads ranging in sizes from approximately 100-foot by 150-foot to 175-foot by 450-foot (refer to Figure 3-8);

- Construction of a 20,000 barrel per day (2.5 acre feet per day or 840,000 gallons per day) water treatment plant (utilizing primarily reverse osmosis treatment technology), on an approximately 150-foot by 125-foot building pad (refer to Figure 3-5);

- Construction of two 210,000 gallon filtered water tanks and two day tanks sized at 420,000 gallons each designed to contain 12 hours of treated water production (see Figure 3-5);

- Construction of a 420,000 gallon Recovery Water Tank (see Figure 3-5);

- Other appurtenances and tanks for storage and conveyance of treatment materials and ancillary equipment as needed (see Figure 3-5);

- Construction of three air stripping towers 70 feet in height to remove organics and heat from the water, two heat exchangers (fin-fan followed by a wet surface heat exchanger); and various tanks and silos on an 175-foot by 450-foot building pad (see Figure 3-5);

- Construction of water transmission pipelines within existing facility roadways and piping routes including stub-out pipelines for re-use on / or off-site (see Figure 3-5);

- Creation of a smooth-bottomed tempering pond lined with low-permeability material within an existing dry pond (more detail provided in Section 3.4.3.3) (see Figure 3-4);

- Relocation of existing pipelines within the proposed footprint of the water treatment/reclamation facility, including an existing flare. Relocated pipelines will be placed in existing, above-ground pipe racks (see Section 3.4.3.3);

- Placement of a reclaimed water outfall structure for release of the treated water on an existing rip-rap bank along Pismo Creek (see Figure 3-7);

- Temporary use of two staging areas in idle and abandoned well locations, one being approximately 75-foot by 100-foot and the other approximately 100-foot by 150-foot, located outside of the Phase III/IV project boundary within previously disturbed areas (see Figure 3-4);

- Operation of the proposed project (water treatment plant) including discharge and potential re-use;

- Discharge of the treated produced water into Pismo Creek (see Figure 3-3); and,

- Potential re-use of the treated produced water (i.e. agriculture) by adjoining property owners in the vicinity of the project site, as well as re-use in the oil field. Re-use pipelines are located outside of the existing Phase III/IV project boundary and proceed to the north and south toward adjacent properties.

4. ISSUES TO BE DISCUSSED IN THE SEIR

There are a number of key issues related to the project which must be addressed, including the following:

- Air quality impacts related to construction and operational activities;
- Potential water quality impacts, including change in flow rates, change in water chemistry, and change in water temperature, to Pismo Creek;
- Potential impacts to biological resources, including California Red-legged frog, Pismo Clarkia, avian species (i.e., creation of tempering ponds), and steelhead;
- Hazards and hazardous materials, including potential hazards to workers and the public, as well as potential hazards to plants and wildlife from the release of treated water; and,
- Potential ground subsidence.

THIS PAGE LEFT BLANK INTENTIONALLY

APPENDIX B
NOTICE OF PREPARATION RESPONSES

THIS PAGE LEFT BLANK INTENTIONALLY

AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN LUIS OBISPO

RECEIVED
JUL 02 2007
SLO CO PLANNING & BLDG

June 28, 2007

Murry Wilson
San Luis Obispo County Planning and Building Dept.
County Government Center, Room 310
San Luis Obispo CA 93401

SUBJECT: APCD Comments Regarding the Plains Exploration Produced Water Reclaim Facility NOP Project Level.

Dear Mr. Wilson,

Thank you for including the San Luis Obispo County Air Pollution Control District (APCD) in the environmental review process. We have completed our review of the proposed project located at 1821 Price Canyon Road in San Luis Obispo. The project as proposed is to enhance the recovery of oil reserves via treatment of excess produced waters. Inherent to the enhanced recovery process is dewatering the oil-bearing formation by reducing return water flows from the existing oil-water separation process.
The following are APCD comments that are pertinent to this project.

1. Contact Person:

Melissa Guise
Air Pollution Control District
3433 Roberto Court
San Luis Obispo, CA 93401
(805) 781-5912

2. Permit(s) or Approval(s) Authority:

Construction Equipment Permitting
Portable equipment used during construction activities may require statewide registration or a District permit. Please contact Gary Willey of our Engineering Division at (805) 781-5912 for more information on portable equipment registration and permitting.

Hydrocarbon Contaminated Soil
Should hydrocarbon contaminated soil be encountered during construction activities, the APCD must be notified immediately. Any storage pile of contaminated material must be covered at all times except when soil is added or removed. The following measures shall be implemented:

- Covers on storage piles shall be maintained in place at all times in areas not actively involved in soil addition or removal;
- Contaminated soil shall be covered with at least six inches of packed uncontaminated soil or other TPH –non-permeable barrier such as plastic tarp. No headspace shall be allowed where vapors could accumulate;
- Covered piles shall be designed in such a way to eliminate erosion due to wind or water. No openings in the covers are permitted;
- During soil excavation, odors shall not be evident to such a degree as to cause a public nuisance; and,

- Clean soil must be segregated from contaminated soil.

For further information, contact Karen Brooks of our Enforcement Division at 781-5912.

Naturally Occurring Asbestos
The project site is located in a candidate area for Naturally Occurring Asbestos (NOA), which has been identified as a toxic air contaminant by the California Air Resources Board (ARB). Under the ARB Air Toxics Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations, prior to any grading activities at the site, the project proponent shall ensure that a geologic evaluation is conducted to determine if NOA is present within the area that will be disturbed. If NOA is not present, an exemption request must be filed with the District (see Attachment 1). If NOA is found at the site the applicant must comply with all requirements outlined in the Asbestos ATCM. This may include development of an Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program for approval by the APCD. Please refer to the APCD web page at *http://www.slocleanair.org/business/asbestos.asp* for more information or contact Tim Fuhs of our Enforcement Division at (805) 781-5912.

Developmental Burning
Effective February 25, 2000, the APCD prohibited developmental burning of vegetative material within San Luis Obispo County. Under certain circumstances where no technically feasible alternatives are available, limited developmental burning under restrictions may be allowed. This requires prior application, payment of fee based on the size of the project, APCD approval, and issuance of a burn permit by the APCD and the local fire department authority. The applicant is required to furnish the APCD with the study of technical feasibility (which includes costs and other constraints) at the time of application. If you have any questions regarding these requirements, contact Karen Brooks of our Enforcement Division at (805) 781-5912.

Demolition Activities
Demolition activities can have potential negative air quality impacts, including issues surrounding proper handling, demolition, and disposal of asbestos containing material (ACM). Asbestos containing materials could be encountered during demolition or remodeling of existing buildings. Asbestos can also be found in utility pipes/pipelines (transite pipes or insulation on pipes). If utility pipelines are scheduled for removal or relocation; or building(s) are removed or renovated this project may be subject to various regulatory jurisdictions, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M - asbestos NESHAP). These requirements include but are not limited to: 1) notification requirements to the District, 2) asbestos survey conducted by a Certified Asbestos Inspector, and, 3) applicable removal and disposal requirements of identified ACM. Please contact Tim Fuhs of the Enforcement Division at (805) 781-5912 for further information.

Operational Permit Requirements
Permits will be required for this facility. To minimize potential delays, prior to the start of the project, please contact Gary Willey of the District's Engineering Division at (805) 781-5912 for specific information regarding permitting requirements.

3. Environmental Information:

The potential air quality impacts from construction and buildout of the project should be assessed in the EIR. The project under development has the potential for significant impacts to local air emissions, ambient air quality, sensitive receptors, and the implementation of the Clean Air Plan (CAP). A complete air quality analysis should be included in the DEIR to adequately evaluate the

overall air quality impacts associated with implementation of the proposed project. This analysis should address both short-term and long-term emissions impacts. The following is an outline of items that should be included in the analysis:

a) A description of existing air quality and emissions in the impact area, including the attainment status of the District relative to State air quality standards and any existing regulatory restrictions to development. The most recent CAP should be consulted for applicable information.

b) A detailed quantitative air emissions analysis, including greenhouse gases.

c) A qualitative analysis of the air quality impacts should be conducted. A consistency analysis with the CAP will determine if the emissions resulting from development under the project will be consistent with the emissions projected in the CAP, as described in item 6 of this letter. The qualitative analysis should be based upon criteria such as vehicle trip reduction. A finding of Class I impacts could be determined qualitatively. The DEIR author should contact the District if additional information and guidance is required. All assumptions used should be fully documented in an appendix to the DEIR.

- To aid in the air quality analysis, the traffic study should include the total daily traffic volumes projected. The traffic study results can be used in the qualitative analysis by providing a tool for comparing trip generation between different alternatives and evaluating effectiveness of mitigation methods for reducing traffic impacts.

d) The DEIR should include a range of alternatives that could effectively minimize air quality impacts. A consistency analysis should be performed for each of the proposed alternatives identified, as described above. A qualitative analysis of the air quality impacts should be generated for each of the proposed alternatives.

e) Mitigation measures to reduce or avoid significant air quality impacts should be recommended.

4. Permit Stipulations/Conditions:

It is recommended that you refer to the "CEQA Air Quality Handbook" (the Handbook). If you do not have a copy, it can be accessed on the District web page (www.slocleanair.org) in the Business Assistance section, listed under Regulations, or a hardcopy can be requested by contacting the District. The Handbook provides information on mitigating emissions from development (Section 5) which should be referenced in the DEIR.

5. Alternatives:

Any alternatives described in the DEIR should involve the same level of air quality analysis as described in bullet items 3.c and 3.d listed above.

6. Reasonably Foreseeable Projects, Programs or Plans:

The most appropriate standard for assessing the significance of potential air quality impacts for project EIRs is the preparation of a consistency analysis where the proposed project is evaluated against the land use goals, policies, and population projections contained in the CAP. The rationale for requiring the preparation of a consistency analysis is to ensure that the attainment projections

developed by the District are met and maintained. Failure to comply with the CAP could result in long term air quality impacts. Inability to maintain compliance with the state ozone standard could bear potential negative economic implications for the county's residents and business community. The District's CEQA Air Quality Handbook provides guidance for preparing the consistency analysis and recommends evaluation of the following questions:

a) Are the population projections used in the plan or project equal to or less than those used in the most recent CAP for the same area?

b) Is the rate of increase in vehicle trips and miles traveled less than or equal to the rate of population growth for the same area?

c) Have all applicable land use and transportation control measures from the CAP been included in the plan or project to the maximum extent feasible?

7. Relevant Information:

As mentioned earlier, the Handbook should be referenced in the EIR for determining the significance of impacts and level of mitigation recommended.

8. Further Comments:

We have no further comments at this time.

Again, thank you for the opportunity to comment on this proposal. If you have any questions or comments, feel free to contact me at 781-5912.

Sincerely,

Melissa Guise

Melissa Guise
Air Quality Specialist

MAG/sll

cc: Karen Brooks, Enforcement Division, APCD
Tim Fuhs, Enforcement Division, APCD
Gary Willey, Engineering Division, APCD

Attachments:
1. Naturally Occurring Asbestos – Construction & Grading Project Exemption Request Form,

Naturally Occurring Asbestos – Construction & Grading Project Exemption Request Form

Send To:

San Luis Obispo County
Air Pollution Control District
3433 Roberto Court
San Luis Obispo, CA 93401

Phone: (805) 781-5912
Fax: (805) 781-1002



Applicant Information/ Property Owner		**Project Name**	
Address		**Project Address and /or Assessors Parcel Number**	
City, State, Zip		**City, State, Zip**	
Email Address		**Email Address**	
Phone Number	**Date Submitted**	**Agent**	**Phone Number**

The District may provide an exemption from Section 93105 of the California Code of Regulations - Asbestos Airborne Toxic Control Measure For Construction, Grading, Quarrying, And Surface Mining Operations for any property that has any portion of the area to be disturbed located in a geographic ultramafic rock unit; if a registered geologist has conducted a geologic evaluation of the property and determined that no serpentine or ultramafic rock is likely to be found in the area to be disturbed. Before an exemption can be granted, the owner/operator must provide a copy of a report detailing the geologic evaluation to the District for consideration. The District will approve or deny the exemption within 90 days. An outline of the required geological evaluation is provided in the District handout **"ASBESTOS AIRBORNE TOXIC CONTROL MEASURES FOR CONSTRUCTION, GRADING, QUARRYING, AND SURFACE MINING OPERATIONS – Geological Evaluation Requirements."**

NOTE: A basic exemption evaluation fee of $100.00 will be charged.

APPLICANT MUST SIGN BELOW:
I request the San Luis Obispo County Air Pollution Control District grant this project exemption from the requirements of the ATCM based on the attached geological evaluation.
Legal Declaration/Authorized Signature:
Date:

OFFICE USE ONLY - APCD Required Element – Geological Evaluation			
Intake Date:	APCD Staff:	OIS Site #:	OIS Project #:
Date Reviewed:	APCD Staff:	Approved	Not Approved
Comments:			

Naturally Occurring Asbestos - Construction & Grading Project Form





Send To:
San Luis Obispo County Air Pollution Control District
3433 Roberto Court
San Luis Obispo, CA 93401
805-781-5912



Applicant Information/Property Owner		Project Name	
Address		Project Address and/or Assessors Parcel Number	
City, State, Zip		City, State, Zip	
Email:		Email:	
Phone Number	Date Submitted	Agent	Phone Number

Check Where Applicable	ITEM	APCD REQUIRED ELEMENT 1	APCD REQUIRED ELEMENT 2
	Project IS NOT Subject to NOA Requirements	Mapped Location Attached	
	Project IS Subject to NOA Requirements but NOT Disturbing NOA	Geological Evaluation Attached	Exemption Request Form Attached
	Project IS Subject to NOA Requirements and Project is Disturbing NOA - More than One Acre	Geological Evaluation Attached	Dust Control Measure Plan Attached
	Project IS Subject to NOA Requirements and Project is Disturbing NOA - One Acre or Less	Geological Evaluation Attached	Mini-Dust Control Measure Plan Attached

APPLICANT MUST SIGN BELOW:

Legal Declaration/Authorized Signature: Date:

OFFICE USE ONLY - APCD Required Elements

Geological Evaluation		Exemption Request Form		Dust Control Measure Plan		Monitoring, Health & Safety Plan	
Approved		Approved		Approved		Approved	
Not Approved		Not Approved		Not Approved		Not Approved	
Comments:		Comments:		Comments:			

APCD Staff:	Intake Date:	Date Reviewed:	OIS Site #	OIS Proj. #
INVOICE No.	Basic Fee:	Additional Fees:	Billable Hrs:	Total Fees:

City of Pismo Beach, Planning Division
760 Mattie Road
Pismo Beach, CA 93449-2056
(805) 773-4658 · Fax: (805) 773-4684

County of San Luis Obispo
ATTN: Murry Wilson
Environmental Resource Specialist
Department of Planning and Building

RE: Response to Notice of Preparation (NOP) for SEIR for the Plains Exploration and Production – Produced Water Reclamation Facility

Dear Murry:

This letter is written in response to the NOP referenced above and includes items the City of Pismo Beach would like to see addressed in the Subsequent Environmental Impact Report (SEIR). Please include information addressing the following areas of concern:

1. On-going water quality monitoring above, at, and below discharge point
2. Threshold water quality parameters/criteria per RWQCB permit
3. Contingency measures, including automatic shutoff, if monitoring shows exceedance of parameters/criteria established by RWQCB
4. Monetary compensation to fund Pismo Creek Watershed improvement projects to mitigate impacts (thermal, water quality) to steelhead habitat

Thank you for the opportunity to comment of the above referenced NOP. Should you have any questions regarding these comments, please feel free to contact me a (805) 773-4658.

Sincerely,

Scot Graham
Senior Planner
City of Pismo Beach
(805) 773-465
sgraham@pismobeach.org

THIS PAGE LEFT BLANK INTENTIONALLY

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT

ARNOLD SCHWARZENEGGER
GOVERNOR

CYNTHIA BRYANT
DIRECTOR

Notice of Preparation

May 29, 2007

To: Reviewing Agencies

Re: Plains Exploration and Production Company - Produced Water Reclamation Facility
SCH# 2007051143

Attached for your review and comment is the Notice of Preparation (NOP) for the Plains Exploration and Production Company - Produced Water Reclamation Facility draft Environmental Impact Report (EIR).

Responsible agencies must transmit their 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 the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Murry Wilson
San Luis Obispo County Planning
976 Osos Street, Room 300
San Luis Obispo, CA 93408

with a copy to the State Clearinghouse in 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 environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Project Analyst, State Clearinghouse

Attachments
cc: Lead Agency

THIS PAGE LEFT BLANK INTENTIONALLY

California Regional Water Quality Control Board
Central Coast Region

895 Aerovista Place, Suite 101, San Luis Obispo, California 93401-7906
(805) 549-3147 • Fax (805) 543-0397
http://www.waterboards.ca.gov/centralcoast

Linda S. Adams.
Secretary for
Environmental Protection

Arnold Schwarzenegger
Governor

June 20, 2007



Mr. Murry Wilson, Environmental Resource Specialist
County of San Luis Obispo
976 Osos Street
San Luis Obispo, CA 93408

Dear Mr. Wilson:

NOTICE OF PREPARATION OF SUBSEQUENT EIR FOR PXP ARROYO GRANDE PRODUCED WATER RECLAMATION FACILITY, SAN LUIS OBISPO COUNTY

Thank you for the opportunity to provide input regarding issues to be evaluated in a Subsequent Environmental Impact Report (SEIR) for the Plains Exploration and Production (PXP) wastewater reclamation facility, proposed to be located in Price Canyon. As you know from our earlier meeting and correspondence regarding the proposed facility, authorization to discharge treated wastewater to Pismo Creek (proposed) requires adoption of a National Discharge Elimination System (NPDES) Permit by this Water Board. We have the following comments regarding the SEIR for the PXP facility.

1. PXP submitted a report of waste discharge (application) in September, 2006, for authorization to discharge treated wastewater to Pismo Creek. This Water Board responded with a letter describing information needed to complete the application (see attached October 6, 2006 letter). Additional information has been submitted by the applicant and we are proceeding with the process of drafting a permit and associated fact sheet to be circulated for public comment and presented to the Central Coast Water Board for its consideration. We will send you a copy of the proposed permit and associated fact sheet as soon as it is drafted. Please note that an NPDES permit will not be adopted by the Water Board until the CEQA process is complete (as described in item No. 1 of the attached letter).

2. PXP proposes to discharge treated produced water (water produced from extraction wells) to Pismo Creek. The discharge will be created by expanding the existing oil production facility in Price Canyon. Federal regulations (40CFR435) prohibit the discharge of produced water to surface waters unless such discharge is used for agriculture or wildlife propagation. In this case, the applicant has not yet demonstrated that the discharge will be used for such purposes, and compliance with the federal discharge prohibition has not yet been addressed.

3. If PXP meets the conditions for exception to the federal prohibition of discharge, then we will propose an NPDES permit reflecting federal and state criteria for discharges to inland surface waters. We do not anticipate bringing such a proposed permit to public hearing before December 2007.

If you have questions regarding the issues above or would like to discuss the status of PXP application for NPDES permit, please contact **Sorrel Marks of my staff at 805/549-3695** or Harvey Packard at 805/542-4639.

Sincerely,

FOR Roger W. Briggs
Executive Officer

Attachment: October 6, 2006 letter to Candice Salway

S:\NPDES\NPDES Facilities\San Luis Obispo Co\PXP Price Cyn\SEIR coments.ltr.doc
File: PXP Price Canyon
Task: 102-01

cs:

Ms. Candice Salway
Plains Exploration and Production
5640 So. Fairfax Ave.
Los Angeles, CA 90056

Mr. Daniel Tormey
Entrix
2140 Eastman Ave., Suite 200
Ventura, CA 93003

Scott Keen, Tetra Tech (via email)

California Regional Water Quality Control Board
Central Coast Region

895 Aerovista Place, Suite 101, San Luis Obispo, California 93401-7906
(805) 549-3147 • Fax (805) 543-0397
http://www.waterboards.ca.gov/centralcoast

Linda S. Adams.
Secretary for
Environmental Protection

Arnold Schwarzenegger
Governor

October 6, 2006

Ms. Candice Salway
Plains Exploration and Production
5640 So. Fairfax Ave.
Los Angeles, CA 90056

Dear Ms. Salway:

INCOMPLETE REPORT OF WASTE DISCHARGE - PXP ARROYO GRANDE PRODUCED WATER RECLAMATION FACILITY, SAN LUIS OBISPO COUNTY

We have reviewed your September 15, 2006 submittal, which includes a) Report of Waste Discharge (application) for authorization to discharge oil production wastewater to Pismo Creek, and b) Application for Section 401 Water Quality Certification. We have the following comments regarding your submittal.

Application for NPDES Permit: Your application describes proposed discharge of approximately 0.84 million gallons per day (MGD) of treated oil production wastewater. Proposed treatment includes lime softening, multi-media filtration, ion exchange, cooling, micro-filtration and reverse osmosis prior to discharge. The following issues must be addressed before we can proceed with processing your application.

1. The Central Coast Water Board cannot take action (issue a permit) until compliance with the California Environmental Quality Act (CEQA) is complete. Please submit documentation of compliance with CEQA requirements.

2. Please submit owner's name and mailing address for each property adjacent to the discharge location.

3. An application fee equal to the first annual fee must be submitted, and will be billed annually thereafter as long as the discharge continues. The fee is based upon the facility complexity and potential threat to water quality (1A in the State Water Board rating system). Additional information regarding these fees is available online at http://www.swrcb.ca.gov/fees/docs/adoptedfeeschedule.html#flowlessthan100. Please submit your application fee of $18,871. Make check payable to the State Water Resources Control Board.

4. In the report *Revised Hydrologic, Water Quality, and Biological Characterization of Pismo Creek*, prepared by Entrix, Appendix D incorrectly summarizes applicable

water quality criteria. Provided as Attachment 1 to this letter is a summary of water quality criteria applicable to Pismo Creek, which we will use to evaluate compliance. Please use the criteria provided to evaluate potential for the proposed discharge to violate water quality standards. This "reasonable potential analysis," as it is termed in the State Implementation Policy, will be used as the basis for effluent limitations appearing in your permit. The steps used to prepare the reasonable potential analysis are summarized in Attachment 2 (excerpts from the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*). The Policy in its entirety is available online at: http://www.waterboards.ca.gov/iswp/docs/final.pdf. Alternatively, Water Board staff can complete the reasonable potential analysis. However, your submittal does not make clear which constituent data reflects treated effluent and telephone conversation with your agent, Dan Tormey, indicates that no effluent data is included. Therefore, if you prefer that Water Board staff complete the analysis, please submit effluent data and corresponding compliance with appropriate water quality criteria specified in Attachment 1.

5. In describing alternatives to the proposed creek discharge, your submittal refers to the infeasibility to buy injection sites (p.4-2); limited amount that could be reused (p.4-2 & 4-4); limited land disposal opportunities on- or off-site (p.4-3 & 4-4); and irrigation reuse opportunities. Please expand upon this information to address potential combinations of alternatives that could reduce or eliminate the need for creek discharge. If cost is the limiting factor in such evaluations, then specific details of associated costs should be included.

6. Please submit a statement of whether PXP has contributed $250 or more to any federal, state, or local election for any Central Coast Water Board member within the last twelve months. Current Central Coast Water Board members are Jeffrey S. Young, Gary C. Shallcross, Russell M. Jeffries, Daniel M. Press, John H. Hayashi, Monica S. Hunter and Leslie S. Bowker. Government Code Section 84308(c) requires this statement.

Please submit the additional information, described above, to complete your application for NPDES Permit. When we have received information to adequately address these issues, we will proceed to prepare a draft permit and staff report, circulate those draft documents for public comment, and schedule a public hearing by the Central Coast Water Board. We anticipate the public hearing will be approximately 180 days from the time we receive the completed application.

If you have questions regarding the NPDES Permit process, please contact Sorrel Marks at 805/549-3695.

Section 401 Water Quality Certification:
For the Water Board to fully evaluate the application for Section 401 Water Quality Certification, we require the following information:

1. Please provide permanent impacts to streambed, riparian, and wetland habitats in acres and linear feet (Section 4 of 401 application).

2. Please provide the acreage of all temporary impacts (Section 4 of 401 application).

3. Please provide the Water Board with a copy of the Army Corps of Engineers permit application for the proposed project and indicate Corps staff involved in reviewing the application if known.

4. Please provide the Water Board with a copy of the Department of Fish and Game Streambed Alteration Agreement application for the proposed project.

5. Habitat impacts from the anticipated 1.3 cfs discharge are characterized as negligible at high flows, and in entirely positive terms at low flows, in the hydrology study included with the submitted materials. Riparian and riparian wetland functions and values on Pismo Creek are an expression of the quasi-equilibrium state that derives from both regional and microclimatic conditions. It is expected that these functions and values would be altered by the anticipated continuous discharge, particularly during drier periods. Subsequent submittals should characterize these functions and values and address all potential impacts, including negative impacts.

6. The Water Board does not view with favor the proposed use of riprap for outfall energy dissipation and increased channel roughness (Entrix, Inc. Revised Hydrologic study, July 11, 2006, p.viii). Preferred methods include biotechnical approaches that integrate vegetation and structural components as necessary. Subsequent submittals should include analysis of alternatives to the use of riprap on Pismo Creek.

7. Please formulate compensatory mitigation plans for habitat impacts. The Water Board requires a 3:1 replacement ratio for all permanently impacted wetlands, a 2:1 replacement ratio for permanently impacted streambed habitats, and a 1:1 replacement ratio for impacted riparian habitat and temporarily impacted streambed and wetland habitats. Please see section 12 of Instructions for Filling Out the CWA Section 401 Water Quality Certification, available online at http://www.waterboards.ca.gov/centralcoast/401WQCert/Index.htm for additional information on compensatory mitigation.

8. Please provide the Water Board with an inclusive list of Best Management Practices specific to the proposed project that would be implemented during and after project activities.

9. Please provide photographs of the site for the proposed Pismo Creek discharge area.

The information above is required to complete the Water Quality Certification application process. Once the application is complete, the Water Board will evaluate your application for appropriate action, which may include: Standard Certification, Technically Conditioned Certification or Denial of Certification.

If you have questions regarding the Section 401 Water Quality Certification process, please contact **Dominic Roques at 805/542-4780**.

Sincerely,

Roger W. Briggs
Executive Officer

Attachments:
1. Priority Pollutant criteria list
2. Steps for completing a reasonable potential analysis

S:/NPDES/NPDES Facilities/San Luis Obispo Co/PXP/incomplete ROWD.ltr
File: PXP Price Canyon
Task: 102-01

cc:

Mr. Daniel Tormey
Entrix
2140 Eastman Ave., Suite 200
Ventura, CA 93003

Mr. Murry Wilson
SLO Co. Co. Government Center, Rm. 310
San Luis Obispo, CA 93408

ATTACHMENT D
PRIORITY TOXIC POLLUTANTS

VOLATILE ORGANICS						
CTR #	Chemical Constituent	CAS Number	Basis	Effluent Limit (µg/L or noted)	Respective Minimum Level (ML)[A], (µg/L)	Acceptable Analytical Methods[B]
28	1,1 Dichloroethane	75343	Primary MCL	5	0.5, 1	GC, GCMS
30	1,1 Dichloroethene	75354	California Toxics Rule	0.057	0.5	GC
41	1,1,1 Trichloroethane	71556	Primary MCL	200	0.5, 2	GC, GCMS
42	1,1,2 Trichloroethane	79005	California Toxics Rule	0.6	0.5	GC
37	1,1,2,2 Tetrachloroethane	79345	California Toxics Rule	0.17	0.5	GC
75	1,2 Dichlorobenzene	95501	Secondary MCL	10	0.5, 2	GC, GCMS
29	1,2 Dichloroethane	107062	California Toxics Rule	0.38	0.5	GC
31	1,2 Dichloropropane	78875	California Toxics Rule	0.52	0.5	GC
76	1,3 Dichlorobenzene	541731	California Toxics Rule	400	0.5, 2	GC, GCMS
32	1,3 Dichloropropene	542756	Primary MCL	0.5	0.5, 2	GC, GCMS
77	1,4 Dichlorobenzene	106467	Primary MCL	5	0.5, 2	GC, GCMS
17	Acrolein	107028	National Ambient Water Quality Criteria	21	2, 5	GC, GCMS
18	Acrylonitrile	107131	California Toxics Rule	0.059	2, 2	GC, GCMS
19	Benzene	71432	Primary MCL	1	0.5	GC
20	Bromoform	75252	California Toxics Rule	4.3	0.5, 2	GC, GCMS
34	Methyl Bromide	74839	California Toxics Rule	48	1, 2	GC, GCMS
21	Carbon Tetrachloride	56235	California Toxics Rule	0.25	0.5	GC
22	Chlorobenzene	108097	Primary MCL	70	0.5, 2	GC, GCMS
23	Chlorodibromomethane	124481	California Toxics Rule	0.401	0.5	GC
24	Chloroethane	75003	Primary MCL	300	0.5, 2	GC, GCMS
25	2-Chloroethyl vinyl ether	110758	No Criteria Available		1, 1	GC, GCMS
26	Chloroform	67663	National Toxics Rule	5.7	0.5, 2	GC, GCMS
35	Chloromethane	74873	USEPA Health Advisory	3	0.5, 2	GC, GCMS
27	Dichlorobromo-methane	75274	California Toxics Rule	0.56	0.5	GC
36	Dichloromethane	75092	California Toxics Rule	4.7	0.5, 2	GC, GCMS
33	Ethylbenzene	100414	Primary MCL	300	0.5, 2	GC, GCMS
38	Tetrachloroethene	127184	National Toxics Rule	0.8	0.5	GC
39	Toluene	108883	Primary MCL	150	0.5, 2	GC, GCMS
40	Trans-1,2 Dichloroethylene	156605	Primary MCL	10	0.5	GC
43	Trichloroethene	79016	National Toxics Rule	2.7	0.5, 2	GC, GCMS
44	Vinyl Chloride	75014	Primary MCL	0.5	0.5, 2	GC, GCMS

SEMI-VOLATILE ORGANICS

CTR #	Chemical Constituents	CAS Number	Basis	Effluent Limit (µg/L or noted)	Respective Minimum Level (ML)[A], (µg/L)	Acceptable Analyti Methods
60	1,2 Benzanthracene	56553	California Toxics Rule	0.0044	5	GCMS
85	1,2 Diphenylhydrazine	122667	California Toxics Rule	0.04	1	GCMS
101	1,2,4 Trichlorobenzene	120821	Public Health Goal	5	1, 5	GC, GCMS
45	2 Chlorophenol	95578	California Toxics Rule	120	2, 5	GC, GCMS
46	2,4 Dichlorophenol	120832	California Toxics Rule	93	1, 5	GC, GCMS
47	2,4 Dimethyphenol	105679	CA Notification Level (DHS)	100	1, 2	GC, GCMS
49	2,4 Dinitrophenol	51285	California Toxics Rule	70	5, 5	GC, GCMS
82	2,4 Dinitrotoluene	121142	California Toxics Rule	0.11	5	GCMS
55	2,4,6 Trichlorophenol	88062	California Toxics Rule	2.1	10, 10	GC, GCMS
83	2,6 Dinitrotoluene	606202	National Ambient Water Quality Criteria	230	5	GCMS
50	2-Nitrophenol	25154557	National Ambient Water Quality Criteria	150 [C2]	10	GCMS
71	2- Chloronaphthalene	91587	National Ambient Water Quality Criteria	1600[C3] / 7.5[F]	10	GCMS
78	3,3' Dichlorobenzidine	91941	California Toxics Rule	0.04	5	GCMS
62	3,4 Benzofluoranthene	205992	California Toxics Rule	0.0044	10, 10	GCMS, LC
52	4 Chloro-3-methylphenol	59507	National Ambient Water Quality Criteria	30	5, 1	GC, GCMS
48	4,6 Dinitro-2-methylphenol	534521	National Ambient Water Quality Criteria	13.4	5	GCMS
51	4-Nitrophenol	100027	National Ambient Water Quality Criteria	150	5, 10	GC, GCMS
69	4-Bromophenyl phenyl ether	101553	National Ambient Water Quality Criteria	122 [C1]	10, 5	GC, GCMS
72	4-Chlorophenyl phenyl ether	7005723	National Ambient Water Quality Criteria	122 [C1]	5	GCMS
56	Acenaphthene	83329	National Ambient Water Quality Criteria	520 / 500[F]	1, 1, 0.5	GC, GCMS, LC
57	Acenaphthylene	208968	National Ambient Water Quality Criteria	300[F]	10, 0.2	GCMS,
58	Anthracene	120127	California Toxics Rule	9600	10, 2	GCMS, L
59	Benzidine	92875	California Toxics Rule	0.00012	5	GCMS
61	Benzo(a)pyrene (3,4 Benzopyrene)	50328	California Toxics Rule	0.0044	2	LC
63	Benzo(g,h,i)perylene	191242	National Ambient Water Quality Criteria	300[F]	5, 0.1	GCMS, LC
64	Benzo(k)fluoranthene	207089	California Toxics Rule	0.0044	2	LC
65	Bis (2-Chloroethoxyl) methane	111911	No Criteria Available		5	GCMS
66	Bis(2-chloroethyl) ether	111444	California Toxics Rule	0.031	1	GCMS
67	Bis(2-chloroisopropyl) ether	39638329	National Ambient Water Quality Criteria	122[C1]	10, 2	GC, GCMS
68	Bis(2-Ethylhexyl) phthalate	117817	California Toxics Rule	1.8	5	GCMS
70	Butyl benzyl phthalate	85687	Central Coast Water Board's (CCWB's) Basin Plan	2[C4]	10, 10	GC, GCMS
73	Chrysene	218019	California Toxics Rule	0.0044	5	LC
81	Di-n-butylphthalate	84742	CCWB's Basin Plan	2[C4]	10	GCMS
84	Di-n-octylphthalate	117840	CCWB's Basin Plan	2[C4]	10	GCMS
74	Dibenzo(a,h)-anthracene	53703	California Toxics Rule	0.0044	0.1	LC
79	Diethyl phthalate	84662	CCWB's Basin Plan	2[C4]	10, 2	GC, GCMS
80	Dimethyl phthalate	131113	CCWB's Basin Plan	2[C4]	10, 2	GC, GCMS
86	Fluoranthene	206440	California Toxics Rule	300	10, 1, 0.05	GC, GCMS, LC
87	Fluorene	86737	California Toxics Rule	1300	10, 0.1	GCMS, LC
90	Hexachlorocyclopentadiene	77474	National Ambient Water Quality Criteria	5.2	5, 5	GC, GCMS
88	Hexachlorobenzene	118741	California Toxics Rule	0.00075	1	GCMS
89	Hexachlorobutadiene	87683	California Toxics Rule	0.44	1	GCMS
91	Hexachloroethane	67721	California Toxics Rule	1.9	1	GCMS
92	Indeno(1,2,3-cd)pyrene	193395	California Toxics Rule	0.0044	0.05	LC
93	Isophorone	78591	California Toxics Rule	8.4	1	GCMS
98	N-Nitrosodiphenylamine	86306	California Toxics Rule	5	1	GCMS
96	N-Nitrosodimethylamine	62759	California Toxics Rule	0.00069	5	GCMS
97	N-Nitrosodi-n-propylamine	621647	California Toxics Rule	0.005	5	GCM
94	Naphthalene	91203	Taste and Odor	21	10, 1, 0.2	GC, GCMS
95	Nitrobenzene	98953	California Toxics Rule	17	10, 1	GC, GCM
53	Pentachlorophenol	87865	California Toxics Rule	0.28	1	GC
99	Phenanthrene	85108	National Ambient Water Quality Criteria	300 [C5,F]	5, 0.05	GCMS, LC
54	Phenol	108352	CCWB's Basin Plan	1	1, 1, 50	GC, GCMS, COLOR
100	Pyrene	129000	California Toxics Rule	960	10, 0.05	GCMS, LC

PESTICIDES

CTR #	Chemical Constituent	CAS Number	Basis	Effluent Limit (µg/L or noted)	Respective Minimum Level (ML)[A], (µg/L)	Acceptable Analytical Methods[B]
110	4,4'-DDD	72548	California Toxics Rule	0.00083	0.05	GC
109	4,4'-DDE	72559	California Toxics Rule	0.00059	0.05	GC
108	4,4'-DDT	50293	California Toxics Rule	0.00059	0.01	GC
112	alpha-Endosulfan	959988	California Toxics Rule	0.056[C6] / 0.0087[C6,F]	0.02	GC
103	alpha-BHC	319846	California Toxics Rule	0.0039	0.01	GC
102	Aldrin	309002	California Toxics Rule	0.00013	0.005	GC
113	beta-Endosulfan	33213659	California Toxics Rule	0.056[C6] / 0.0087[C6,F]	0.01	GC
104	beta-BHC	319857	California Toxics Rule	0.014	0.005	GC
107	Chlordane	57749	California Toxics Rule	0.00057	0.1	GC
106	delta-BHC	319868	No Criteria Available		0.005	GC
111	Dieldrin	60571	California Toxics Rule	0.00014	0.01	GC
114	Endosulfan Sulfate	1031078	National Ambient Water Quality Criteria	0.056 / 0.0087[F]	0.005	GC
115	Endrin	72208	California Toxics Rule	0.036 / 0.0023[F]	0.01	GC
116	Endrin Aldehyde	7421934	California Toxics Rule	0.76	0.01	GC
117	Heptachlor	76448	California Toxics Rule	0.00021	0.01	GC
118	Heptachlor Epoxide	1024573	California Toxics Rule	0.0001	0.01	GC
105	Lindane (gamma-BHC)	58899	California Toxics Rule	0.019	0.02	GC
119	PCB 1016	12674112	California Toxics Rule	0.0001[C7]	0.5	GC
120	PCB 1221	11104282	California Toxics Rule	0.00017[C7]	0.5	GC
121	PCB 1232	11141165	California Toxics Rule	0.00017[C7]	0.5	GC
122	PCB 1242	53469219	California Toxics Rule	0.00017[C7]	0.5	GC
123	PCB 1248	12672296	California Toxics Rule	0.00017[C7]	0.5	GC
124	PCB 1254	11097691	California Toxics Rule	0.00017[C7]	0.5	GC
125	PCB 1260	11096825	California Toxics Rule	0.00017[C7]	0.5	GC
126	Toxaphene	8001352	California Toxics Rule	0.0002	0.5	GC
16	2,3,7,8-TCDD (Dioxin)	1746016	California Toxics Rule	1.30E-08	5.00E-06	GC

INORGANICS

CTR #	Chemical Constituents	CAS Number	Basis	Effluent Limit (µg/L or noted)	Respective Minimum Level (ML)[A], (µg/L)	Acceptable Analytical Methods[B]
1	Antimony	7440360	Primary MCL	6	10, 5, 0.5, 5, 0.5	FAA, GFAA, ICPMS, SPGFAA, HYDRIDE
2	Arsenic	7440382	National Toxics Rule	0.018	2, 10, 2, 2, 1	GFAA, ICP, ICPMS, SPGFAA
15	Asbestos	1332214	California Toxics Rule	7 MFL[D]	0.2 MFL>10µm in length[D]	TEM
3	Beryllium	7440417	Primary MCL	4	20, 0.5, 2, 0.5, 1, 1000	FAA, GFAA, ICP, ICPMS, SPGFAA, DCP
4	Cadmium	7440439	National Toxics Rule / CCWB's Basin Plan	1[G] / 0.2[E]	0.5, 0.25, 0.5	GFAA, ICPMS, SPGFAA
5a	Chromium III	7440473	Primary MCL	50[H]	50, 2, 10, 0.5, 1	FAA, GFAA. ICP, ICPMS, SPGFAA
5b	Chromium VI	18540299	National Toxics Rule	10	5, 10	FAA, COLOR
6	Copper	7440508	California Toxics Rule / National Toxics Rule	9[G] / 2.4[F,G]	5, 0.5, 2	GFAA, ICPMS, SPGFAA
14	Cyanide	57125	California Toxics Rule	5.2[G] / 1[F,G]	5	COLOR
7	Lead	7439921	California Toxics Rule	2.5[G]	0.5, 2	ICPMS, SPGFAA
8	Mercury	7439976	National Toxics Rule	0.012	0.0005	CVAA
9	Nickel	7440020	California Toxics Rule / CCWB's Basin Plan	52[G] / 2[E1]	50, 5, 20, 1, 5	FAA, GFAA, ICP, ICPMS, SPGFAA
10	Selenium	7782492	California Toxics Rule	5	5, 2, 5, 1	GFAA, ICPMS, SPGFAA, HYDRIDE
11	Silver	7440224	California Toxics Rule	3.4[G] / 1.9[F,G]	1, 0.25, 2	GFAA, ICPMS, SPGFAA
12	Thallium	7440280	California Toxics Rule	1.7	1	ICPMS
13	Zinc	7440666	National Toxics Rule / CCWB's Basin Plan	100[G] / 20[E]	20, 20, 1,10	FAA, ICP, ICPMS, SPGFAA

NOTES:

A. The ML value represents the lowest quantifiable concentration in a sample based on the proper application of all method-based analytical procedures and the absence of any matrix interference. Discharger shall instruct laboratories to establish calibration standards so that the ML value (or its equivalent) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

B. For each constituent the Discharger may select one of the indicated analytical methods, which are described in 40 CFR 136.3. The abbreviations refer to the following:

1. GC ..... Gas Chromatography
2. GCMS ..... Gas Chromatography/Mass Spectrometry
3. LC ..... High Pressure Liquid Chromatography
4. FAA ..... Flame Atomic Absorption
5. GFAA ..... Graphite Furnace Atomic Absorption
6. Hydride ..... Gaseous Hydride Atomic Absorption
7. CVAA ..... Cold Vapor Atomic Absorption
8. ICP ..... Inductively Coupled Plasma
9. ICPMS ..... Inductively Coupled Plasma/Mass Spectrometry
10. SPGFAA ..... Stabilized Platform Graphite Furnace Atomic Absorption
11. DCP ..... Direct Current Plasma
12. TEM ..... Transmission Electron Microscopy
13. COLOR ..... Colorimetric

C. Indicate a regulatory decision that the cited concentration is either necessary or sufficient for full protection of beneficial uses or indicate meaning of uncommon acronyms

[C1] – For haloethers
[C2] – For nitrophenols
[C3] – For chlorinated naphthalenes
[C4] – For phthalate esters
[C5] – For polynuclear aromatic hydrocarbons
[C6] – Criteria for sum of alpha and beta forms
[C7] – Criteria for sums of all PCBs

D. MFL is defined as Million Fibers per Liter in the measurement of asbestos in water (EPA Method 600/R-93/116). Its detection limits are at 0.2 MFL of length greater than 10 microns

E. Criteria for protection of Marine Habitat Beneficial Use (CCWB's Basin Plan)

[E1] – value cited as objective pertains to nickel salts (not pure metallic nickel)

F. Criteria only applies to discharges to saltwater inland surface waters, enclosed bays, and estuaries.

G. Criteria values for metals are expressed as a function of a total hardness of 100 mg/L

H. For total Chromium

as specified in the CTR, the federal criteria apply to all waters assigned any aquatic life or human health use designated in basin plans. It further states that the application of the criteria are based on the presence in all waters of some aquatic life designation and the presence or absence of the municipal and domestic supply (MUN) designation (i.e., the aquatic life criteria and the human health criteria for consuming water and organisms apply to MUN-designated water bodies; the aquatic life criteria and the human health criteria for consuming organisms only apply to non-MUN water bodies).

Designated beneficial uses to which aquatic life criteria or objectives would apply include, but are not necessarily limited to, warm freshwater habitat (WARM), cold freshwater habitat (COLD), and estuarine habitat (EST). Designated beneficial uses to which human health criteria/objectives would apply include, but are not necessarily limited to, municipal and domestic supply (MUN) and water contact recreation (REC1). Human health criteria/objectives are differentiated by whether organisms alone from the water body are consumed compared to whether both organisms and water from the water body are consumed. Where MUN is designated, the latter situation applies.

1.2 Data Requirements and Adjustments

The RWQCB may adjust the criteria/objective for metals with *discharger-specific Water Effect Ratios established in accordance with U.S. EPA guidance – Interim Guidance on Determination and Use of Water Effect Ratios for Metals (EPA-823-B-94-001) or Streamlined Water-Effect Ratio Procedure for Discharges of Copper (EPA-822-R-01-005), if appropriate[7].

It is the discharger's responsibility to provide all data and other information requested by the RWQCB before the issuance, reissuance, or modification of a permit to the extent feasible. When implementing the provisions of this Policy, the RWQCB shall use all available, valid, relevant, representative data and information, as determined by the RWQCB. The RWQCB shall have discretion to consider if any data are inappropriate or insufficient for use in implementing this Policy. Instances where such consideration is warranted include, but are not limited to, the following: evidence that a sample has been erroneously reported or is not representative of effluent or ambient receiving water quality; questionable quality control/quality assurance practices; and varying seasonal conditions. The lack of a site-specific objective for a priority pollutant shall not be considered insufficient data.

When implementing the provisions of this Policy, the RWQCB shall ensure that criteria/objectives are properly adjusted for hardness or pH, if applicable, using the hardness or pH values for the receiving water, and that translators are appropriately applied (in accordance with section 1.4.1), if applicable. The RWQCB shall also ensure that pollutant and flow data are expressed in the appropriate forms and units for purposes of comparability and calculations.

1.3 Determination of Priority Pollutants Requiring Water Quality-Based Effluent Limitations

The RWQCB shall conduct the analysis in this section for each priority pollutant with an applicable criterion or objective, excluding priority pollutants for which a Total Maximum Daily Load (TMDL) has been developed, to determine if a water quality-based effluent limitation is

[7] A Water Effect Ratio may also be used to develop a site-specific metal objective, as described in Section 5.2.

required in the discharger's permit. It is the discharger's responsibility to provide all information requested by the RWQCB for use in the analysis. The RWQCB shall use all available, valid, relevant, representative information, as described in section 1.2, to determine whether a discharge may: (1) cause, (2) have a reasonable potential to cause, or (3) contribute to an excursion above any applicable priority pollutant criterion or objective. If the following analysis (which is depicted as a flowchart in Appendix 2) indicates that a limitation for a pollutant is required, the RWQCB shall establish the limitation in accordance with section 1.4. Within each step below, if it is necessary to express a dissolved metal or selenium value as total recoverable and a site-specific translator has not yet been developed, as described in section 1.4.1, the RWQCB shall use the applicable U.S. EPA conversion factor (Appendix 3).

Step 1: Identify applicable water quality criteria and objectives for priority pollutants as described in section 1.1. Determine the lowest (most stringent) water quality criterion or objective for the pollutant applicable to the receiving water (C). Adjust the criterion or objective for hardness and/or pH, if applicable, as described in section 1.2.

Step 2: Identify all effluent data for the pollutant as described in section 1.2 and proceed with *Step 3*. If effluent data are unavailable or insufficient, as described in section 1.2, proceed with *Step 5*.

Step 3: Determine the observed maximum pollutant concentration for the effluent (MEC). If the pollutant was detected, proceed with *Step 4*. If the pollutant was **not** detected in any of the effluent samples **and** any of the reported detection limits are below the C, use the lowest detection limit as the MEC and proceed with *Step 4*. If the pollutant was **not** detected in any of the effluent samples **and** all of the reported detection limits are greater than or equal to the C value, proceed with *Step 5*.

Step 4: Adjust the MEC from *Step 3,* if applicable, as described in section 1.2. Compare the MEC from *Step 3* or the adjusted MEC to the C from *Step 1*. If the MEC is greater than or equal to the C, an effluent limitation is required and the analysis for the subject pollutant is complete. If the MEC is less than the C, proceed with *Step 5*.

Step 5: Determine the observed maximum ambient background concentration for the pollutant (B) as described in section 1.4.3.1. If the pollutant was detected, proceed with *Step 6*. If B data are unavailable or insufficient, as described in section 1.2, proceed with *Step 7*.

Step 6: Adjust the B from *Step 5,* if applicable, as described in section 1.2. Compare the B from *Step 5* or the adjusted B to the C from *Step 1*. If the B is greater than the C and the pollutant is detected in the effluent, an effluent limitation is required and the analysis for the subject pollutant is complete. If B is greater than the C and the pollutant was not detected in any of the effluent samples, effluent monitoring is required (as described in *Step 8)* proceed with *Step 7*. If the B is less than or equal to the C, proceed with *Step 7*.

Step 7: Review other information available to determine if a water quality-based effluent limitation is required, notwithstanding the above analysis in *Steps 1* through *6*, to protect beneficial uses.

Information that may be used to aid in determining if a water quality-based effluent limitation is required includes: the facility type, the discharge type, solids loading analysis, lack of dilution, history of compliance problems, potential toxic impact of discharge, fish tissue residue data, water quality and beneficial uses of the receiving water, CWA 303(d) listing for the pollutant, the presence of endangered or threatened species or critical habitat, and other information. If data or other information is unavailable or insufficient, as described in section 1.2, to determine if a water quality-based effluent limitation is required, proceed with *Step 8*.

Step 8: If data are unavailable or insufficient, as described in section 1.2, to conduct the above analysis for the pollutant, or if all reported detection limits of the pollutant in the effluent are greater than or equal to the C value, the RWQCB shall require additional monitoring for the pollutant in place of a water quality-based effluent limitation. Upon completion of the required monitoring, the RWQCB shall use the gathered data to conduct the analysis in *Steps 1* through *7* above and determine if a water quality-based effluent limitation is required. If, upon completion of the monitoring required by Step 8 and the subsequent analysis in *Steps 1* through *7*, a specific pollutant was not detected in any effluent or if ambient background sample and applicable detection limits are greater than or equal to the C value, the RWQCB may require periodic monitoring of the pollutant.

The RWQCB shall require periodic monitoring (at least once prior to the issuance and reissuance of a permit) for pollutants for which criteria or objectives apply and for which no effluent limitations have been established; however, the RWQCB may choose to exempt low volume discharges, determined to have no significant adverse impact on water quality, from this monitoring requirement.

1.4 Calculation of Effluent Limitations

When a RWQCB determines, using the procedures described in section 1.3, that water quality-based effluent limitations are necessary to control a priority pollutant in a discharge, the permit shall contain effluent limitations developed using one or more of the following methods:

A. If a TMDL is in effect, assign a portion of the loading capacity of the receiving water to each identified priority pollutant source of waste, point and non-point, based on the TMDL (see Appendix 6);

B. Use the following procedure based on a steady-state model:

Step 1: For each priority pollutant identified in section 1.3, identify the applicable water quality criteria/objectives for the pollutant as described in section 1.1. Adjust the criterion or objective, if applicable, as described in section 1.2. If it is necessary to express a dissolved metal or selenium criterion/objective as total recoverable and a site-specific translator has not yet been developed, as described in section 1.4.1, the RWQCB shall use the applicable U.S. EPA conversion factor (Appendix 3). If data are insufficient to calculate the effluent limitation, the RWQCB shall establish interim requirements in accordance with section 2.2.2.

STATE OF CALIFORNIA Arnold Schwarzenegger, *Govemor*

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax





May 31, 2007

Murry Wilson
San Luis Obispo County Planning
976 Osos Street, Room 300
San Luis Obispo, CA 93408

RE: SCH# 2007051143, Plains Exploration and Production Company; San Luis Obispo County

Dear Mr. Wilson:

The Native American Heritage Commission (NAHC) has reviewed the Notice of Preparation (NOP) referenced above. The California Environmental Quality Act (CEQA) states that any project that causes a substantial adverse change in the significance of an historical resource, which includes archeological resources, is a significant effect requiring the preparation of an EIR (CEQA Guidelines 15064(b)). To comply with this provision the lead agency is required to assess whether the project will have an adverse impact on historical resources within the area of project effect (APE), and if so to mitigate that effect. To adequately assess and mitigate project-related impacts to archaeological resources, the NAHC recommends the following actions:

- ✓ Contact the appropriate regional archaeological Information Center for a record search. The record search will determine:
  - If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
  - If any known cultural resources have already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.
- ✓ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.
- ✓ Contact the Native American Heritage Commission for:
  - A Sacred Lands File Check. **USGS 7.5-minute quadrangle name, township, range, and section required.**
  - A list of appropriate Native American contacts for consultation concerning the project site and to assist in the mitigation measures. **Native American Contacts List attached.**
- ✓ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
  - Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5(f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
  - Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.
  - Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, CEQA §15064.5(e), and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

Sincerely,

Katy Sanchez

Katy Sanchez
Program Analyst

CC: State Clearinghouse

THIS PAGE LEFT BLANK INTENTIONALLY

APPENDIX C
ENTRIX DOCUMENTS

THIS PAGE LEFT BLANK INTENTIONALLY

SUPPLEMENTAL INFORMATION TO LAND USE APPLICATION

Plains Exploration and Production Company
Arroyo Grande Produced Water Reclamation Facility

Prepared for:

PLAINS EXPLORATION AND PRODUCTION COMPANY
Bakersfield, California

Prepared by:

ENTRIX, INC.
2140 Eastman Ave., Suite 200
Ventura, California 93003

Project # 3086103

May 18, 2006

THIS PAGE LEFT BLANK INTENTIONALLY

Page

1.0 Introduction 1-1

2.0 Project Purpose and Need 2-1

3.0 Project Description 3-1

3.1.1 Location 3-1

3.1.2 Background 3-1

3.1.3 Project Description 3-2

3.1.4 Schedule 3-5

3.1.5 Required Permits 3-5

4.0 Options Analysis 4-1

4.1 Underground Injection of Excess Produced Water 4-2

4.2 Moderate Treatment of Produced Water and Surface Disposal 4-2

4.2.1 Use of Water for Dust Control at Cold Canyon Landfill 4-2

4.2.2 Onsite Disposal via Evaporation/Percolation Ponds 4-3

4.2.3 City of Pismo Beach Waste Water Treatment Plant 4-3

4.2.4 City of Pismo Beach Ocean Outfall 4-3

4.3 High Degrees of Water Treatment and Surface Reuse/Discharge 4-4

4.3.1 Displacement of Existing Groundwater Use at the Oil Field 4-4

4.3.2 Onsite Disposal by Land Application 4-4

4.3.3 Beneficial Reuse for Non-Potable Water or Non-Edible Crops 4-5

4.3.4 Beneficial Reuse for Potable Water or Edible Crops 4-6

4.3.5 Surface Water Discharge in Arroyo Grande Creek 4-6

4.3.6 Surface Water Discharge in Pismo Creek 4-6

4.4 Proposed Feasible Options 4-7

5.0 Environmental Checklist 5-1

Appendix A Figures

Appendix B Air Dispersion Modeling Report

Appendix C Workplan for Water Quality and Hydrology Characterization of Pismo Creek

Plains Exploration and Production Company (PXP) proposes to install a water reclamation facility to treat produced water from its Arroyo Grande Oil Field in San Luis Obispo County, California (Figure 1, Vicinity Map). Purified water would be used to displace existing groundwater use on the oil field, be made available to potential future partners for additional beneficial reuse, and the remainder would be discharged to Pismo Creek according to the terms of a National Pollutant Discharge Elimination System (NPDES) permit. The NPDES application will be submitted in July at the completion of the *Hydrology and Water Quality Study*. Reject water, created by cleaning the reverse osmosis treatment system (RO System), will be re-injected into the oil-bearing formation. A map depicting the Project area and infrastructure in provided as Figure 2 (Site Plan/Layout).

The Arroyo Grande Oil Field is located in Price Canyon approximately 3 miles northeast of the City of Pismo Beach. The Project lies entirely within the 320-acre field, which is within the larger 1,480 acres Price Canyon Unit as defined by the California Division of Oil, Gas & Geothermal Resources. The *Final Plains Exploration and Production Phase IV Development Plan Environmental Impact Report* (Phase IV EIR) (SLO County and Padre Associates, September 2005) contains substantial information regarding the history of operations at the field, current and proposed operations, and environmental information. The Arroyo Grande Produced Water Reclamation Facility (Project) will be almost entirely on property analyzed in that EIR, and as such, the information contained in that document and supporting exhibits are incorporated by reference in to this supplemental information.

This document provides supplemental information to the County's Land Use Permit form. The information is organized as follows:

- Section 2 provides a description of the purpose and need for the Arroyo Grande Oil Field Produced Water Reclamation Facility;
- Section 3 provides a Project description;
- Section 4 provides an options analysis, summarizing the options considered by PXP for disposal, discharge, and reuse of the produced water in the development of this Project;
- Section 5 provides a California Environmental Quality Act (CEQA) environmental checklist, developed using relevant information from the recently certified EIR for the Arroyo Grande Phase IV development Project, supplemented with new environmental information where appropriate.

The Phase IV EIR contains a complete description of Arroyo Grande Oil Field operations, and is incorporated by reference in this supplemental information. Currently, co-mingled oil, water and gas are pumped (produced) from subsurface oil-bearing formations and then separated by surface facilities on the oil field. The oil is sold, the gas is purified and utilized onsite and the produced water is re-injected into the oil producing reservoir. The oil field uses enhanced oil recovery techniques, including injection of steam into the subsurface formation to reduce oil viscosity and more efficiently extract the oil. For approximately 25 years, the Arroyo Grande Oil Field has been using up to 20 percent of produced water for steam production and injection into the producing zone. The remaining 80 percent of excess produced water is also injected into the producing zone, which interferes with the steam injection and therefore lowers the overall efficiency of the thermal recovery process. If the excess produced water could be introduced to a location (below ground or above ground) that does not interfere with the steam injection zone, then the recovery of oil would be greatly enhanced.

Therefore, the primary purpose of the Project is to enhance the recovery of oil reserves by treatment and reuse of excess produced water. Inherent to this enhanced recovery is dewatering the oil-bearing formation by reducing return water flows from the existing oil/water separation process.

The excess produced water will be discharged to Pismo Creek or beneficially reused for irrigation. The anticipated volume of treated water to be discharged is ~20,000 bbl per day (~2.5 acre-feet per day or ~940 acre-feet per year or ~0.84 million gallons per day). The actual volume of treated water will keep pace with oil production at the field.

840,000 gallons/day

As demonstrated in Section 5, the Project will be constructed and operated with no significant impacts, and no public controversy is anticipated. As such, a Mitigated Negative Declaration would be an appropriate level of environmental review under CEQA, and an alternatives analysis is not required. However, consultation with the CRWQCB-CC has indicated a requirement to evaluate a full range of options for water reuse prior to recommending discharge to Pismo Creek. PXP has been actively pursuing such options for approximately 10 years, since 1997. These options are in three general categories:

1. Underground injection of produced water into oil-bearing formations but outside the zone of influence of the steam injection:
    - Injection into the oil-bearing formation onsite, outside the zone of steam influence
    - Injection into the oil-bearing formation offsite, outside the zone of steam influence.
2. Moderate treatment of produced water (oil and gas separation, filtration) followed by discharge to various sources:
    - Water for dust control at landfill, water transported via pipeline
    - Onsite surface discharge into evaporation/percolation ponds
    - Discharge to the City of Pismo Beach waste water treatment plant
    - Blending of produced water with discharge from the City's treatment plant, discharge of the mixture through City's ocean outfall.
3. High degrees of water treatment (reverse osmosis) followed by reuse or discharge to various sources:
    - Displacement of existing groundwater use on the oil field
    - Surface application
    - Surface irrigation or groundwater recharge for edible agricultural use
    - Surface irrigation or groundwater recharge for non-edible agricultural use
    - Discharge to Arroyo Grande Creek (different watershed from the location of the Arroyo Grande Oil Field)

- Discharge to Pismo Creek (same watershed as the location of the Arroyo Grande Oil Field).

The options analyzed within each of these categories are described in the following subsections, including a feasibility assessment.

The results of the options analysis indicate that high degrees of treatment of the produced water are required if the objective of increasing the efficiency of steam-enhanced oil recovery is to be achieved. The current feasible uses for the water are displacement of groundwater use on the oil field, and discharge to Pismo Creek. The system will also be configured for further, future beneficial reuse of the treated water if willing partners are available.

4.1 UNDERGROUND INJECTION OF EXCESS PRODUCED WATER

Injection into the oil-bearing formation, either within the surface footprint of the oil field or offsite, were considered in detail. The objective was to identify a zone or zones within the oil-bearing formation that could accept the anticipated volume of water without significant interference with the steam injection. Onsite injection was the most feasible, since offsite injection would require the acquisition of easements and other entitlements. Geologists were contracted to identify the best areas for re-injection while PXP engineers determined the feasibility of drilling locations and inquired about the necessary permits.

Reason for Elimination

Results from geologic investigations identified some suitable underground formations capable of accommodating additional water, but these locations were offsite and infeasible to buy or lease. Onsite geology primarily consisted of formations not capable of accepting the additional water without interfering with the steam injection. Several test injection programs confirmed that injection was not feasible (small reservoir/pressured increase). Therefore, these alternatives were eliminated from further evaluation since they did not meet the Project objective of enhancing the steam-enhanced oil recovery.

4.2 MODERATE TREATMENT OF PRODUCED WATER AND SURFACE DISPOSAL

This category of options utilizes the existing water treatment technology on the oil field to separate oil and gas from water, and to filter solids from the water. The resulting produced water contains low levels of petroleum hydrocarbons and other compounds. The following options for surface disposal of this water were considered.

4.2.1 USE OF WATER FOR DUST CONTROL AT COLD CANYON LANDFILL

This option would entail construction of a new pipeline, and delivery of water to Cold Canyon Landfill for use as a dust suppressant during the summer. The landfill owners and operators were contacted and the option was discussed. The landfill has limited needs for water, and the cost and impact of a new pipeline were not justified.

Reason for Elimination

This alternative was eliminated based on the limited water needs of the landfill and impacts of a new pipeline.

4.2.2 Onsite Disposal via Evaporation/Percolation Ponds

This option consists of disposal of the moderately treated produced water to on-site ponds, and either evaporation or percolation of the water. Such are in use in some portions of the San Joaquin Valley.

Reason for Elimination

Percolation tests site soil's infiltration capacity indicated that very low percentages of the produced water would percolate. As a result, very large areas would be required for evaporation, rendering the option infeasible.

4.2.3 City of Pismo Beach Waste Water Treatment Plant

Disposing produced water from the Arroyo Grande Oil Field into the Pismo Beach Wastewater Treatment Facility (WWTF) was considered, and a series of communications with the City defined the feasibility of this alternative.

PXP's proposal to the City included sending approximately 840,000 gallons per day of moderately treated produced water in a new pipeline to the WWTF, and paying a fee for treatment costs.

Reason for Elimination

This alternative was primarily eliminated due to capacity constraints at the City's facility. Discussions with the City of Pismo Beach regarding use of their water treatment plant and/or transmission main to the South County Sanitation District outfall were also unsuccessful because City policy prohibits accepting wastewater from outside the City limits.

4.2.4 City of Pismo Beach Ocean Outfall

This alternative consisted of blending the produced water with the discharge from the WWTF, with the mixture discharged to the ocean through the City's outfall.

Reason for Elimination

This alternative was eliminated due to capacity constraints at the City's facility, prohibition on accepting wastewater from outside the City limits, and potential effects to the City's National Pollutant Discharge Elimination System (NPDES) permit for the outfall. This option was also discussed with the City over several years.

4.3 HIGH DEGREES OF WATER TREATMENT AND SURFACE REUSE/DISCHARGE

PXP considered the option of treating the excess produced water by reverse osmosis. This technique is used for water desalination, and can be designed to remove compounds to levels that would render the water harmless to human health and the environment. This treatment requires a substantial capital outlay, and as such the other two categories of water disposal or use (underground injection, disposal of moderately treated produced water) were carefully analyzed to ensure that they did not provide any viable options.

Once the determination of infeasibility of these two categories of options was made, the use of reverse osmosis was considered the most viable technology for producing highly-treated water suitable for reuse. The options described in this section were evaluated carefully, in particular as they may provide some revenue to offset the capital and operational cost of the treatment system.

PXP proceeded with a pilot plant of the proposed treatment components to demonstrate treatability and verify processes needed to meet water quality requirements for both creek discharge and crop irrigation. The pilot plant operated from mid-2005 to April 2006, successfully demonstrating compliance with water quality goals.

4.3.1 DISPLACEMENT OF EXISTING GROUNDWATER USE AT THE OIL FIELD

Currently, groundwater is used for landscaping, non-potable water use, and in rare cases as makeup water for steam production. This reuse option involves reducing or eliminating these uses of groundwater on the oil field, and replacing the groundwater with the highly-treated produced water.

This option was determined to be a viable beneficial reuse of the water.

4.3.2 ONSITE DISPOSAL BY LAND APPLICATION

In February of 2001, PXP retained ENTRIX to determine the area of land required to absorb the water produced at the field, present an application plan and identify key issues which need to be addressed prior to implementation. In March of 2001, a site visit was conducted and two 95-acre parcels of land were identified as being potentially available for land application of produced water.

The USDA Soil Survey for the area was used to identify the type of soil present and the general properties (including infiltration capacity, thickness and permeability) of the soils. Soil properties were then used to determine absorption area required for the treated water produced at the field on a daily basis.

Results indicated that the infiltration capacity of the soil was the limiting factor. Using the USDA data, up to 170,000 gallons of water could be applied per day at a rate of 0.02 ft/hr. The analysis recommended rotating application areas frequently to avoid surface ponding. The technique could not be used during periods of rainfall.

A corollary of this option involved placing percolation ponds in an arrangement to slow seawater intrusion towards the Edna Valley, east of the oil field.

Reason for Elimination

PXP employed Fugro West, Inc in April of 2006 to further investigate the feasibility of surface discharge of treated produced water, focusing on obtaining site-specific measures of infiltration capacity with percolation tests. Results from soil characterization indicate that the land was of low permeability and had been affected by recent faulting, creating barriers to both ground and surface water flow. Further, groundwater was encountered at relatively shallow (15-20 feet below ground surface) depths.

The shallow bedrock underlying the field coupled with minimal Pismo Creek alluvial deposits would result in surface flows to Pismo Creek. Spray disposal would require more irrigable acreage than is available on PXP property. The conclusion was that discharge to Pismo Creek would occur, in any case, especially during portions of the year when irrigation demands were at a minimum.

These factors led to the conclusion that infiltration in this area was marginally suitable, either for disposal or for slowing seawater intrusion, and thus this option was eliminated from consideration.

4.3.3 Beneficial Reuse for Non-Potable Water or Non-Edible Crops

This alternative included the potential for using the highly treated water for landscape irrigation or other non-potable, non-edible material. The water would require transport by pipeline to the proposed locations. The water would either be applied directly to crops, or used for groundwater recharge in areas of existing use. This alternative had the potential to recoup a portion of treatment costs while also serving as a beneficial reuse.

Reason for Elimination

PXP recognized early in Project development that the reclaimed water resulting from the proposed Project has value as a non-potable, dependable water supply source. Dialogue with nearby irrigators was initiated in 1997, including the Edna Valley east of the oil field. None of the parties contacted made firm commitments for water deliveries in some cases, water delivery distances by pipeline made the option unacceptable to many landowners. In addition, the water needs for these uses are episodic, and could not take the continuous volume of water contemplated. Therefore, some creek discharge would still occur.

PXP will design the facility so that, should a willing partner come forward in the future, they could be provided with water for this beneficial use. Although arrangements with specific irrigators have yet to be put in place, PXP fully anticipates seasonal deliveries of reclaimed water for irrigation.

4.3.4 Beneficial Reuse for Potable Water or Edible Crops

Several parcels of land were researched in the areas adjacent to Price Canyon Road in the Edna Valley and Pismo Creek for irrigation. Land owners were contacted and soil borings taken to identify soil characteristics in the area. The water would either be applied directly to crops, or used for groundwater recharge in areas of existing use.

Reason for Elimination

Water for irrigation of edible crops or for potable use would require transport by pipeline to the proposed locations. The water would either be applied directly to crops, or used for groundwater recharge in areas of existing use. PXP does not represent that reclaimed water from the oil field is appropriate for potable purposes nor for application on edible crops. In the interest of perceived public health, no such proposals are under consideration, and as such this option was eliminated.

4.3.5 Surface Water Discharge in Arroyo Grande Creek

PXP entered into dialogue with San Luis Obispo County Flood Control & Water Conservation District Zone 3 for potential beneficial reuse in Arroyo Grande Creek. A conceptual delivery system was laid out, hydrogeologic studies were conducted for introduction into the creek, right-of-way acquisition was researched, and outlines of delivery contracts were discussed.

Reason for Elimination

Arroyo Grande Creek discharge was the original favorable option between the two creek discharge options. San Luis Obispo County discharges water from Lopez Lake to Arroyo Grande Creek to provide water for downstream agriculture users and aquatic habitat. These discharges thereby reduce the amount of water the County can receive from Lopez Lake for potable use. This agreement would allow the County to purchase treated water from PXP for potable use. The County entered into an agreement, Memorandum of Understanding (MOU), in September 2004 with PXP to purchase the pipeline from PXP over an extended period of time. One year later, estimates of operating costs were substantially higher that those under discussion. This option was eliminated owing to high capital costs, high operating costs, and insufficient land to percolate the required 20,000 bwpd.

Furthermore, this option is substantially similar to surface discharge in Pismo Creek, but carries the burdens of much greater cost, and the adverse environmental impacts of new pipeline construction.

4.3.6 Surface Water Discharge in Pismo Creek

As a result of examining the reach of Pismo Creek in the vicinity of the Arroyo Grande field, the preferred discharge location depicted in Figure 2 was selected. PXP's research into the existing setting of Pismo Creek revealed that the reach downstream of the Arroyo

Grande oil field is largely a conveyance for runoff to the ocean and neither the creek nor its alluvium supports municipal or significant irrigation supplies. The primary beneficial use is aquatic habitat.

PXP sought to gauge the relative flow impact of the proposed creek discharge, however, no stream flow records along Pismo Creek were found (i.e., this is an un-gauged creek, likely due to its limited role as a water supply source and lack of flood control facilities). A hydrologic study is underway to measure flows in Pismo Creek from February through June 2006, to use actual flows to calibrate a standard model (HEC-RAS), and to compare to a comparable watershed (Toro Creek north of Morro Bay). Results will characterize baseline conditions and allow analysis of relative flow of the discharge. These data will also characterize the potential changes to instream habitat available as a result of augmented flows in the creek. A workplan is provided in Appendix C.

With regard to surface water quality in Pismo Creek, little published water quality data exists. PXP initiated a sampling program at three locations (upstream, downstream and near the proposed discharge area). The results of that sampling program will help characterize baseline conditions, especially dissolved oxygen and temperature ranges.

This option was determined to be a viable use of the water.

4.4 PROPOSED FEASIBLE OPTIONS

Three feasible uses of the highly treated water were identified in the options analysis, as follows:

- Displacement of groundwater use on the oil field with highly-treated produced water
- Designing the system to allow for further beneficial reuse for non-potable and non-edible uses, should a willing partner be available in the future
- Discharge of highly-treated produced water to Pismo Creek.

THIS PAGE LEFT BLANK INTENTIONALLY

Reasonable Potential Analysis and Options Analysis

Plains Exploration & Production Company

Produced Water Reclamation Facility

1821 Price Canyon Road, San Luis Obispo

March 16, 2007

Prepared for:

Plains Exploration and Production Company

San Luis Obispo, California

Prepared by

ENTRIX
ENVIRONMENTAL CONSULTANTS

ENTRIX, Inc.
2140 Eastman Ave, Suite 200
Ventura, CA 93003

Reasonable Potential Analysis and Options Analysis
Plains Exploration & Production Company
Produced Water Reclamation Facility
1821 Price Canyon Road,
San Luis Obispo

Prepared for:

Central Regional Water Quality Control Board

895 Aerovista Place, Suite 101

San Luis Obispo, California 93401-7906

Prepared by:

ENTRIX, Inc.

2140 Eastman Ave, Suite 200

Ventura, CA 93003

March 16, 2007

APPENDICES

Attachment A:	Results of Produced Water Sampling
Attachment B:	Laboratory Reports

TABLES

Table 1:	Summary of Attributes of Beneficial Use Options in Addition to Augmenting Flow in Pismo Creek

THIS PAGE LEFT BLANK INTENTIONALLY

Response to Request

This response provides additional information in response to your letter of October 6, 2006 regarding Plains Exploration & Production Company's Report of Waste Discharge for its proposed Produced Water Reclamation Facility on the Arroyo Grande Oilfield in San Luis Obispo County, California. ENTRIX has been retained by PXP to assist with permitting, and this response is submitted on behalf of PXP. ENTRIX submitted responses to your letter on October 27, 2006. We met with you on October 31, 2006 to better define the data needs, and received guidance on additional data needs for Items 4 (Reasonable Potential Analysis) and 5 (Options Analysis). This response presents the requested information for these two items as well as items 2 and 3. We believe that the information provided will be sufficient to allow you to deem our application complete. The request is presented in italics, followed by the response.

NPDES Application

2. *Please submit owner's name and mailing address for each property adjacent to the discharge location.*

As we discussed, the Regional Board considers "adjacent" to be within 300 feet of the discharge location. PXP is the only landowner within 300 feet of the discharge location.

3. *An application fee equal to the first annual fee must be submitted, and will be billed annually thereafter as long as the discharge continues. The fee is based upon the facility complexity and potential threat to water quality (1A in the State Water Board rating system). Additional information regarding these fees is available online at http://www.swrcb.ca.gov/fees/docs/adoptedfeeschedule.html#flowlessthan100. Please submit your application fee of $18,871. Make check payable to the State Water Resources Control Board.*

The fee will come under separate cover, for delivery to the Regional Board on March 20, 2007.

4. *In the report Revised Hydrologic, Water Quality, and Biological Characterization of Pismo Creek, prepared by ENTRIX, Appendix D incorrectly summarizes applicable water quality criteria. Provided as Attachment 1 to this response is a summary of water quality criteria applicable to Pismo Creek, which we will use to evaluate compliance. Please use the criteria provided to evaluate potential for the proposed discharge to violate water quality standards. This "reasonable potential analysis," as it is termed in the State Implementation Policy, will be used as the basis for effluent limitations appearing in your permit. The steps used to prepare the reasonable potential analysis are summarized in Attachment 2 (excerpts from the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California). The Policy in its entirety is available online at: http://www.waterboards.ca.gov/iswp/docs/final.pdf. Alternatively, Water Board staff can complete the reasonable potential analysis. However, your submittal does not make clear which constituent data reflects treated effluent and telephone conversation with your agent, Dan Tormey, indicates that no*

effluent data is included. Therefore, if you prefer that Water Board staff complete the analysis, please submit effluent data and corresponding compliance with appropriate water quality criteria specified in Attachment 1.

More Detailed Process Description.

In our meeting of October 31, 2006, you requested further information regarding the operation of the water reclamation facility. This section provides a more detailed process description, and a brief summary of the pilot testing that was conducted to validate the manufacturer's warranties for the system.

PXP, in anticipation of developing a Produced Water Treatment Plant at its Arroyo Grande Field has conducted extensive pilot testing during a seven month period between 2005 and 2006. The pilot testing was used to validate the design concept of the water treatment plant as well as demonstrate consistent performance results. The final phase of the pilot testing operated the system without the lime-softening pretreatment for a 30-day period to demonstrate that the system would continue to maintain removal efficiencies even under difficult operating conditions. The results of the pilot test data validated the manufacturer's predications, giving PXP confidence that the treatment plant will meet discharge requirements.

The water plant can be divided into two parts. The first part will consist of pretreatment to soften, filter and cool the produced water. The second part of the process will consist of reverse osmosis (RO) and air stripping to remove the regulated constituents prior to discharge. The following describes the treatment plant, the removal of constituents of concern, process predictability and process reliability.

Process Description

The water plant will consist of a series of processes starting with warm-lime softening, deep-bed filtration, strong-acid cation softening (ion exchange) and cooling. The warm-lime softener will remove most of the scale-forming minerals in the produced water, i.e. calcium, magnesium, alkalinity, silica, etc. The deep-bed filters will remove residual particulate matter from the water. Each of the filters will contain three feet of fine garnet and will be operated at a flow rate to optimize particulate removal. The cation softeners will remove residual hardness. At this point in the process, the water is of a quality to be used for high-pressure steam generation, i.e. free of hardness and highly filtered. The water will then be cooled to 80 °F to 90 °F prior to the introduction into the membrane processes.

Pretreated water will then pass through microfilters to remove any residual/fine particulate matter. Microfiltration is a membrane process (similar to RO), and in the AG plant, it will be used to protect the RO from fouling. Microfilters will remove sub-micron particulate matter a hundredfold smaller than the deep-bed filters are capable of (or other types of media filtration, e.g. sand filters or carbonized zeolite filters). After the microfilters, the water will pass through another set of strong-acid cation softeners. These are considered guard softeners and will capture any trace levels of hardness that might pass in pretreatment. At this point in the process the water is ready to be introduced into the RO system, i.e. highly filtered and free of mineral-scale constituents.

The remainder of the treatment system will consist of two stages of RO and air stripping, i.e. 1st Pass RO followed by air stripping followed by a 2nd Pass RO. These processes will treat the water to meet the discharge criteria for Pismo Creek. Target parameters and constituents of

concern are turbidity, pH, temperature, dissolved oxygen, sodium, chloride, sulfate, boron, non-ionic ammonia, acetone and 2-butanone. Occasionally, there are also trace levels of BTEX.

To meet discharge requirements, the plant will be designed with a two-pass RO system. The 1st Pass RO will be operated at high pH (11.5) and will remove soluble species of minerals salts, e.g. sodium, chloride, sulfate and boron. Reject (wastewater) from the 1st Pass RO will be injected back into the oil-producing formation. Permeate (treated water) from the 1st Pass RO will be sent to air strippers. The air strippers will remove some non-ionic ammonia and most of the acetone and 2-butanone. At high pH, 99.5% of the ammonia is in the non-ionic form and is easily stripped. Occasional levels of BTEX will be easily removed to non-detectable levels, because the air strippers are sized to remove acetone and 2-butanone (which are significantly less volatile than BTEX). Additionally, the strippers will cool the water and completely oxygenate it.

The pH of the water from the strippers will be lowered to neutral and fed to the 2nd Pass RO. At neutral pH, 99.0% of the ammonia (not removed by the stripper) will be converted to ionic ammonia. The 2nd Pass RO will readily remove ionic ammonia as well as further reduce the levels of sodium, chloride, sulfate and boron. The permeate from the 2nd Pass RO will have no measurable turbidity. Reject from the 2nd Pass RO will be recycled for other uses in the plant. 2nd Pass RO permeate will be discharged to Pismo Creek.

All of the processes described above were part of the pilot testing conducted at AG.

Process Predictability

During pilot testing, a significant amount of data was collected to monitor constituent removal. These data were routinely compared to well established RO and air stripping models which predict performance.

RO is a mature technology and has been commercially available for over 30 years. As such, RO membrane manufacturers have developed models that are used to predict permeate quality for a range of waters from low-TDS tap water to brackish water to seawater. Prior to pilot testing, several membrane manufacturers were consulted and predictions were developed for the RO components of the treatment plant. These were used to develop the proof-of-concept testing parameters.

Likewise, air stripping is a very common treatment technology used throughout the US to treat groundwater containing volatile constituents. Air stripper packing manufacturers were consulted to determine the operating requirements for the strippers which were tested in the field.

Pilot test data was validated by manufacturer predictions of performance. The percent removals of the key ionic constituents, listed in the "Process Description" above, are never more than three percent below manufacturer predictions, and in some cases the removals are much greater than these predictions. Pilot test results for the air stripper predict the same removal efficiencies for the volatile compounds.

Process Reliability

Several advantages of the process at AG are constant produced water chemistry and feedwater flow. Water treatment plants are more reliable if the feedwater chemistry remains constant. Variable feedwater chemistry requires constant adjustments to operation which usually lead to operating problems. Likewise, constant flow provides for stable operation.

During our meeting on October 31, 2006, you asked that we compare our treatment system to that installed at the Greka Asphalt Plant in Santa Maria. The two plants are fundamentally different, and we do not expect to face the same challenges at Arroyo Grande. The principal differences are as follows:

- The water supply at Arroyo Grande will have constant chemistry and temperature (slight variation year to year) and will be fed to the water treating system at a constant rate. Keeping these parameters uniform is critical to the successful operation of any water treatment system. At Greka, there are a number of water sources – each with a very different chemistry, flow and temperature. Several of the sources have high mineral content and significant levels of petroleum byproducts – both of which create a high fouling potential for any RO system.

- The Greka plant is designed for two levels of filtration – filters for particulate removal and a carbonized-zeolite filter for organic removal (and some particulate removal). These types of filtration can be useful in protecting RO equipment if the stream chemistry and flow is constant. They treat a number of different streams being treated at Greka – boiler blowdown, occasional brine streams (from boiler feedwater softeners), cooling tower blowdown (which can have very high levels of particulate matter and bacteria) and crude tank residues. As configured, the Greka RO system is exposed to mineral-forming scale (there appears to be no hardness removal process) and particulate and petroleum fouling.

PXP is confident that the treatment plant will meet discharge requirements.

Determination of Constituents for Monitoring/Reasonable Potential Analysis

This section provides a specific answer to the question cited above. To determine what constituents from the produced water should be monitored to ensure protection of the aquatic resources identified in the Basin Plan and to meet the requirements of a Reasonable Potential Analysis (RPA), PXP conducted 3 separate water quality analysis of the produced water prior to treatment on January 4, 18, and 25, 2007. The collected water was analyzed for the Priority Toxic Pollutants as specified in the attachment to the letter of October 27, 2006 from the Central Coast Regional Water Quality Control Board and the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.*

As we discussed, we used the following approach in determining which compounds should be included in the monitoring and reporting program. First, we analyzed samples of produced water prior to treatment. If the compound is not detected in the untreated water, then it will not occur in the treated water. Second, if the compound is detected in untreated water, but at levels below the applicable standard, then it will not occur in the treated water at levels that exceed the standard. Third, if the compound is detected at levels that exceed the applicable standard, then it is recommended that the compound be monitored during operation of the system. As we discussed, and as is common practice, if the method detection limit exceeds the regulatory standard, then a result of "not detected" is considered to mean the regulatory standard is met. Finally, we do not propose to conduct a Reasonable Potential Analysis to allow discharge of compounds at levels that exceed the applicable standard. Although several compounds in Pismo Creek exceed the standards provided in your letter of October 27, 2006, we do not propose to

allow the proposed Facility to discharge water with constituent concentrations above the standards.

The results of the sampling and analysis of produced water (Attachment A, full laboratory reports are provided in Attachment B) indicate that two of the Priority Toxic Pollutants Effluent Limits were exceeded, Benzene and Phenol. Benzene in the produced water prior to treatment exceed the recommended effluent criteria during the January 4 and 18, 2007 sampling and Phenol from the produced water prior to treatment exceeded the recommended criteria during all three water sampling events. All other results were either not detected, or detected below the effluent limits for the Priority Toxic Pollutants.

Based on the water quality sampling results, PXP recommends implementing a water quality monitoring program that would monitor the effluent from the produced water treatment plant for Benzene and Phenol at a frequency that is consistent with the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.* Water samples will be collected in a manner that is consistent with EPA Methods 624 and 625 pursuant to 40 CFR 136.4 (a)-(c) and 40 CFR 136.5 (a)-(d) at the point of discharge. All water samples will be analyzed at a laboratory that is certified by the Department of Health Services, in accordance with the provision of Water Code Section 13176 and will be accompanied by the laboratory QA/QC reports. The results from the water sampled will be submitted to the Regional Board with the required analytical reporting limits and method detection limits at a frequency determined by the Regional Board.

Based on the results of the Produced Water Treatment Plant pilot test, the results of the water quality analysis on the produced water prior to treatment, and the implementation of a water quality monitoring program for the constituents identified during the RPA, PXP believes the aquatic resources identified in the Basin Plan will be adequately protected.

5. In describing alternatives to the proposed creek discharge, your submittal refers to the infeasibility to buy injection sites (p.4-2); limited amount that could be reused (p.4-2 & 4-4); limited land disposal opportunities on- or off-site (p.4-3 & 4-4); and irrigation reuse opportunities. Please expand upon this information to address potential combinations of alternatives that could reduce or eliminate the need for creek discharge. If cost is the limiting factor in such evaluations, then specific details of associated costs should be included.

The response first presents greater detail on individual options, followed by consideration of combinations of alternatives.

Greater Detail on Other Options. The following provides more detail on particular options evaluated.

Onsite Injection

PXP evaluated numerous potential areas to inject produced water into the subsurface without adversely impacting the steam drive. Several areas in the Monterey Formation were evaluated, but increases in zone pressure indicated the injection could not be sustained in compliance with Division of Oil, Gas, and Geothermal Resources (DOGGR) requirements. A sand zone (M-12) and a diatomite zone were investigated, but found to be connected to the producing zones, and therefore would adversely affect the steam drive. The Oak Park area, southeast of the oilfield,

was evaluated, but the area is currently undergoing residential development. The cost of conversion of a portion of this property to injection use was deemed prohibitive based on current real estate values in the area, although a specific appraisal was not conducted. Furthermore the Oak Park area was drilled and tested, and found to not be an open-ended reservoir, suggesting that injection could lead to the sorts of pressure increases observed in the Monterey Formation. The design calls for injection of the reject water produced by the treatment process into the producing zones. Further injection would undermine the project purpose of the facility.

Surface Discharge

PXP evaluated surface discharge on the oilfield. Percolation tests were conducted, and determined limited recharge potential. A total of 16 soil borings were installed by Fugro West in 2005-2006, logged for strata encountered, and analyzed for grain size variation. The data indicted a high percentage of silt and clay, and an average permeability for the area was determined to be approximately 0.5 gallons per day per square foot. Thus, an area of one acre could percolate 20,000 gallons per day (0.06 acre-feet per day). The report further concluded that any water that could be percolated would quickly encounter shallow bedrock and remerge as surface flow in Pismo Creek. The area is also subject to landslides, and further loading by infiltration could increase the incidence of this form of mass movement. As such, the amount of reclaimed water that could be accommodated would be small, and have the potential for adverse impacts. This alternative could only be applied in the dry season, since during the wet season the soils are already at their infiltration capacity.

Irrigation of Edible Crops

PXP communicated with wineries in the Edna Valley and with growers in the area regarding use of the reclaimed water for irrigation of edible crops. As the crops are edible, the California Department of Health Services places limitations on the use of reclaimed water, including additional treatment by oxidation, chlorination, coagulation, clarification, and filtration. Furthermore, boron levels in the water are relatively high and may affect the crops. Some growers considered blending the water with State Water Project supplies prior to application. Ultimately, no users were willing to undertake the additional treatment of the water, and did not negotiate further. This alternative could only be applied in the growing season, when there is an irrigation demand.

Irrigation of non-edible crops

A local landowner has expressed interest in using the reclaimed water for irrigation for non-potable uses. The landowner was only interested in a long-term commitment from PXP for guarantied supplies. PXP cannot make such a commitment, and certainly not beyond the life of the oilfield. PXP believes that providing access to the reclaimed water may induce this landowner as well as others to take advantage of the offer in some fashion, but this is not certain. This alternative could only be applied in the growing season, when there is an irrigation demand. Table 1 summarizes these factors, as well as those for use of the treated water for non-potable use on the Arroyo Grande Oilfield, and use of the treated water for dust control at the nearby landfill.

Table 1: Summary of Attributes of Beneficial Use Options in Addition to Augmenting Flow in Pismo Creek

Alternative	Volume of Water	Further Treatment Required Beyond Proposal?	Can Accommodate Continuous Supply?	Feasible?
Non-potable water supply at PXP Oil Field	Up to approximately 1,000 gallons per day	No	Yes	Yes, will be implemented
Surface Discharge on Oil Field	20,000 to 50,000 gallons per day based on infiltration capacity, still flows to Creek	No	No, cannot discharge during wet season	No: Inadequate infiltration area, drains to Pismo Creek
Irrigation for Edible Crops	Not determined	Yes, oxidation, chlorination, coagulation, clarification, filtration. Boron reduction was a concern.	No, only demand during spring and summer	No, do not have willing recipient for water and upgrades to treatment
Irrigation for non-potable crops	Not determined	No	No, only demand during growing season	No, do not have willing recipient
Landfill Dust Control	Not determined, but likely in the range of 100,000 gallons per day	No	No, only demand during dry season	No, landfill not willing to support pipeline from oilfield

Combinations of Alternatives. The evaluation of options also included the potential to combine them in order to reduce creek discharge. As summarized in Table 1, the currently feasible combination of alternatives is augmenting flow in Pismo Creek with the discharge from the facility, and use of a portion of the treated water for non-potable uses on the Arroyo Grande Oilfield. This non-potable use will reduce the amount of groundwater pumped from the water basin. PXP believes that once the reclaimed water is made available, area landowners may take advantage of its use for other non-potable uses. However, after approximately 10 years of consultation, there are no feasible uses at this time, and these other non-potable uses cannot be guarantied.

THIS PAGE LEFT BLANK INTENTIONALLY

APPENDIX D
AIR QUALITY

THIS PAGE LEFT BLANK INTENTIONALLY

PXP PHASE IV EIR
CONSTRUCTION EMISSIONS

	Equipment	Load Factor (%)	BHP	Emission Factors (lb/BHP-hr) NOx	ROG	PM10	CO2	Hours per day	Emissions (lb/day) NOx	ROG	PM10	CO2
Construction Equipment	Motor grader	61	175	0.021	0.003	0.001	1.15	6	13.5	1.9	0.6	736.6
	Backhoe	55	85	0.023	0.002	0.0015	1.15	6	6.5	0.6	0.4	322.6
	Hydrocrane F-750	43	260	0.023	0.003	0.0015	1.15	4	10.3	1.3	0.7	514.3
	Manlift 40LF	59	210	0.023	0.002	0.001	1.15	4	11.4	1.0	0.5	569.9
	28-ton hydrocrane RT	43	260	0.023	0.002	0.0015	1.15	4	10.3	0.9	0.7	514.3
	100-ton Hydrocrane	43	280	0.023	0.002	0.0015	1.15	4	11.1	1.0	0.7	553.8
	210-Ton Hydrocrane	43	290	0.023	0.002	0.0015	1.15	4	11.5	1.0	0.7	573.6
	D9 Dozer	59	320	0.021	0.002	0.005	1.15	6	23.8	2.3	5.7	1302.7
	Concrete Mixer Truck	43	320	0.021	0.002	0.005	1.15	2	5.8	0.6	1.4	316.5
	980 Loader	21	195	0.023	0.002	0.0015	1.15	6	5.7	0.5	0.4	282.6
	Compactor 54" drum	59	100	0.023	0.002	0.0015	1.15	4	5.4	0.5	0.4	271.4
	Air Compressor 185	43	100	0.018	0.002	0.001	1.15	8	6.2	0.7	0.3	395.6
	Welding Rig	21	205	0.023	0.002	0.001	1.15	4	4.0	0.3	0.2	198.0
	Welding Machine	45	110	0.018	0.002	0.001	1.15	4	3.6	0.4	0.2	227.7
SUM									**128.8**	**12.9**	**12.8**	**6779.6**

Notes:
Emissions SUM are per ***piece*** of equipment per ***day***
B5 through B18 uses emissions factors for a similar horsepower pieces of equipment
All cranes use emissions factors based on average horsepower
Load factors and emission factors for other equipment were taken from Nonroad Engine and Vehicle Emission Study (EPA, 1991).
Other load factors are averages based on composite load factors taken from Median Life, Annual Activity, and Load-Factor Values for Nonroad Emissions Modeling (EPA, 2004)
NOx emission factors for portable engines are taken from the standards for the Statewide Registration Program
N2O and CH4 emission factors from "California's Greenhouse Gas Inventory", converted to g/BHP-hr
Estimates presented are *worst-case* scenario without mitigation.

Equipment	Quantity	Pounds per day NOx	ROG	PM10	CO2	Tons per quarter (66 work days) NOx	ROG	PM10	CO2	Total Tons (180 work days) NOx	ROG	PM10	CO2
Motor grader	1	13.5	1.9	0.6	736.6	0.4	0.1	0.0	24.3	1.2	0.2	0.1	66.3
Backhoe	2	12.9	1.1	0.8	645.2	0.4	0.0	0.0	21.3	1.2	0.1	0.1	58.1
Hydrocrane F-750	4	41.1	5.4	2.7	2057.1	1.4	0.2	0.1	67.9	3.7	0.5	0.2	185.1
Manlift 40LF	4	45.6	4.0	2.0	2279.8	1.5	0.1	0.1	75.2	4.1	0.4	0.2	205.2
28-ton hydrocrane RT	1	10.3	0.9	0.7	514.3	0.3	0.0	0.0	17.0	0.9	0.1	0.1	46.3
100-ton Hydrocrane	1	11.1	1.0	0.7	553.8	0.4	0.0	0.0	18.3	1.0	0.1	0.1	49.8
210-Ton Hydrocrane	1	11.5	1.0	0.7	573.6	0.4	0.0	0.0	18.9	1.0	0.1	0.1	51.6
D9 Dozer	2	47.6	4.5	11.3	2605.4	1.6	0.1	0.4	86.0	4.3	0.4	1.0	234.5
Concrete Mixer Truck	3	17.3	1.7	4.1	949.4	0.6	0.1	0.1	31.3	1.6	0.1	0.4	85.4
980 Loader	1	5.7	0.5	0.4	282.6	0.2	0.0	0.0	9.3	0.5	0.0	0.0	25.4
Compactor 54" drum	1	5.4	0.5	0.4	271.4	0.2	0.0	0.0	9.0	0.5	0.0	0.0	24.4
Air Compressor 185	2	12.4	1.4	0.7	791.2	0.4	0.0	0.0	26.1	1.1	0.1	0.1	71.2
Welding Rig	10	39.6	3.4	1.7	1980.3	1.3	0.1	0.1	65.3	3.6	0.3	0.2	178.2
Welding Machine	10	35.6	4.0	2.0	2277.0	1.2	0.1	0.1	75.1	3.2	0.4	0.2	204.9
Totals		**309.6**	**31.2**	**28.9**	**16517.7**	**10.2**	**1.0**	**1.0**	**545.1**	**27.9**	**2.8**	**2.6**	**1486.6**

Equipment	Quantity	Load Factor	BHP	Hours/day	Pounds per day N2O	CH4	Total tons N2O	CH4
Motor grader	1	61	175	6	0.0055	0.0417	0.0005	0.0037
Backhoe	2	55	85	6	0.0048	0.0365	0.0004	0.0033
Hydrocrane F-750	4	43	260	4	0.0154	0.1163	0.0014	0.0105
Manlift 40LF	4	59	210	4	0.0170	0.1289	0.0015	0.0116
28-ton hydrocrane RT	1	43	260	4	0.0038	0.0291	0.0003	0.0026
100-ton Hydrocrane	1	43	280	4	0.0041	0.0313	0.0004	0.0028
210-Ton Hydrocrane	1	43	290	4	0.0043	0.0324	0.0004	0.0029
D9 Dozer	2	59	320	6	0.0195	0.1473	0.0018	0.0133
Concrete Mixer Truck	3	43	320	2	0.0071	0.0537	0.0006	0.0048
980 Loader	1	21	195	6	0.0021	0.0160	0.0002	0.0014
Compactor 54" drum	1	59	100	4	0.0020	0.0153	0.0002	0.0014
Air Compressor 185	2	43	100	8	0.0059	0.0447	0.0005	0.0040
Welding Rig	10	21	205	4	0.0148	0.1120	0.0013	0.0101
Welding Machine	10	45	110	4	0.0170	0.1288	0.0015	0.0116
Totals					0.1235	0.9341	0.0111	0.0841

On-road vehicle types for RO Water Treatment Plant: Emissions per day

ON-ROAD SOURCES

			NOX		ROC						CO		CO2	PM10				SOX		Emissions (lbs/day)					
Vehicle Class	Number	VMT	Run Exhaust (g/mi)	Start-Up (g/st)	Run Exhaust (g/mi)	Start-Up (g/st)	Hot-Soak (g/trip)	Rest Loss (g/hr)	Run Evap (g/hr)	Diurnal Evap (g/hr)	Run Exhaust (g/mi)	Start-Up (g/st)	Run Exhaust (g/mi)	Run Exhaust (g/mi)	Start-Up (g/st)	Tire Wear (g/mi)	Brake Wear (g/mi)	Run Exhaust (g/mi)	Start-Up (g/st)	NOX	ROC	CO	CO2	PM10	SOX
LDA-CAT	20	10	0.273	0.534	0.148	1.497	0.261	0.115	3.18	0.263	4.661	15.203	456	0.009	0.014	0.008	0.013	0.004	0.003	0.17	0.23	3.44	201.06	0.01	0.00
HHD-Dsl	0	0	8.37		0.535						1.938			0.229		0.036	0.013	0.021		0.00	0.00	0.00	0.00	0.00	0.00
LHD1-DSL	3	10	6.375		0.266						1.535		1505	0.252		0.012	0.013	0.014		0.43	0.02	0.10	99.54	0.02	0.00
																			lbs/day	0.60	0.25	3.54	300.60	0.03	0.00
																			tons/yr	0.1	0.0	0.3	27.1	0.0	0.0

Assumptions:

Onroad emissions factors and mpg from EMFAC 2002, Summer 2008, 85 degrees F, 60% RH

Assumes startup after 12 hours
Vehicle speed = 35 mph

VMT assumes 10 miles round trip each day (from either Pismo Beach or San Luis Obispo) and quantity of vehicles at worst-case scenario
20 min hot soak per trip
15 min rest each trip
45 minute run time total
Light Duty Truck (LDT) assumes all fuel types
Heavy-Duty Truck (HHD) assumes diesel fuel
Medium Heavy Duty Truck (MHD) assumes diesel fuel
180 work days total
CH4 & N2O emission factors from "California's Greenhouse Gas Inventory" (www.arb.ca.gov/cc/ccei/inventory/docs)

Class	mi/gal	miles/day	Total miles	Total gallons	N2O g/gal	CH4 g/gal	N2O tons	CH4 Tons
LDT-CAT	18.97	200	36000	1898	0.075	0.375	0.0002	0.0008
HDD-DSL	4.65	0	0	0	0.255	0.574	0.0000	0.0000
MHD-DSL	6.7	30	5400	806	0.255	0.574	0.0002	0.0005

Health Risk Assessment – DRAFT REPORT
PXP Arroyo Grande Oil Field, Phase IV Development

Based on the Protocol approved by the San Luis Obispo County APCD (Paul Reitz, November 2007).

Date: December 28th, 2007.
Prepared by: Interact PMTI (contact: Uliana Micovic, 805-218-4774 cell, email: umicovic@interactpmti.com).

1. Introduction

PXP proposes Phase IV operations at the Arroyo Grande Oil Field Facility as per the Project Description (Padre 2006). The current Health Risk Assessment (HRA) has been prepared to address the baseline and proposed operations.

2. Current Operations and Project Description

Current Operations

Arroyo Grande Oil Field produces oil and gas, separates water, gas and oil into three separate phases, treats oil and gas, and sells oil and gas. Producing wells are stimulated by injecting steam into injection wells. Six steam generators produce steam for oil stimulation. The steam generators are fuelled with utility natural gas, gas produced by the facility and/or landfill gas. Currently four existing steam generators (A-1, A-3, A-5 and A-6) are used at various loads. Generators A-2 and A-4 are not currently used.

The facility has a tank battery to store and ship oil to buyers. All tanks are fixed roof tanks with emissions controlled through a closed vapor control system with 95% efficiency. Currently, tanks Nos. 10435, 10436, 10398, and 10399, are in operation. The oil loading is also controlled through the same vapor control system. Current oil throughput is approximately 24,500,000 gallons per year, 1,400 – 1,800 barrels per day on average.

A portion of electricity to the facility is supplied from a Cogeneration unit that includes a turbine operated on natural gas.

The facility's fugitive emissions that also include emissions from the producing wells and connecting lines are controlled with an ongoing Leak Inspection and Maintenance program.

The facility also has two heater treaters (4 and 6 MMBtu/hr rating) that currently do not consume fuel, but are designed to combust natural gas.

The facility operates a gas plant that treats the produced gas so it can be combusted in the facility's equipment. The gas plant emissions are fugitive ROC from various piping components, such as flanges, connectors, valves and compressor seals.

Proposed Operations

PXP proposes to drill 95 new producing wells, and produce enough steam to stimulate oil production. To achieve higher steam production, PXP proposes to install three new steam generators, 85 MMBtu/hr each. As the most conservative assumption, it is assumed that all three

steam generators will be used at 100% load, although in reality the steam generators will need to be taken offline for maintenance, and their use will fluctuate.

As the most conservative assumption, it was also assumed that the existing six steam generators will be used at 100% load (A-1 through A-6). The existing 4 MMBtu/hr heater treater will be removed. A new 8 MMBtu/hr heater with two burners – 4 MMBtu/hr each – will be installed as replacement for the 4 MMBtu/hr heater treater. The existing 6 MMBtu/hr heater treater will be on stand by, and will only be used during maintenance of the main heater treater.

Oil throughput through the existing tanks and loading racks will be up to 76,650,000 gallons per year (1,825,000 bbl/year), 5,000 barrels per day (bbls/day) of oil. It is assumed that the oil will be evenly distributed through each of the facility eight storage tanks at approx. 228,000 bbls/year. (Tanks Nos. 10397, 10433, 10434 and 10401 would be operational in addition to the currently used tanks listed in the previous section).

Fugitive emissions through the oil/liquid components and the Gas Plant (gas phase) components will stay the same as currently occurring, because no additional components or other equipment with fugitive components will be installed.

As the most conservative approach, it is assumed that for the proposed project, the existing turbine/cogen will be operating at 100% load; currently it operates at approximately 83-86%. Solvent use is assumed to double during the project.

PXP proposes to install a water treatment plant that will treat produced water to the requirements that would allow the water to be discharged into the environment. The proposed water treatment plant will produce 20,000 bbls/day of treated water. The HAPs emissions sources of the water treatment facility would be three air strippers designed to remove the residual organic components and ammonia from the treated water.

Current (Baseline) and Project emission sources and their parameters used in the HRA are identified in Table 1.

3. Models and Software Used

The HRA has been prepared according to "*The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* (OEHHA, August 2003). The HRA has been prepared using the most recent version of the California Air Resources Board (CARB) Hotspots Analysis and Reporting Program (HARP version 1.3) software.

Cancer and non-cancer (acute and chronic) health impacts have been estimated using the new risk assessment guidelines developed by the Office of Environmental Health Hazard Assessment (OEHHA).

Table 1. Emission Sources Parameters

HARP Source ID	Source Name	UTM E (m)	UTM N (m)	X Length (m)	Y Length (m)	Stack Height (m)	Elevation (ft)	Stack Diam. (m)	Stack Diam. (ft)	T (K)	Exhaust Velocity (m/s)	Exhaust Velocity (ft/min)	Oper. Schedule
1001	Generator A-1	716515	3896230			10.4	233.4	0.9	3.0	464.6	11.70	2303.1	24/7
1002	Generator A-2	716514	3896234			10.4	233.8	0.9	3.0	464.6	11.70	2303.1	24/7
1003	Generator A-3	716513	3896238			10.4	234.5	0.9	3.0	464.6	11.70	2303.1	24/7
1004	Generator A-4	716890	3895690			10.4	132	0.9	3.0	464.6	11.70	2303.1	24/7
1005	Generator A-5	716892	3895692			10.4	132.7	0.9	3.0	464.6	11.70	2303.1	24/7
1006	Generator A-6	716892	3895694			10.4	133.1	0.9	3.0	464.6	11.70	2303.1	24/7
1017*	Generator A-7	716894	3895694			10.4	133.3	0.9	3.0	464.6	11.70	2303.1	24/7
1018*	Generator A-8	716896	3895694			10.4	133.5	0.9	3.0	464.6	11.70	2303.1	24/7
1019*	Generator A-9	716518	3896240			10.4	233.2	0.9	3.0	464.6	11.70	2303.1	24/7
1020	Turbine	716860	3896107			12.2	153	1.52	5.0	532.9	15.53	3057.1	24/7
1030*	Heater, Stack 1	716544	3896175			5.49	224.6	0.76	2.5	449.8	1.04	204.0	24/7
1031*	Heater, Stack 2	716544	3896176			5.49	224.5	0.76	2.5	449.8	1.04	204.0	24/7
1060*	Air Stripper 1	716354	3896365			9.14	282.2	3.66	12.0	305.4	3.37	663.1	24/7
1061*	Air Stripper 2	716352	3896365			9.14	282.9	3.66	12.0	305.4	3.37	663.1	24/7
1062*	Air Stripper 3	716350	3896365			9.14	283.5	3.66	12.0	305.4	3.37	663.1	24/7
2001*	New Wells	716973	3896449	1000	1000		177.1						24/7
2020	Existing Fugitives	716973	3896449	1000	1000		177.1						24/7
2030	Gas Plant	716440	3896485	100	100		289						24/7
3000	Solvent Use	716973	3896449	1000	1000		177.1						24/7
3050	Tanks	716600	3896170	100	100	6.01	211.7						24/7
3060	Loading Racks	716700	3896170	100	100		189.5						2/5

* Denotes the emission new sources introduced with the proposed project.

4. Data Sources

The facility boundaries have been obtained from a survey prepared by a licensed surveyor from Engineering Development Associates (EDA) and converted from State Plane (California) Coordinates to UTM NAD83 (HARP default).

The emission sources are identified in Table 1. The existing sources include six steam generators, four storage tanks, oil loading racks, solvent use, turbine/cogen, gas plant and other fugitives sources. The proposed sources include 95 new wells and associated connection lines, three new steam generators, a new/replacement heater treater with two burners/stacks, and three air stripper towers for the proposed water reclamation plant. The proposed sources ID's are marked with an asterisk. Several existing sources currently offline will be put in operation for the proposed project: four storage tanks, and two currently idle steam generators.

The equipment coordinates have been estimated using the surveyed boundary coordinates, area maps, aerial photos, and facility maps. The coordinates have been verified using Wikimapia.org software, and confirmed with the operator. Facility solvents' use and fugitive emissions, including emissions from wells were assigned the coordinates of the facility center, because these emissions occur throughout the whole oil lease.

The current (baseline) facility equipment lists and emissions have been assembled from the SLO County APCD emissions inventories for 2005 and 2006, gas analysis results, and review of the existing equipment permits to operate.

Emissions from the storage tanks and from truck loading were estimated using a different True Vapor Pressure (TVP) than was used in the 2005 and 2006 emission inventories (see Appendix B for the TVP laboratory results). The TVP analysis for the Arroyo Grande oil was performed in December 2007 to get a more current TVP value. The obtained TVP is 0.432 psia at 165 F. The TVP that has been used for reporting purposes until 2006 was obtained in 1995 (TVP = 8.78 psia). However, the December 2007 TVP result is more representative of the heavy crude oil produced from the Arroyo Grande Oil Field (API gravity = 14.1, see December 2007 Lab Analysis, Appendix B), and thus it was used for the tanks and truck loading emissions estimates.

Storage Tanks' head space vapors were analyzed for VOCs in December 2007 (see Appendix B). These concentrations were used to determine HAPs emissions from tanks and truck loading, multiplying the HAPs weight ratio by the TOC emissions from the tanks and loading.

TOC emissions from the storage tanks were estimated using the spreadsheet provided by the SLO County APCD. TOC emissions from loading were estimated using the AP-42 method, page 5.2-4 (see Table 2 below).

The proposed project equipment lists and parameters have been assembled using the proposed equipment information obtained from PXP. **The proposed project equipment emissions** have been estimated based on the predicted worst case fuel use, and based on the equipment emission factors approved by the APCD (see below).

Hazardous Air Pollutants (HAPs) emission factors have been obtained from the reference documents listed in Table 2. Emissions sources or calculation methods are also listed in Table 2. The HAPs emission factors are listed in Table 3.

Water Reclamation Plant HAPs emissions occur only from the air strippers, which are open to the atmosphere. All other equipment of the proposed water reclamation plant is closed to the atmosphere. PXP conducted a pilot test for the proposed facility and analyzed water quality after various water treatment stages. The air strippers would be located downstream of the 1st Stage Reverse Osmosis (RO) treatment. It was conservatively assumed that 100% VOCs and ammonia are removed from the water via air stripers, thus all VOCs and ammonia found in the 1st Stage RO treatment permeate was assumed to be emitted through the air strippers. The laboratory analysis or the water that has passed through the 1st Stage RO is contained in Appendix D.

Table 2. Information Sources of HAPs Emission Factors

Equipment	Source and Assumptions	Emission Factor Calculation or Source
Turbine/Cogen	US EPA AP-42 Emission Factors for natural gas fired turbines, Table 3.1-3 (April 2000).	**Fuel use x EF = = MMscf/hr x lb/MMscf = = lb HAPs/hr**
Steam Generators and Heater Treater	VC APCD AB 2588 Combustion Emission Factors datasheet - natural gas fired external combustion equipment: 10 – 100 MMBtu/hr for steam generators; & < 10 MMBtu/hr for heater treater.	**Fuel use x EF = = MMscf/hr x lb/MMscf = = lb HAPs/hr**
Fugitive Components including Gas Plant, & new wells	CARB, VOC Species Profile, Table II, Profile 316, "Refinery – Pipes, Valves & Flanges – Composite".	VOC emissions from the Annual Emissions Inventory (AEI) and estimates for the new wells components: **VOC lbs/year x HAP weight fraction in VOCs= lbs HAP/year**
Oil Shipping Tanks	Oil TVP analysis at 165 °F – see attached (December 2007, Appendix B), TVP=0.432 psia. TVP of 0.5 is conservatively used for calculations. RVP of 0.14 psia is adjusted per the APCD spreadsheet, App. C. It is assumed that the project throughput of 76,650,000 gals/year (1,825,000 bbls/yr) will be equally distributed through all the facility storage tanks (approx. 228,000 bbls/year per each tank).	VOC emissions depending on throughput calculated using the spreadsheet provided by the SLO County APCD for tank emissions and EFs (see Appendix C). HAPs emission factors for the tanks truck loading were derived from the analysis of the tank head space gas (see attached lab report). The obtained HAPs concentrations were used in conjunction with the estimated TOC emissions from the tanks. **HAP Emissions = TOC x HAPs weight ratio in tank head space.**
Solvents	MSDS of a generic material	VOC emissions from the AEI

Tanker-truck Loading Operations	Oil TVP analysis at 165 °F – see Appendix B, TVP=0.432 psia. TVP of 0.5 psia was conservatively used for calculations. HAPs in the vapor phase of the loaded oil is assumed to be the same as in the shipping tank head space. Analysis of shipping/stock tank head space for volatiles is given in Appendix B. VOC emissions depending on throughput, calculated using the APCD-provided spreadsheet, based on AP-42, page 5.2-4 method for tanker trucks loading.	**Loading TOC EF =** **= CF x 12.46 x (S x TVP x MW) / T** where, S – 1.0 (loading code, per AP-42); TVP – true vapor pressure = 0.5 psia; MW – 50 lb/lb-mole; T – temperature of bulk loaded liquid, R = (F+460); CF – control factor (at 95% emissions control, CF = 0.05); **Loading TOC EF =** **= 0.05 x 12.46 x (1 x 0.5 x 50) / (162+460) =** **= 0.025** **HAP Emissions = TOC x HAPs weight ratio in tank head space.**
Air Strippers	It is assumed that all the HAPs contained in the water entering air strippers will be stripped and emitted into the atmosphere. Total emissions were divided by three (3) to account for the emissions distribution between the three proposed air strippers.	Emissions were calculated using HAPs concentrations measured during the Water Treatment Facility Pilot test (see attached lab analysis – Appendix D) multiplied by 20,000 bbls/day, which is the proposed Water Treatment Facility production capacity.

MMscf – million standard cubic feet; lb – pound; bbls/day – barrels per day; MMBtu – million British thermal units; EF – emission factor; AEI – Annual Emissions Inventory; TVP – True Vapor Pressure; RVP – Reid Vapor Pressure. VC APCD – Ventura County Air Pollution Control District; CARB – California Air Resources Board.

The HAPs emission summaries are given for each source: maximum hourly, and average annual emissions in Tables 4, 5, 6 and 7 below.

Location-specific Digital Elevation Model (DEM) data sets were used for dispersion modeling: arroyo_grande_ne_ca.dem and pismo_beach_ca.dem, obtained from USGS.

Meteorology. Per the discussion with the SLO County APCD (telephone conversation with Paul Reitz, November 2, 2007), the worst-case meteorological dataset (HARP screening meteorology) was used as a first approximation. Default HARP averaging time conversion factors were used.

Table 3. Facility Equipment Emission Factors

EQUIPMENT		EMISSION FACTORS	
Steam Generators	**CAS**	**lb/MMBtu ***	**lb/MMscf ****
PAH with indiv components	1150	3.92E-07	0.0004
Xylenes	1210	1.93E-05	0.0197
Formaldehyde	50000	1.21E-05	0.0123
Benzene	71432	5.69E-06	0.0058
Acetaldehyde	75070	3.04E-06	0.0031
Ethyl Benzene	100414	6.76E-06	0.0069
Acrolein	107028	2.65E-06	0.0027
Toluene	108883	2.60E-05	0.0265
Hexane	110543	4.51E-06	0.0046
Propylene	115071	5.20E-04	0.5300
Turbine/Cogen * **	**CAS**	**lb/MMBtu*****	
PAH w/o indiv components	1151	2.20E-06	
Xylenes	1210	6.40E-05	
Formaldehyde	50000	7.10E-04	
Benzene	71432	1.20E-05	
Acetaldehyde	75070	4.00E-05	
Propylene Oxide	75569	2.90E-05	
Naphthalene	91203	1.30E-06	
Ethylbenzene	100414	3.20E-05	
1,3-Butadiene	106990	4.30E-07	
Acrolein	107028	6.40E-06	
Toluene	108883	1.30E-04	
Heater Treater*	**CAS**	**lb/MMBtu***	**lb/MMscf****
PAH w indiv components	1150	3.92E-07	0.0004
Xylenes	1210	2.67E-05	0.0272
Formaldehyde	50000	1.67E-05	0.0170
Benzene	71432	7.84E-06	0.0080
Acetaldehyde	75070	4.22E-06	0.0043
Ethyl Benzene	100414	9.31E-06	0.0095
Acrolein	107028	2.65E-06	0.0027
Toluene	108883	3.59E-05	0.0366
Hexane	110543	6.18E-06	0.0063
Propylene	115071	7.17E-04	0.7310
Fugitives and Wells (Including New Wells)	**CAS**	**VOC Weight Fraction**	
Xylenes	1210	0.002	na
Benzene	71432	0.001	na
Toluene	108883	0.005	na
Hexane	110543	0.034	na
Cyclohexane	110827	0.001	na
Propylene	115071	0.001	na
H_2S	7783064	0.027	na
Air Strippers of the Water Treatment Facility	**CAS**	**Treated Water, µg/L ******	
Xylenes	1210	3.00	na

Benzene	71432	1.50	na
2-butanone (MEK)	78933	590.00	na
Naphthalene	91203	9.40	na
Ethyl Benzene	100414	0.79	na
Toluene	108883	0.67	na
Chlorobenzene	108907	2.20	na
Ammonia, mg/L ****	7664417	15.00 mg/L	na
Tanks and Truck Loading	**CAS**	**TOC Weight Fraction**	
Xylenes	1210	5.48E-07	na
Benzene	71432	1.31E-05	na
Toluene	108883	8.49E-07	na
Ethylbenzene	100414	2.38E-06	na
Toluene	108883	5.48E-07	na
H_2S	7783064	8.09E-03	na

na – not applicable; µg/L – micrograms per liter; MMBtu – million British Thermal Units; MMscf – million standard cubic feet.
* For Heater Treater and Steam Generators these emission factors (lbs/MMBtu) are calculated from the original emission factors by dividing over 1020 (Btu/scf). The original factors are contained in the VC APCD AB 2588 Combustion Emission Factors: http://www.vcapcd.org/pubs/Engineering/AirToxics/combem.pdf.
** These factors are from the VC APCD AB 2588 Combustion Emission Factors: http://www.vcapcd.org/pubs/Engineering/AirToxics/combem.pdf.
*** These factors are from the AP-42,Volume I, Chapter 3, Stationary Internal Combustion Sources: http://www.epa.gov/ttn/chief/ap42/ch03/index.html.
**** HAPs concentrations before the air strippers (source: pilot test, see attached lab reports for the RO Permeate [ROP]) are in micrograms per liter for organics, and in milligrams per liter (mg/L) for ammonia.

Table 4. HAPs Emissions – Baseline, Maximum Hour, lbs/hour

	PAHs-w/	Xylenes	Formalde hyde	Benzene	Acetalde hyde	Ethyl Benzene	Acrolein	Toluene	Hexane	Propylene	MEK
Generator A-1	1.96E-05	9.66E-04	6.03E-04	2.84E-04	1.52E-04	3.38E-04	1.32E-04	1.30E-03	2.26E-04	2.60E-02	
Generator A-2**											
Generator A-3	1.96E-05	9.66E-04	6.03E-04	2.84E-04	1.52E-04	3.38E-04	1.32E-04	1.30E-03	2.26E-04	2.60E-02	
Generator A-4**											
Generator A-5	1.96E-05	9.66E-04	6.03E-04	2.84E-04	1.52E-04	3.38E-04	1.32E-04	1.30E-03	2.26E-04	2.60E-02	
Generator A-6	1.18E-05	5.79E-04	3.62E-04	1.71E-04	9.12E-05	2.03E-04	7.94E-05	7.79E-04	1.35E-04	1.56E-02	
Turbine		1.33E-03	1.47E-02	2.48E-04	8.28E-04	6.62E-04	1.33E-04	2.69E-03			
Heater, Stack 1*											
Heater, Stack 2*											
Existing Fugitives		2.03E-04		1.01E-04				5.07E-04	3.45E-03	1.01E-04	
Gas Plant		3.25E-04		1.63E-04				8.13E-04	5.53E-03	1.63E-04	
Solvent Use		6.79E-04		1.36E-04							
Tanks		2.25E-08		5.39E-07		3.49E-08		9.77E-08			
Loading Racks		3.84E-08		9.17E-07		5.95E-08		1.66E-07			
TOTAL	**7.06E-05**	**6.01E-03**	**1.69E-02**	**1.67E-03**	**1.38E-03**	**1.88E-03**	**6.09E-04**	**8.69E-03**	**9.79E-03**	**9.38E-02**	**0.00E+00**

* Heater Treater does not currently burn fuel.
** Steam Generators A-2 and A-4 currently do not operate.
PAH w/ – polyaromatic hydrocarbons with individual components.

Table 4 (cont.). HAPs Emissions – Baseline, Maximum Hour, lbs/hour

	Naphtha-lene	Chloro-benzene	Ammonia, NH3	Cyclo-hexane	H2S	Methanol	PAHs-w/o	Propylene Oxide	1,3-Butadiene
Generator A-1									
Generator A-2**									
Generator A-3									
Generator A-4**									
Generator A-5									
Generator A-6									
Turbine	2.69E-05						4.55E-05	6.00E-04	8.90E-06
Heater, Stack 1*									
Heater, Stack 2*									
Existing Fugitives				1.01E-04	2.73E-03				
Gas Plant				1.63E-04	4.39E-03				
Solvent Use						2.74E-04			
Tanks					3.33E-04				
Loading Racks					5.67E-04				
TOTAL	**2.69E-05**	**0.00E+00**	**0.00E+00**	**2.64E-04**	**8.02E-03**	**2.74E-04**	**4.55E-05**	**6.00E-04**	**8.90E-06**

* Heater Treater does not currently burn fuel.
** Steam Generators A-2 and A-4 do not currently operate.
PAH w/o – polyaromatic hydrocarbons without individual components.

Table 5. HAPs Emissions – Baseline, Annual, lbs/year

	PAHs-w/	Xylenes	Formalde hyde	Benzene	Acetalde hyde	Ethyl Benzene	Acrolein	Toluene	Hexane	Propylene	MEK
Generator A-1	4.37E-02	2.15E+00	1.34E+00	6.34E-01	3.39E-01	7.54E-01	2.95E-01	2.90E+00	5.03E-01	5.79E+01	
Generator A-2**											
Generator A-3	1.38E-01	6.79E+00	4.24E+00	2.00E+00	1.07E+00	2.38E+00	9.30E-01	9.13E+00	1.59E+00	1.83E+02	
Generator A-4**											
Generator A-5	1.38E-01	6.79E+00	4.24E+00	2.00E+00	1.07E+00	2.38E+00	9.31E-01	9.14E+00	1.59E+00	1.83E+02	
Generator A-6	1.57E-02	7.71E-01	4.81E-01	2.27E-01	1.21E-01	2.70E-01	1.06E-01	1.04E+00	1.80E-01	2.07E+01	
Turbine		9.66E+00	1.07E+02	1.81E+00	6.04E+00	4.83E+00	9.66E-01	1.96E+01			
Heater, Stack 1*											
Heater, Stack 2*											
Existing Fugitives		1.78E+00		8.88E-01				4.44E+00	3.02E+01	8.88E-01	
Gas Plant		2.85E+00		1.43E+00				7.13E+00	4.85E+01	1.43E+00	
Solvent Use		5.95E+00		1.19E+00							
Tanks		1.97E-04		4.72E-03		3.06E-04		8.56E-04			
Loading Racks		3.36E-04		8.04E-03		5.21E-04		1.46E-03			
TOTAL	**3.35E-01**	**3.67E+01**	**1.17E+02**	**1.02E+01**	**8.63E+00**	**1.06E+01**	**3.23E+00**	**5.34E+01**	**8.25E+01**	**4.46E+02**	**0.00E+00**

* Heater Treater does not currently burn fuel.
** Steam Generators A-2 and A-4 do not currently operate.
PAH w/ – polyaromatic hydrocarbons with individual components.

Table 5 (cont.). HAPs Emissions – Baseline, Annual, lbs/year

	Naphtha-lene	Chloro-benzene	Ammonia, NH3	Cyclo-hexane	H2S	Methanol	PAHs-w/o	Propylene Oxide	1,3-Butadiene
Generator A-1									
Generator A-2**									
Generator A-3									
Generator A-4**									
Generator A-5									
Generator A-6									
Turbine	1.96E-01						3.32E-01	4.38E+00	6.49E-02
Heater, Stack 1*									
Heater, Stack 2*									
Existing Fugitives				8.88E-01	2.39E+01				
Gas Plant				1.43E+00	3.84E+01				
Solvent Use						2.40E+00			
Tanks					2.91E+00				
Loading Racks					4.96E+00				
TOTAL	**1.96E-01**	**0.00E+00**	**0.00E+00**	**2.31E+00**	**7.02E+01**	**2.40E+00**	**3.32E-01**	**4.38E+00**	**6.49E-02**

* Heater Treater does not currently burn fuel.
** Steam Generators A-2 and A-4 do not currently operate..
PAH w/o – polyaromatic hydrocarbons without individual components.

Table 6. HAPs Emissions – Project, Maximum Hour, lbs/hour

	PAHs-w/	Xylenes	Form-aldehyde	Benzene	Acet-aldehyde	Ethyl Benzene	Acrolein	Toluene	Hexane	Propy-lene	MEK
Generator A-1	1.96E-05	9.66E-04	6.03E-04	2.84E-04	1.52E-04	3.38E-04	1.32E-04	1.30E-03	2.26E-04	2.60E-02	
Generator A-2	1.96E-05	9.66E-04	6.03E-04	2.84E-04	1.52E-04	3.38E-04	1.32E-04	1.30E-03	2.26E-04	2.60E-02	
Generator A-3	1.96E-05	9.66E-04	6.03E-04	2.84E-04	1.52E-04	3.38E-04	1.32E-04	1.30E-03	2.26E-04	2.60E-02	
Generator A-4	1.96E-05	9.66E-04	6.03E-04	2.84E-04	1.52E-04	3.38E-04	1.32E-04	1.30E-03	2.26E-04	2.60E-02	
Generator A-5	1.96E-05	9.66E-04	6.03E-04	2.84E-04	1.52E-04	3.38E-04	1.32E-04	1.30E-03	2.26E-04	2.60E-02	
Generator A-6	1.18E-05	5.79E-04	3.62E-04	1.71E-04	9.12E-05	2.03E-04	7.94E-05	7.79E-04	1.35E-04	1.56E-02	
Generator A-7	3.33E-05	1.64E-03	1.03E-03	4.83E-04	2.58E-04	5.75E-04	2.25E-04	2.21E-03	3.83E-04	4.42E-02	
Generator A-8	3.33E-05	1.64E-03	1.03E-03	4.83E-04	2.58E-04	5.75E-04	2.25E-04	2.21E-03	3.83E-04	4.42E-02	
Generator A-9	3.33E-05	1.64E-03	1.03E-03	4.83E-04	2.58E-04	5.75E-04	2.25E-04	2.21E-03	3.83E-04	4.42E-02	
Turbine		1.33E-03	1.47E-02	2.48E-04	8.28E-04	6.62E-04	1.33E-04	2.69E-03			
Heater, Stack 1	1.57E-06	1.07E-04	6.67E-05	3.14E-05	1.69E-05	3.73E-05	1.06E-05	1.44E-04	2.47E-05	2.87E-03	
Heater, Stack 2	1.57E-06	1.07E-04	6.67E-05	3.14E-05	1.69E-05	3.73E-05	1.06E-05	1.44E-04	2.47E-05	2.87E-03	
Air Stripper 1		2.92E-04		1.46E-04		7.68E-05		6.51E-05			5.74E-02
Air Stripper 2		2.92E-04		1.46E-04		7.68E-05		6.51E-05			5.74E-02
Air Stripper 3		2.92E-04		1.46E-04		7.68E-05		6.51E-05			5.74E-02
New Wells		1.34E-02		6.70E-03				3.35E-02	2.28E-01	6.70E-03	
Existing Fugitives		2.03E-04		1.01E-04				5.07E-04	3.45E-03	1.01E-04	
Gas Plant		3.25E-04		1.63E-04				8.13E-04	5.53E-03	1.63E-04	
Solvent Use		1.36E-03		2.72E-04							
Tanks		6.38E-08		1.53E-06		9.89E-08		2.77E-07			
Loading Racks		1.20E-07		2.87E-06		1.86E-07		5.20E-07			
TOTAL	**2.13E-04**	**2.80E-02**	**2.13E-02**	**1.10E-02**	**2.49E-03**	**4.59E-03**	**1.57E-03**	**5.19E-02**	**2.39E-01**	**2.91E-01**	**1.72E-01**

PAH w/ – polyaromatic hydrocarbons with individual components.

Table 6 (cont.). HAPs Emissions – Project, Maximum Hour, lbs/hour

	Naphtha-lene	Chloro-benzene	Ammonia, NH3	Cyclo-hexane	H2S	Methanol	PAHs-w/o	Propylene Oxide	1,3-Butadiene
Generator A-1									
Generator A-2									
Generator A-3									
Generator A-4									
Generator A-5									
Generator A-6									
Generator A-7									
Generator A-8									
Generator A-9									
Turbine	2.69E-05						4.55E-05	6.00E-04	8.90E-06
Heater, Stack 1									
Heater, Stack 2									
Air Stripper 1	9.14E-04	2.14E-04	1.46E+00						
Air Stripper 2	9.14E-04	2.14E-04	1.46E+00						
Air Stripper 3	9.14E-04	2.14E-04	1.46E+00						
New Wells				6.70E-03	1.81E-01				
Existing Fugitives				1.01E-04	2.73E-03				
Gas Plant				1.63E-04	4.39E-03				
Solvent Use						5.48E-04			
Tanks					9.42E-04				
Loading Racks					1.77E-03				
TOTAL	**2.77E-03**	**6.42E-04**	**4.37E+00**	**6.96E-03**	**1.90E-01**	**5.48E-04**	**4.55E-05**	**6.00E-04**	**8.90E-06**

PAH w/o – polyaromatic hydrocarbons without individual components.

Table 7. HAPs Emissions – Project, Annual, lbs/year

	PAHs-w/	Xylenes	Form-aldehyde	Benzene	Acet-aldehyde	Ethyl Benzene	Acrolein	Toluene	Hexane	Propy-lene	MEK
Generator A-1	1.72E-01	8.46E+00	5.28E+00	2.49E+00	1.33E+00	2.96E+00	1.16E+00	1.14E+01	1.98E+00	2.28E+02	
Generator A-2	1.72E-01	8.46E+00	5.28E+00	2.49E+00	1.33E+00	2.96E+00	1.16E+00	1.14E+01	1.98E+00	2.28E+02	
Generator A-3	1.72E-01	8.46E+00	5.28E+00	2.49E+00	1.33E+00	2.96E+00	1.16E+00	1.14E+01	1.98E+00	2.28E+02	
Generator A-4	1.72E-01	8.46E+00	5.28E+00	2.49E+00	1.33E+00	2.96E+00	1.16E+00	1.14E+01	1.98E+00	2.28E+02	
Generator A-5	1.72E-01	8.46E+00	5.28E+00	2.49E+00	1.33E+00	2.96E+00	1.16E+00	1.14E+01	1.98E+00	2.28E+02	
Generator A-6	1.03E-01	5.08E+00	3.17E+00	1.49E+00	7.99E-01	1.78E+00	6.96E-01	6.83E+00	1.19E+00	1.37E+02	
Generator A-7	2.92E-01	1.44E+01	8.98E+00	4.23E+00	2.26E+00	5.04E+00	1.97E+00	1.93E+01	3.36E+00	3.87E+02	
Generator A-8	2.92E-01	1.44E+01	8.98E+00	4.23E+00	2.26E+00	5.04E+00	1.97E+00	1.93E+01	3.36E+00	3.87E+02	
Generator A-9	2.92E-01	1.44E+01	8.98E+00	4.23E+00	2.26E+00	5.04E+00	1.97E+00	1.93E+01	3.36E+00	3.87E+02	
Turbine		1.16E+01	1.29E+02	2.18E+00	7.25E+00	5.80E+00	1.16E+00	2.36E+01			
Heater, Stack 1	1.37E-02	9.34E-01	5.84E-01	2.75E-01	1.48E-01	3.26E-01	9.28E-02	1.26E+00	2.16E-01	2.51E+01	
Heater, Stack 2	1.37E-02	9.34E-01	5.84E-01	2.75E-01	1.48E-01	3.26E-01	9.28E-02	1.26E+00	2.16E-01	2.51E+01	
Air Stripper 1		2.56E+00		1.28E+00		6.73E-01		5.71E-01			5.02E+02
Air Stripper 2		2.56E+00		1.28E+00		6.73E-01		5.71E-01			5.02E+02
Air Stripper 3		2.56E+00		1.28E+00		6.73E-01		5.71E-01			5.02E+02
New Wells		1.17E+02		5.87E+01				2.93E+02	1.99E+03	5.87E+01	
Existing Fugitives		1.78E+00		8.88E-01				4.44E+00	3.02E+01	8.88E-01	
Gas Plant		2.85E+00		1.43E+00				7.13E+00	4.85E+01	1.43E+00	
Solvent Use		1.19E+01		2.38E+00							
Tanks		5.59E-04		1.34E-02		8.66E-04		2.43E-03			
Loading Racks		1.05E-03		2.51E-02		1.63E-03		4.56E-03			
TOTAL	**1.87E+00**	**2.46E+02**	**1.86E+02**	**9.66E+01**	**2.18E+01**	**4.02E+01**	**1.38E+01**	**4.55E+02**	**2.10E+03**	**2.55E+03**	**1.51E+03**

PAH w/ – polyaromatic hydrocarbons with individual components.

Table 7 (cont.). HAPs Emissions – Project, Annual, lbs/year

	Naphtha-lene	Chloro-benzene	NH3	Cyclo-hexane	H2S	Methanol	PAHs-w/o	Propylene Oxide	1,3-Butadiene
Generator A-1									
Generator A-2									
Generator A-3									
Generator A-4									
Generator A-5									
Generator A-6									
Generator A-7									
Generator A-8									
Generator A-9									
Turbine	2.36E-01						3.99E-01	5.26E+00	7.80E-02
Heater, Stack 1									
Heater, Stack 2									
Air Stripper 1	8.01E+00	1.87E+00	1.28E+04						
Air Stripper 2	8.01E+00	1.87E+00	1.28E+04						
Air Stripper 3	8.01E+00	1.87E+00	1.28E+04						
New Wells				5.87E+01	1.58E+03				
Existing Fugitives				8.88E-01	2.39E+01				
Gas Plant				1.43E+00	3.84E+01				
Solvent Use						4.80E+00			
Tanks					8.26E+00				
Loading Racks					1.55E+01				
TOTAL	**2.43E+01**	**5.62E+00**	**3.83E+04**	**6.10E+01**	**1.67E+03**	**4.80E+00**	**3.99E-01**	**5.26E+00**	**7.80E-02**

PAH w/o – polyaromatic hydrocarbons without individual components.

5. *Analysis*

The 70-years (adult resident) exposure duration with the Derived (Adjusted) Method was used to determine cancer risk. The Derived (OEHHA) Method was used to determine the chronic hazard index. Coordinates are given in UTM NAD 83.

Inhalation and other RELs and cancer potency factors for each substance that are integral to the HARP v 1.3 software were used to evaluate potential cancer and non-cancer risks.

Dermal, mother's milk and soil injection pathways were enabled in addition to inhalation.

Facility Boundary Receptors have been spaced at 25 meters. Grid Receptors have been spaced at 50 meters. Sensitive receptors were obtained by studying the aerials of the area, the details are given in Table 8.

6. *Results*

The resulting health risk factors are below the respective significance thresholds: 10 in a million (1.00E-05) for cancer risk, and 1.00 for both chronic and acute HIs.

Table 8. Sensitive Receptors and Project Health Risks

Sensitive Receptor *	UTM E, m	UTM N, m	Cancer Risk, threshold = 1.00E-05	Chronic HI, threshold = 1.00E-00	Acute HI, threshold = 1.00E-00
Residence 1	**717452**	**3897482**	**3.94E-07**	**3.12E-02**	**7.29E-02**
Residence 2	717518	3897983	2.87E-07	2.12E-02	3.69E-02
Residence 3	717016	3897908	3.01E-07	2.19E-02	4.10E-02
Residence 4	**717064**	**3897548**	**7.01E-07**	**4.23E-02**	**6.57E-02**
Residence 5	**715958**	**3897651**	**8.00E-07**	**3.62E-02**	**4.84E-02**
Residence 6	715825	3897756	6.88E-07	3.12E-02	4.09E-02
Residence 7	713478	3895541	1.80E-07	9.97E-03	1.61E-02
Residence 8	715381	3892772	3.13E-07	1.31E-02	1.74E-02
Residence 9	717882	3893858	4.82E-07	1.83E-02	2.87E-02
Residence 10	717934	3893937	4.92E-07	1.86E-02	2.90E-02
Residence 11	718061	3893871	4.87E-07	1.85E-02	2.86E-02
Residence 12	718055	3894069	5.03E-07	1.89E-02	2.97E-02
Residence 13	717858	3896363	4.08E-07	2.97E-02	6.48E-02
School	715166	3891752	1.84E-07	1.05E-02	1.48E-02

* The highlighted receptors have the highest risks.

The health risk analysis results – cancer risk and hazard indices (HIs) isopleths – are plotted on the area maps, and can be seen on the Figures in Appendix A[1].

Proposed Project Point of Maximum Impact (PMI) offsite receptors are shown on the maps in Appendix A. These are also summarized in Table 9.

[1] The Isopleths do not seem to surround the emission sources because of the way the terrain interacts with the screening meteorology parameters.

The potentially affected sensitive receptors are identified on the maps. The resulting cancer and non-cancer risk factors are provided in Table 8; the receptors with the highest risk are highlighted in bold font.

Table 9. Point of Maximum Impact Offsite Receptors and Project Health Risks

Receptor with HARP grid No.*	UTM E, m	UTM N, m	Cancer Risk, threshold = 1.00E-05	Chronic HI, threshold = 1.00E-00	Acute HI, threshold = 1.00E-00
#599	715773	3896249	1.49E-06	7.81E-02	1.20E-01
#876	717073	3895449	2.06E-06	9.13E-02	2.32E-01
#683	717573	3896049	1.91E-06	6.22E-02	1.15E-01

* The grid point numbers are generated by HARP. Please see Appendix A Figures for the locations of the PMI grid points.

7. Reporting

Attached to this report are the following electronic files with HARP input and output:

- ISC workbook file (filename.ISC);
- ISC input file generated by HARP when ISC is run (filename.INP);
- ISC output file generated by HARP when ISC in run (filename.OUT);
- ISC binary output file; holds χ/Q for data for each hour (filename.BIN);
- List of error messages generated by ISC (filename.ERR);
- Sources receptor file; contains list of sources and receptors for the ISC run; generated by HARP when you set up ISC (filename.SRC);
- Point estimate risk values generated by HARP; this file is updated automatically each time you perform one of the point estimate risk analysis functions (filename.RSK);
- Average and maximum χ/Q values for each source-receptor combination; generated by ISC (filename.XOQ);
- Plot file generated by ISC (filename.PLT);
- Site-specific parameters used for all receptor risk modeling (filename.SIT);
- Map file used to overlay facility and receptors (filename.DEB).

APPENDIX A
FIGURES

THIS PAGE LEFT BLANK INTENTIONALLY

FIGURE A-1. Area Elevation Map

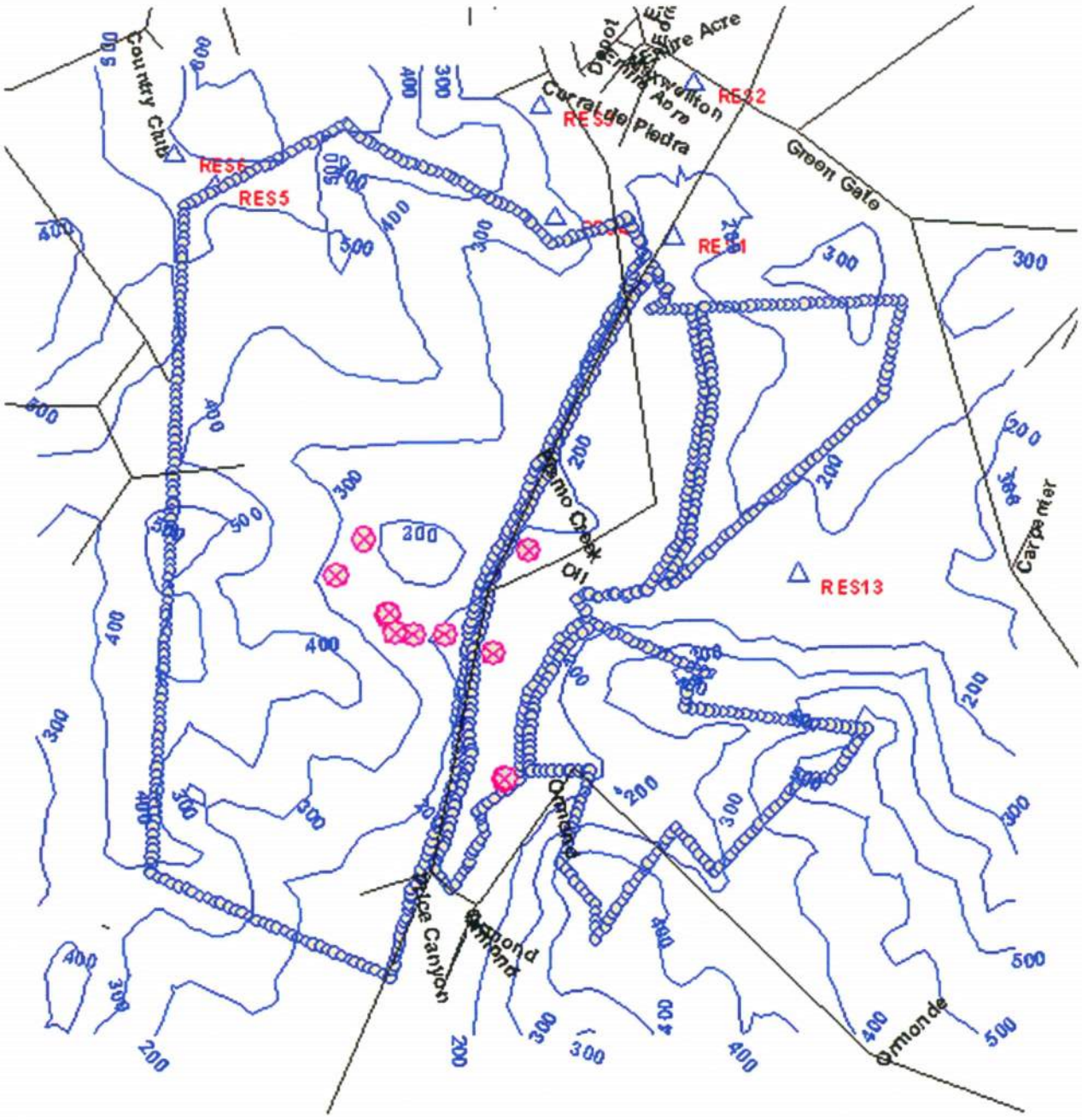


FIGURE A-2. Baseline Cancer Risk Isopleths (1 in a million)

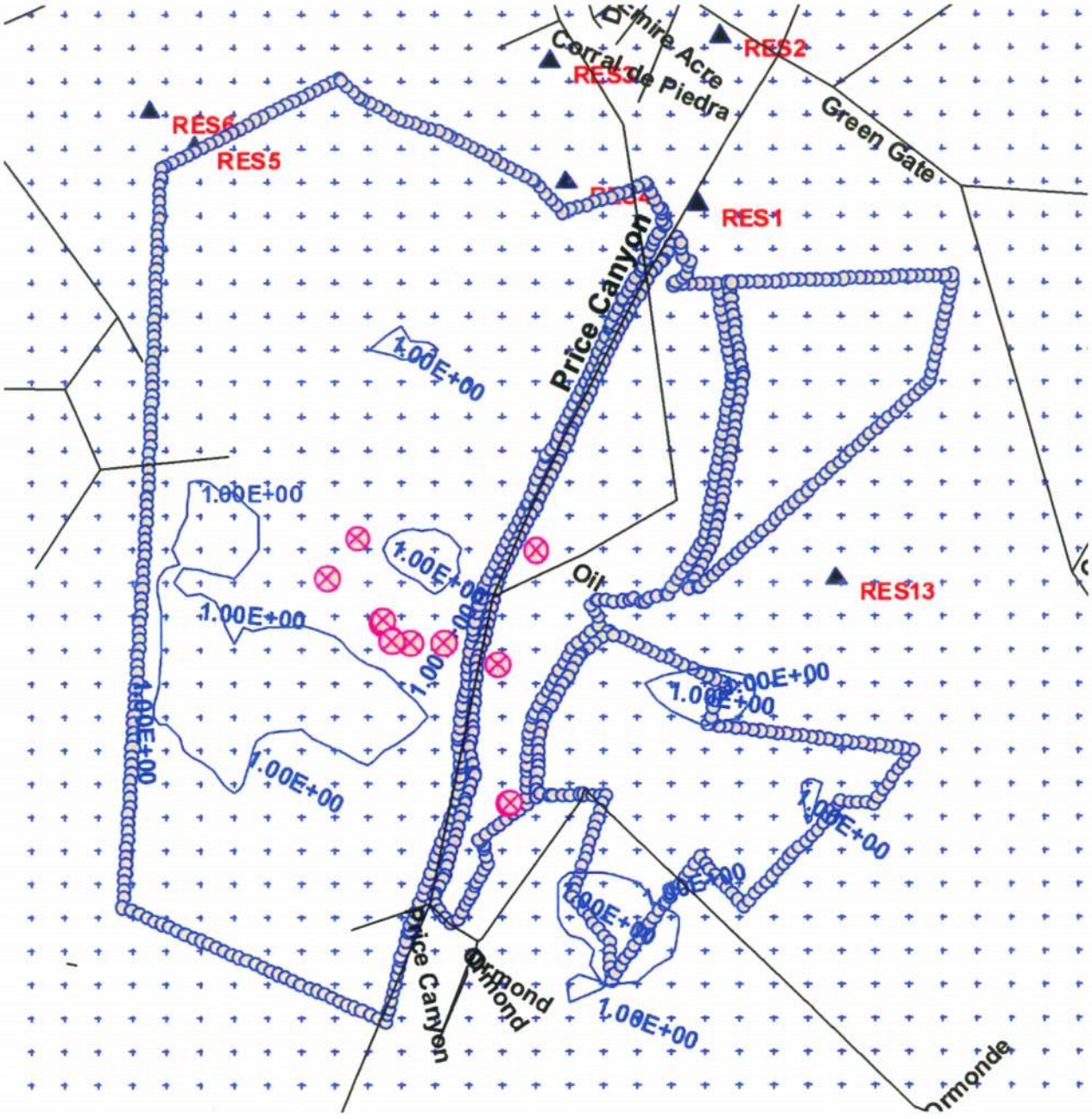


FIGURE A-3. Project Cancer Risk Isopleths (1 in a million)

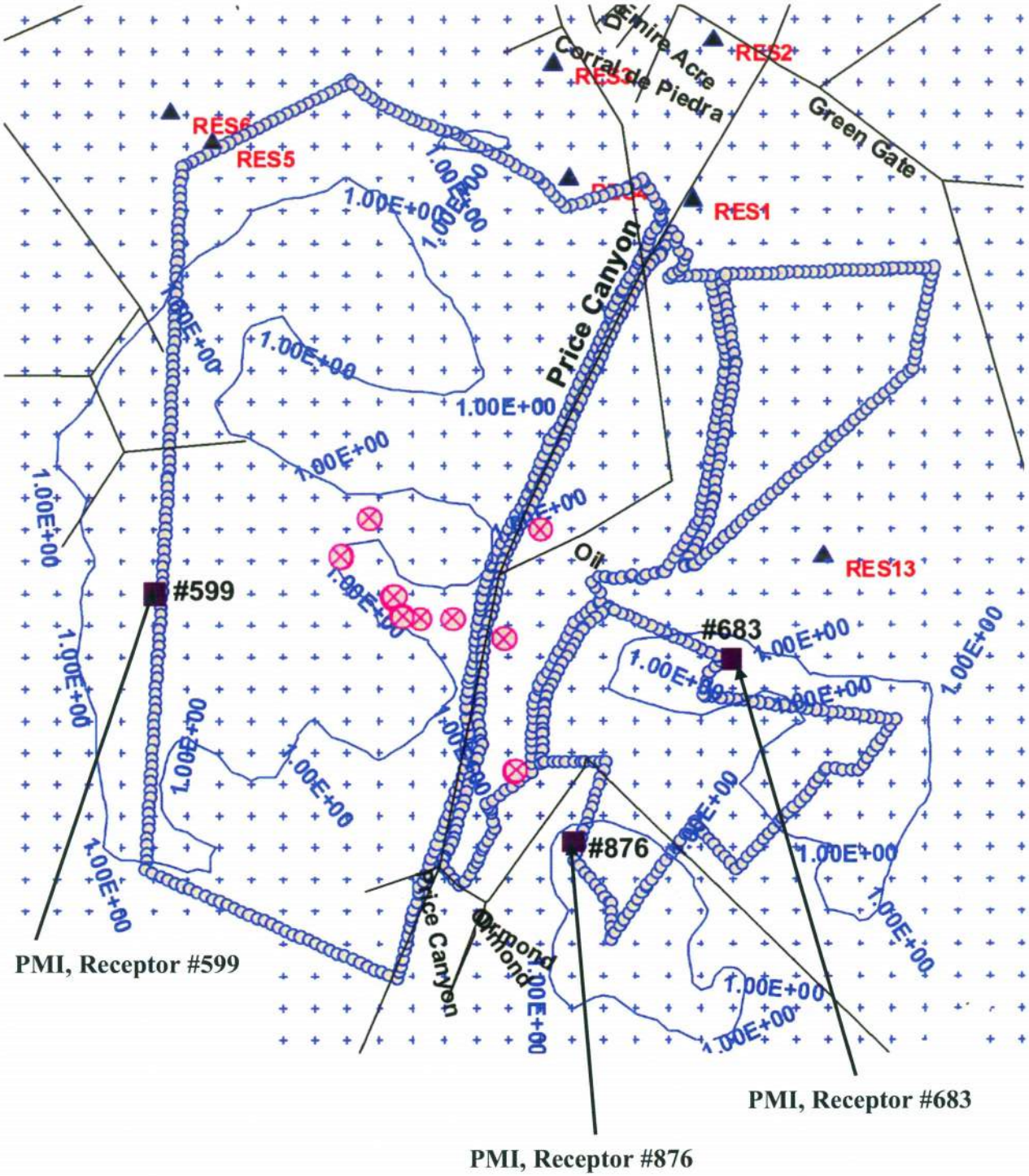


FIGURE A-4. Baseline Chronic Risk Isopleths (HI = 0.02)

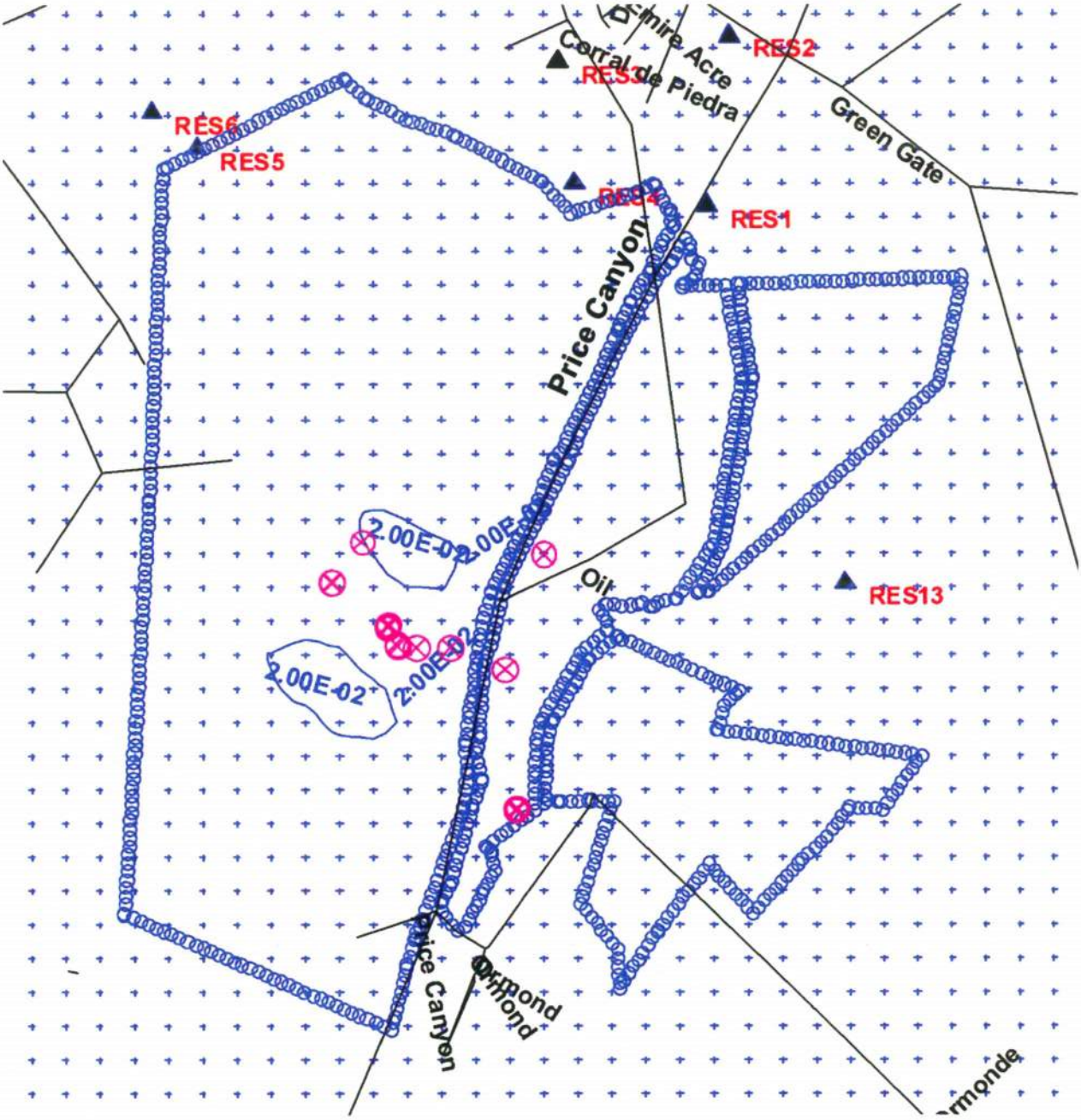


FIGURE A-5. Project Chronic Risk Isopleths (HI = 0.1)

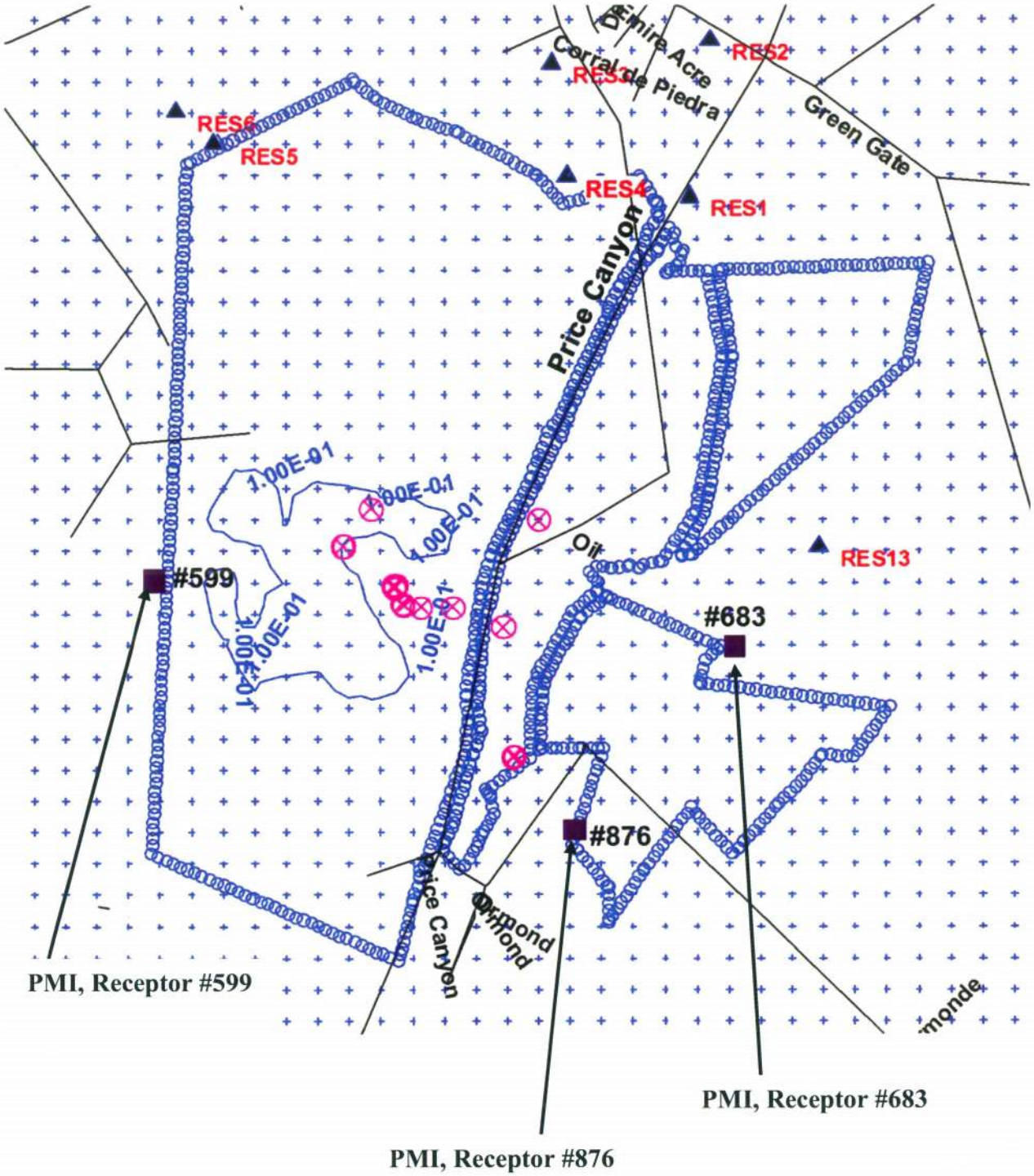


FIGURE A-6. Baseline Acute Isopleths (HI = 0.1)

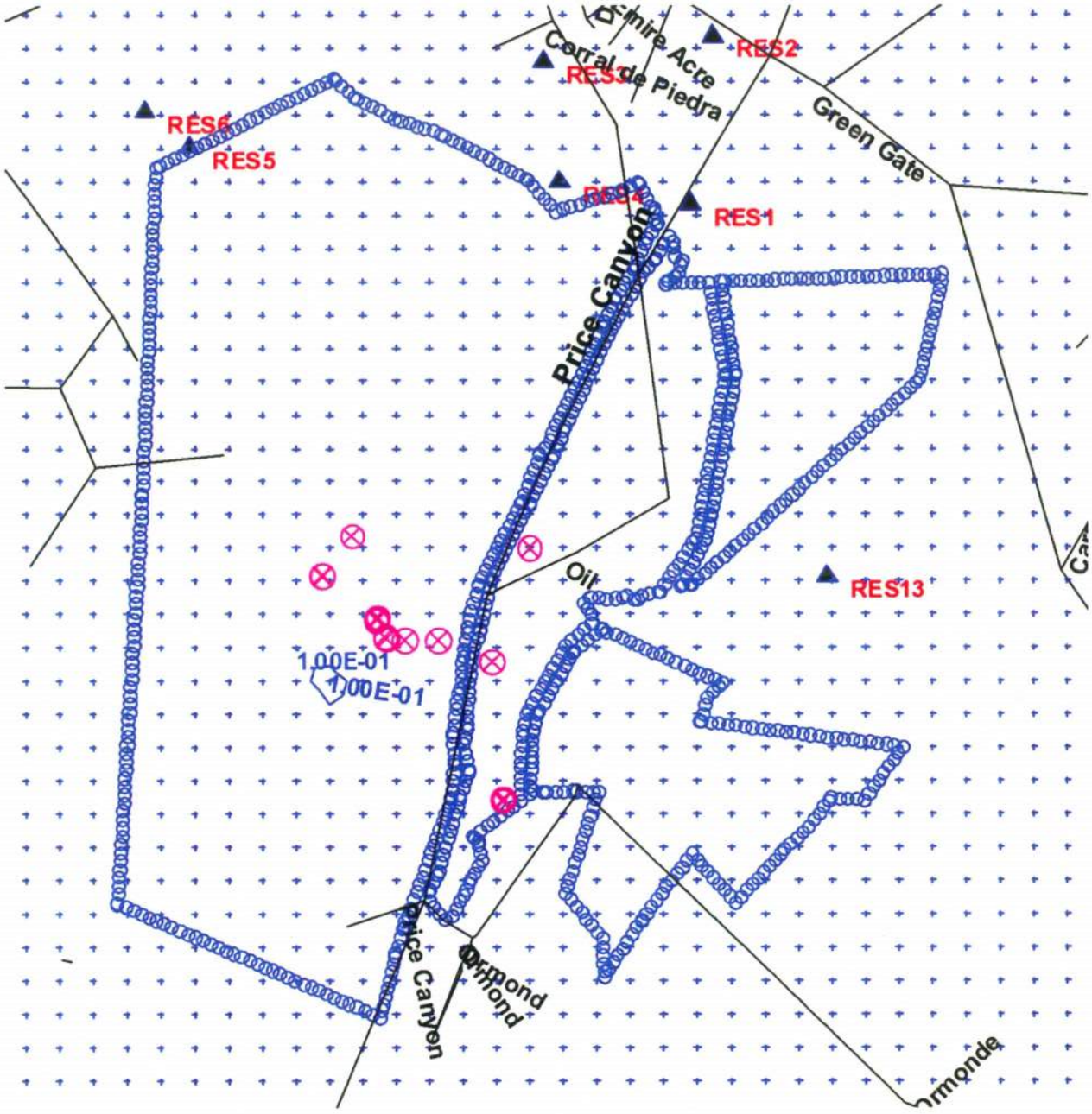


FIGURE A-7. Project Acute Isopleths (HI = 0.2)

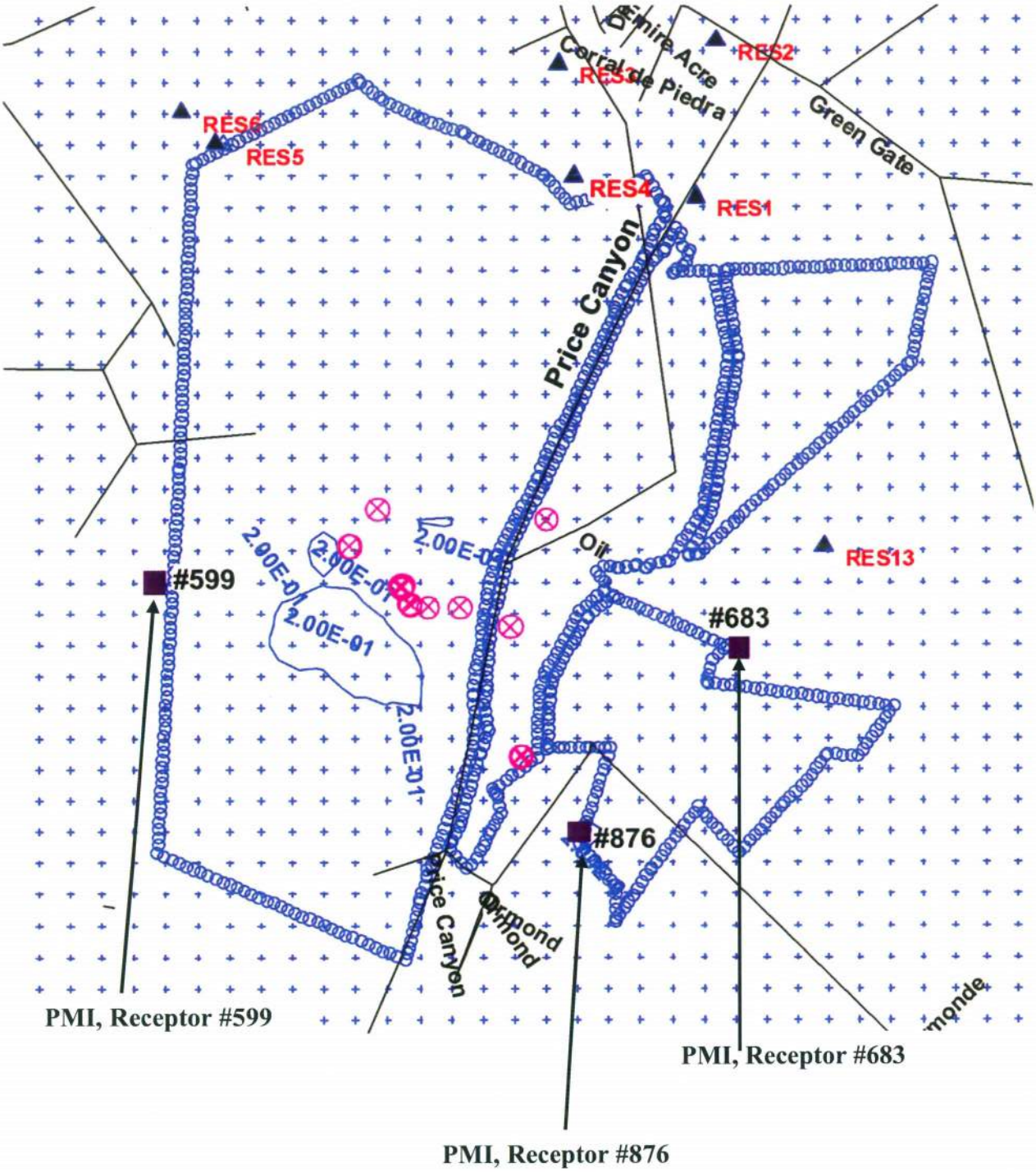


Table 3. Facility Equipment Emission Factors

EQUIPMENT		EMISSION FACTORS	
Steam Generators	**CAS**	**lb/MMBtu ***	**lb/MMscf ****
PAH with indiv components	1150	3.92E-07	0.0004
Xylenes	1210	1.93E-05	0.0197
Formaldehyde	50000	1.21E-05	0.0123
Benzene	71432	5.69E-06	0.0058
Acetaldehyde	75070	3.04E-06	0.0031
Ethyl Benzene	100414	6.76E-06	0.0069
Acrolein	107028	2.65E-06	0.0027
Toluene	108883	2.60E-05	0.0265
Hexane	110543	4.51E-06	0.0046
Propylene	115071	5.20E-04	0.5300
Turbine/Cogen ***	**CAS**	**lb/MMBtu*****	
PAH w/o indiv components	1151	2.20E-06	
Xylenes	1210	6.40E-05	
Formaldehyde	50000	7.10E-04	
Benzene	71432	1.20E-05	
Acetaldehyde	75070	4.00E-05	
Propylene Oxide	75569	2.90E-05	
Naphthalene	91203	1.30E-06	
Ethylbenzene	100414	3.20E-05	
1,3-Butadiene	106990	4.30E-07	
Acrolein	107028	6.40E-06	
Toluene	108883	1.30E-04	
Heater Treater*	**CAS**	**lb/MMBtu***	**lb/MMscf****
PAH w indiv components	1150	3.92E-07	0.0004
Xylenes	1210	2.67E-05	0.0272
Formaldehyde	50000	1.67E-05	0.0170
Benzene	71432	7.84E-06	0.0080
Acetaldehyde	75070	4.22E-06	0.0043
Ethyl Benzene	100414	9.31E-06	0.0095
Acrolein	107028	2.65E-06	0.0027
Toluene	108883	3.59E-05	0.0366
Hexane	110543	6.18E-06	0.0063
Propylene	115071	7.17E-04	0.7310
Fugitives and Wells (Including New Wells)	**CAS**	**VOC Weight Fraction**	
Xylenes	1210	0.002	na
Benzene	71432	0.001	na
Toluene	108883	0.005	na
Hexane	110543	0.034	na
Cyclohexane	110827	0.001	na
Propylene	115071	0.001	na
H_2S	7783064	0.027	na
Air Strippers of the Water Treatment Facility	**CAS**	**Treated Water, µg/L ******	
Xylenes	1210	3.00	na

THIS PAGE LEFT BLANK INTENTIONALLY

APPENDIX B

LABORATORY REPORTS

1. OIL API GRAVITY and TVP
2. STORAGE TANK HEADSPACE VOCs
3. GAS PLANT PROCESSED GAS
4. FUGITIVE EMISSIONS
5. GAS PLANT INLET GAS

THIS PAGE LEFT BLANK INTENTIONALLY

OILFIELD ENVIRONMENTAL AND COMPLIANCE

Client: Plains Exploration & Production	SAMPLE ID: 07-2871-1
1821 Price Canyon Road	Date Sampled: 12/06/07
San Luis Obispo, CA 93401	Date Analyzed: 12/07/07
Attn: Paul Delorenzo	Date Received: 12/06/07
Project: A.G. HRA	
Site: Price Canyon	Lab Contact: J. Carstens

Report Of Analytical Results

OEC ID	Client ID	Constituent	Results	Units	Method	PQL
07-2871-1	TK 10436	API Gravity	14.1	API	ASTM D-287	0.1
		Vapor Pressure @ 165°F	0.432	psi	HOST[1]	0.005

[1]Test Method for Vapor Pressure of Reactive Organic Compounds in Heavy Crude Oil Using Gas Chromatography, Revised Draft, calculation from page 6. David Littlejohn and Donald Lucas, Lawrence Berkeley National Laboratory, March 1, 2000. Results listed as ND would have been reported if present at or above the listed PQL(Practical Quantitation Limit).

Julius G. Carstens, Lab Director

OILFIELD ENVIRONMENTAL AND COMPLIANCE, INC

Client:	Plains Exploration & Production	SAMPLE ID:	07-2871-2
	1821 Price Canyon Road	Date Received:	12/6/07
	San Luis Obispo, CA 93401	Date Sampled:	12/6/07
Attn:	Paul Delorenzo	Date Analyzed:	12/7/07
Project:	A.G. HRA		
Client ID:	Stock Tank Headspace		
Matrix	Gas	Lab Contact:	J. Carstens

Report Of Analytical Results
TO-14 (VOLATILE ORGANIC COMPOUNDS)

Constituents	Analysis Results	PQL (ppbv)
1,1,1,2-Tetrachloroethane	ND	125
1,1,1-Trichloroethane	ND	125
1,1,2,2-Tetrachloroethane	ND	125
1,1,2-Trichloroethane	ND	125
1,1-Dichloroethane	ND	125
1,1-Dichloroethene	ND	125
1,1-Dichloropropene	ND	125
1,2,3-Trichlorobenzene	ND	125
1,2,3-Trichloropropane	ND	125
1,2,4-Trichlorobenzene	ND	125
1,2,4-Trimethylbenzene	ND	125
1,2-Dibromo-3-Chloropropane	ND	125
1,2-Dibromoethane (EDB)	ND	125
1,2-Dichlorobenzene	ND	125
1,2-Dichloroethane (EDC)	ND	125
1,2-Dichloropropane	ND	125
1,3,5-Trimethylbenzene	ND	125
1,3-Dichlorobenzene	ND	125
1,4-Dichlorobenzene	ND	125
2,2-Dichloropropane	ND	125
2-Chlorotoluene	ND	125
4-Chlorotoluene	ND	125
4-Isopropyltoluene	ND	125
Benzene	6500	125
Bromobenzene	ND	125
Bromodichloromethane	ND	125
Bromoform	ND	125
Bromomethane	ND	125

Test Method: EPA TO-14
PQL = Practical Quantitation Limit
Results listed as ND would have been reported if present at or above the listed PQL.
Raised PQL's due to dilution

307 ROEMER WAY I SUITE 300 I SANTA MARIA I CA 93454 I (805) 922-4772 I FAX (805) 925-3376

OILFIELD ENVIRONMENTAL AND COMPLIANCE, INC.

Client:	Plains Exploration & Production	SAMPLE ID:	07-2871-2
	1821 Price Canyon Road	Date Received:	12/6/07
	San Luis Obispo, CA 93401	Date Sampled:	12/6/07
Attn:	Paul Delorenzo	Date Analyzed:	12/7/07
Project:	A.G. HRA		
Client ID:	Stock Tank Headspace		
Matrix	Gas	Lab Contact:	J. Carstens

Report Of Analytical Results
TO-14 (VOLATILE ORGANIC COMPOUNDS)

Constituents	Analysis Results	PQL (ppbv)
Carbon Tetrachloride	ND	125
Chlorobenzene	ND	125
Chlorodifluoromethane	ND	125
Chloroethane	ND	250
Chloroform	ND	125
Chloromethane	ND	500
cis-1,2-Dichloroethene	ND	125
cis-1,3-Dichloropropene	ND	125
Dibromochloromethane	ND	125
Dibromomethane	ND	125
Dichlorodifluoromethane	ND	500
Ethylbenzene	310	125
Isopropylbenzene	ND	125
Methylene Chloride	ND	250
Styrene	ND	125
Napthalene	ND	125
n-Butylbenzene	ND	125
n-Propylbenzene	ND	125
sec-Butylbenzene	ND	125
tert-Butylbenzene	ND	125
Tetrachloroethene (PCE)	ND	125
Toluene	1000	125
trans-1,2-Dichloroethene	ND	125
trans-1,3-Dichloropropene	ND	125
Trichloroethene (TCE)	ND	125
Trichlorofluoromethane	ND	125

Test Method: EPA TO-14
PQL = Practical Quantitation Limit
Results listed as ND would have been reported if present at or above the listed PQL.
Raised PQL's due to dilution

307 ROEMER WAY I SUITE 300 I SANTA MARIA I CA 93454 I (805) 922-4772 I FAX (805) 925-3376

OILFIELD ENVIRONMENTAL AND COMPLIANCE, INC

Client:	Plains Exploration & Production	SAMPLE ID:	07-2871-2
	1821 Price Canyon Road	Date Received:	12/6/07
	San Luis Obispo, CA 93401	Date Sampled:	12/6/07
Attn:	Paul Delorenzo	Date Analyzed:	12/7/07
Project:	A.G. HRA		
Client ID:	Stock Tank Headspace		
Matrix	Gas	Lab Contact:	J. Carstens

Report Of Analytical Results
TO-14 (VOLATILE ORGANIC COMPOUNDS)

Constituents	Analysis Results	PQL (ppbv)
Vinyl Chloride	ND	125
Xylenes (m,p)	200	125
Xylene (o)	ND	125
Percent Surrogate Recovery (Dibromofluoromethane)		93
Percent Surrogate Recovery (Toluene-d8)		125
Percent Surrogate Recovery (4-Bromofluorobenzene)		111

Test Method: EPA TO-14
PQL = Practical Quantitation Limit
Results listed as ND would have been reported if present at or above the listed PQL.
Raised PQL's due to dilution

Julius G. Carstens, Lab Director

307 ROEMER WAY I SUITE 300 I SANTA MARIA I CA 93454 I (805) 922-4772 I FAX (805) 925-3376

OILFIELD ENVIRONMENTAL AND COMPLIANCE, INC.

Client:	Plains Exploration & Production	SAMPLE ID:	06-740-1
	1821 Price Canyon Rd	Date Sampled:	03/31/06 @ 1100
	San Luis Obispo, CA 93401	Date Analyzed:	04/01/06 @ 0223
Attn:	Paul Delorenzo	Lab Contact:	J. Carstens
Facility:	Price Canyon Facility	Meter:	-
Description:	Fuel Gas Outlet	Pressure:	260 psig
Note:	1st Quarter Gas Samples	Temp:	60 °F

Gas Analysis by Chromatography - ASTM D 1945/3588

Component	Mole %	Weight %	G/MCF
Oxygen	0.00	0.00	-
Nitrogen	1.72	1.52	-
Carbon Dioxide	54.39	75.51	-
Hydrogen Sulfide	0.00	0.00	-
Methane	42.68	21.60	-
Ethane	0.90	0.85	0.229
Propane	0.14	0.19	0.038
i-Butane	0.15	0.27	0.049
n-Butane	0.03	0.05	0.008
neo-Pentane	0.00	0.00	0.000
i-Pentane	0.00	0.00	0.000
n-Pentane	0.00	0.00	0.000
2,2-Dimethylbutane	0.00	0.00	0.000
2,3-Dimethylbutane	0.00	0.00	0.000
2-Methylpentane	0.00	0.00	0.000
3-Methylpentane	0.00	0.00	0.000
n-Hexane	0.00	0.00	0.000
Hexanes Plus	0.00	0.00	0.000
Totals	100.0	100.0	0.324

Specific Gravity, Calculated	1.0944 air = 1		
Compressibility (Z) Factor	0.9962		
		CHONS	Weight %
		Carbon	37.90
Gross Calorific Value		Hydrogen	5.69
BTU/ft^3 dry	456.2	Oxygen	54.89
BTU/ft^3 wet	448.2	Nitrogen	1.52
		Sulfur	0.00
Net Calorific Value			
BTU/ft^3 dry	411.2	EPA 'F' Factor (60°F, 1ATM)	9724.9
BTU/ft^3 wet	404.0	SDCF/MMBTU	

Hydrogen Sulfide = ND ppm

ND: None Detected NA: Not Analyzed G/MCF: Gallons/Thousand Cubic Feet

OILFIELD ENVIRONMENTAL AND COMPLIANCE, INC

Client:	Plains Exploration & Production	SAMPLE ID:	06-1442-1
	1821 Price Canyon Rd.	Date Sampled:	06/26/06
	San Luis Obispo CA 93401	Date Analyzed:	06/26/06 @ 1116
Attn:	Mr Paul Delorenzo	Lab Contact:	J. Carstens
Facility:	Price Canyon	Meter:	-
Description:	Fuel Gas Outlet	Pressure:	255 psig
Note:	2nd Quarter Gas Samples	Temp:	- °F

Gas Analysis by Chromatography - ASTM D 1945/3588

Component	Mole %	Weight %	G/MCF
Oxygen	0 00	0 00	-
Nitrogen	1.49	1.27	-
Carbon Dioxide	58 30	78 11	-
Hydrogen Sulfide	0.00	0.00	-
Methane	38.84	18.97	-
Ethane	0.89	0.81	0.227
Propane	0.15	0.20	0.040
i-Butane	0.18	0.32	0.059
n-Butane	0.03	0.05	0.010
neo-Pentane	0.06	0.13	0.022
i-Pentane	0.06	0.13	0.022
n-Pentane	0.00	0.00	0.000
2,2-Dimethylbutane	0 00	0 00	0 000
2,3-Dimethylbutane	0.00	0.00	0.000
2-Methylpentane	0.00	0.00	0.000
3-Methylpentane	0.00	0.00	0.000
n-Hexane	0.00	0.00	0.000
Hexanes Plus	0 00	0 00	0 000
Totals	100.0	100.0	0.379

Specific Gravity, Calculated	1.1342	air = 1	**B/MCF =**	**0.009**
Compressibility (Z) Factor	0.9960		CHONS	Weight %
			Carbon	36.87
Gross Calorific Value			Hydrogen	5.08
BTU/ft^3 dry	423.4		Oxygen	56.79
BTU/ft^3 wet	416.0		Nitrogen	1.27
			Sulfur	0.00
Net Calorific Value				
BTU/ft^3 dry	381.8		EPA 'F' Factor (60°F, 1ATM)	9912.5
BTU/ft^3 wet	375.2		SDCF/MMBTU	

Hydrogen Sulfide = ND ppm

ND: None Detected NA: Not Analyzed G/MCF: Gallons/Thousand Cubic Feet

307 ROEMER WAY | SUITE 300 | SANTA MARIA | CA 93454 | (805) 922-4772 | FAX (805) 925-3376

JUL-05-2006 08:49 From:OEC INC 8059253376 To:8055478979 P.2/7

OILFIELD ENVIRONMENTAL AND COMPLIANCE, INC.

Client:	Plains Exploration & Production	SAMPLE ID:	06-1949-1
	1821 Price Canyon Rd	Date Sampled:	08/25/06 @ 1205
	San Luis Obispo, CA 93401	Date Analyzed:	08/25/06 @ 1340
Attn:	Paul Delorenzo	Lab Contact:	J. Carstens
Facility:	Price Canyon Facility	Meter:	-
Description:	Fuel Gas Outlet	Pressure:	262 psig
Note:	3rd Quarter Gas Samples	Temp:	78 °F

Gas Analysis by Chromatography - ASTM D 1945/3588

Component	Mole %	Weight %	G/MCF
Oxygen	0.00	0.00	-
Nitrogen	1.31	1.08	-
Carbon Dioxide	62.36	80.94	-
Hydrogen Sulfide	0.00	0.00	-
Methane	35.19	16.65	-
Ethane	0.72	0.64	0.183
Propane	0.14	0.18	0.038
i-Butane	0.18	0.31	0.059
n-Butane	0.06	0.10	0.018
neo-Pentane	0.00	0.00	0.000
i-Pentane	0.04	0.09	0.016
n-Pentane	0.00	0.00	0.000
2,2-Dimethylbutane	0.00	0.00	0.000
2,3-Dimethylbutane	0.00	0.00	0.000
2-Methylpentane	0.00	0.00	0.000
3-Methylpentane	0.00	0.00	0.000
n-Hexane	0.00	0.00	0.000
Hexanes Plus	0.00	0.00	0.000
Totals	100.0	100.0	0.314

Specific Gravity, Calculated	1.1707	air = 1		
Compressibility (Z) Factor	0.9959		CHONS	Weight %
			Carbon	35.64
Gross Calorific Value			Hydrogen	4.43
BTU/ft^3 dry	381.1		Oxygen	58.85
BTU/ft^3 wet	374.4		Nitrogen	1.08
			Sulfur	0.00
Net Calorific Value				
BTU/ft^3 dry	343.6		EPA 'F' Factor (60°F, 1ATM)	10169.8
BTU/ft^3 wet	337.6		SDCF/MMBTU	

Hydrogen Sulfide = 2.0 ppm

ND: None Detected NA: Not Analyzed G/MCF: Gallons/Thousand Cubic Feet

OILFIELD ENVIRONMENTAL AND COMPLIANCE, INC.

Client:	Plains Exploration & Production	SAMPLE ID:	06-2757-1
	1821 Price Canyon Rd	Date Sampled:	11/21/06 @ 0938
	San Luis Obispo, CA 93401	Date Analyzed:	11/21/06 @ 1150
Attn:	Paul Delorenzo	Lab Contact:	J. Carstens
Facility:	Price Canyon Facility	Meter:	-
Description:	Fuel Gas Outlet	Pressure:	255 psig
Note:	4th Quarter Gas Samples	Temp:	56 °F

Gas Analysis by Chromatography - ASTM D 1945/3588

Component	Mole %	Weight %	G/MCF
Oxygen	0.00	0.00	-
Nitrogen	1.09	0.85	-
Carbon Dioxide	69.61	85.08	-
Hydrogen Sulfide	0.00	0.00	-
Methane	27.99	12.47	-
Ethane	0.67	0.56	0.171
Propane	0.17	0.21	0.047
i-Butane	0.22	0.36	0.072
n-Butane	0.09	0.14	0.028
neo-Pentane	0.00	0.00	0.000
i-Pentane	0.16	0.33	0.060
n-Pentane	0.00	0.00	0.000
2,2-Dimethylbutane	0.00	0.00	0.000
2,3-Dimethylbutane	0.00	0.00	0.000
2-Methylpentane	0.00	0.00	0.000
3-Methylpentane	0.00	0.00	0.000
n-Hexane	0.00	0.00	0.000
Hexanes Plus	0.00	0.00	0.000
Totals	100.0	100.0	0.378

Specific Gravity, Calculated	1.2431	air = 1		
Compressibility (Z) Factor	0.9955		CHONS	Weight %
			Carbon	33.88
Gross Calorific Value			Hydrogen	3.43
BTU/ft^3 dry	315.5		Oxygen	61.85
BTU/ft^3 wet	310.1		Nitrogen	0.85
			Sulfur	0.00
Net Calorific Value				
BTU/ft^3 dry	284.8		EPA 'F' Factor (60°F, 1ATM)	10749.4
BTU/ft^3 wet	279.8		SDCF/MMBTU	

Hydrogen Sulfide = 1.1 ppm

ND: None Detected NA: Not Analyzed G/MCF: Gallons/Thousand Cubic Feet

OILFIELD ENVIRONMENTAL AND COMPLIANCE, INC.

Client:	Plains Exploration & Production	SAMPLE ID:	06-740-2
	1821 Price Canyon Rd	Date Sampled:	03/31/06 @ 1105
	San Luis Obispo, CA 93401	Date Analyzed:	04/01/06 @ 0249
Attn:	Paul Delorenzo	Lab Contact:	J. Carstens
Facility:	Price Canyon Facility	Meter:	-
Description:	Inlet to Gas Plant	Pressure:	270 psig
Note:	1st Quarter Gas Samples	Temp:	68 °F

Gas Analysis by Chromatography - ASTM D 1945/3588

Component	Mole %	Weight %	G/MCF
Oxygen	0.00	0.00	-
Nitrogen	1.04	0.77	-
Carbon Dioxide	73.05	84.64	-
Hydrogen Sulfide	1.79	1.61	-
Methane	21.77	9.20	-
Ethane	0.55	0.44	0.141
Propane	0.14	0.17	0.040
Butane	0.25	0.38	0.082
n-Butane	0.13	0.20	0.042
neo-Pentane	0.02	0.03	0.007
i-Pentane	0.58	1.11	0.213
n-Pentane	0.13	0.26	0.049
2,2-Dimethylbutane	0.01	0.02	0.004
2,3-Dimethylbutane	0.37	0.84	0.135
2-Methylpentane	0.00	0.00	0.000
3-Methylpentane	0.00	0.00	0.000
n-Hexane	0.00	0.00	0.000
Hexanes Plus	0.14	0.32	0.060
Totals	100.0	100.0	0.770

Specific Gravity, Calculated	1.3114 air = 1		
Compressibility (Z) Factor	0.9949		
Gross Calorific Value		CHONS	Weight %
BTU/ft^3 dry	311.5	Carbon	33.03
BTU/ft^3 wet	306.1	Hydrogen	3.06
Net Calorific Value		Oxygen	61.54
BTU/ft^3 dry	282.5	Nitrogen	0.77
BTU/ft^3 wet	277.6	Sulfur	1.61
		EPA 'F' Factor (60°F, 1ATM) SDCF/MMBTU	10548.6

Hydrogen Sulfide = 18,000 ppm

ND: None Detected NA: Not Analyzed G/MCF: Gallons/Thousand Cubic Feet

307 ROEMER WAY | SUITE 300 | SANTA MARIA | CA 93454 | (805) 922-4772 | FAX (805) 925-3376

OILFIELD ENVIRONMENTAL AND COMPLIANCE, INC.

Client:	Plains Exploration & Production	SAMPLE ID:	06-1442-2
	1821 Price Canyon Rd.	Date Sampled:	06/26/06
	San Luis Obispo CA 93401	Date Analyzed:	06/26/06 @ 1225
Attn:	Mr. Paul Delorenzo	Lab Contact:	J. Carstens
Facility.	Price Canyon	Meter:	-
Description:	Inlet to Gas Plant	Pressure:	- psig
Note:	2nd Quarter Gas Samples	Temp:	- °F

Gas Analysis by Chromatography - ASTM D 1945/3588

Component	Mole %	Weight %	G/MCF
Oxygen	0.00	0.00	-
Nitrogen	0.81	0.60	-
Carbon Dioxide	71.57	82.69	-
Hydrogen Sulfide	3.14	2.81	-
Methane	21.65	9.12	-
Ethane	0.56	0.44	0.142
Propane	0.13	0.15	0.035
i-Butane	0.28	0.42	0.090
n-Butane	0.15	0.23	0.047
neo-Pentane	0.00	0.00	0.000
i-Pentane	0.75	1.41	0.273
n-Pentane	0.17	0.33	0.063
2,2-Dimethylbutane	0.01	0.03	0.005
2,3-Dimethylbutane	0.56	1.28	0.204
2-Methylpentane	0.00	0.00	0.000
3-Methylpentane	0.00	0.00	0.000
n-Hexane	0.01	0.03	0.006
Hexanes Plus	0.20	0.46	0.085
Totals	100.0	100.0	0.950

Specific Gravity, Calculated	1.3151	air = 1	**B/MCF =**	**0.023**
Compressibility (Z) Factor	0.9947		CHONS	Weight %
			Carbon	33.20
Gross Calorific Value			Hydrogen	3.27
BTU/ft^3 dry	340.1		Oxygen	60.12
BTU/ft^3 wet	334.2		Nitrogen	0.60
			Sulfur	2.81
Net Calorific Value				
BTU/ft^3 dry	309.0		EPA 'F' Factor (60°F, 1ATM)	10093.0
BTU/ft^3 wet	303.6		SDCF/MMBTU	

Hydrogen Sulfide = 31600 ppm

ND: None Detected NA: Not Analyzed G/MCF: Gallons/Thousand Cubic Feet

307 ROEMER WAY | SUITE 300 | SANTA MARIA | CA 93454 | (805) 922-4772 | FAX (805) 925-3376

JUL-05-2006 08:49 From:OEC INC 8059253376 To:8055478979 P.4/7

OILFIELD ENVIRONMENTAL AND COMPLIANCE, INC.

Client:	Plains Exploration & Production	SAMPLE ID:	06-1949-2
	1821 Price Canyon Rd	Date Sampled:	08/25/06 @ 1200
	San Luis Obispo, CA 93401	Date Analyzed:	08/25/06 @ 1301
Attn:	Paul Delorenzo	Lab Contact:	J. Carstens
Facility:	Price Canyon Facility	Meter:	-
Description:	Inlet to Gas Plant	Pressure:	267 psig
Note:	3rd Quarter Gas Samples	Temp:	92 °F

Gas Analysis by Chromatography - ASTM D 1945/3588

Component	Mole %	Weight %	G/MCF
Oxygen	0.39	0.32	-
Nitrogen	0.64	0.46	-
Carbon Dioxide	76.51	86.38	-
Hydrogen Sulfide	2.12	1.85	-
Methane	18.23	7.50	-
Ethane	0.41	0.31	0.104
Propane	0.11	0.12	0.030
...utane	0.21	0.31	0.068
...butane	0.11	0.16	0.035
neo-Pentane	0.01	0.02	0.003
i-Pentane	0.58	1.06	0.210
n-Pentane	0.13	0.24	0.048
2,2-Dimethylbutane	0.00	0.00	0.000
2,3-Dimethylbutane	0.40	0.89	0.147
2-Methylpentane	0.00	0.00	0.000
3-Methylpentane	0.00	0.00	0.000
n-Hexane	0.01	0.02	0.004
Hexanes Plus	0.14	0.32	0.060
Totals	100.0	100.0	0.709

Specific Gravity, Calculated	1.3458 air = 1		
Compressibility (Z) Factor	0.9947		
		CHONS	Weight %
		Carbon	31.97
Gross Calorific Value		Hydrogen	2.59
BTU/ft^3 dry	273.0	Oxygen	63.12
BTU/ft^3 wet	268.3	Nitrogen	0.46
		Sulfur	1.85
Net Calorific Value			
BTU/ft^3 dry	247.9	EPA 'F' Factor (60°F, 1ATM)	10891.9
BTU/ft^3 wet	243.6	SDCF/MMBTU	

...drogen Sulfide = 26,000 ppm

ND: None Detected NA: Not Analyzed G/MCF: Gallons/Thousand Cubic Feet

OILFIELD ENVIRONMENTAL AND COMPLIANCE, INC.

Client:	Plains Exploration & Production	SAMPLE ID:	06-2757-2
	1821 Price Canyon Rd	Date Sampled:	11/21/06 @ 0945
	San Luis Obispo, CA 93401	Date Analyzed:	11/21/06 @ 1220
Attn:	Paul Delorenzo	Lab Contact:	J. Carstens
Facility:	Price Canyon Facility	Meter:	-
Description:	Inlet Gas to Gas Plant	Pressure:	262 psig
Note:	4th Quarter Gas Samples	Temp:	58 °F

Gas Analysis by Chromatography - ASTM D 1945/3588

Component	Mole %	Weight %	G/MCF
Oxygen	0.00	0.00	-
Nitrogen	0.63	0.45	-
Carbon Dioxide	77.40	86.19	-
Hydrogen Sulfide	3.88	3.34	-
Methane	15.88	6.45	-
Ethane	0.41	0.31	0.104
Propane	0.14	0.15	0.037
i-Butane	0.24	0.35	0.078
n-Butane	0.12	0.18	0.038
neo-Pentane	0.02	0.04	0.008
i-Pentane	0.63	1.15	0.230
n-Pentane	0.15	0.27	0.054
2,2-Dimethylbutane	0.02	0.03	0.005
2,3-Dimethylbutane	0.35	0.77	0.128
2-Methylpentane	0.00	0.00	0.000
3-Methylpentane	0.00	0.00	0.000
n-Hexane	0.01	0.02	0.005
Hexanes Plus	0.13	0.29	0.055
Totals	100.0	100.0	0.742

Specific Gravity, Calculated	1.3645 air = 1		
Compressibility (Z) Factor	0.9945	CHONS	Weight %
		Carbon	31.12
Gross Calorific Value		Hydrogen	2.43
BTU/ft^3 dry	263.6	Oxygen	62.66
BTU/ft^3 wet	259.1	Nitrogen	0.45
		Sulfur	3.34
Net Calorific Value			
BTU/ft^3 dry	239.7	EPA 'F' Factor (60°F, 1ATM)	10648.5
BTU/ft^3 wet	235.5	SDCF/MMBTU	

Hydrogen Sulfide = 40,000 ppm

ND: None Detected NA: Not Analyzed G/MCF: Gallons/Thousand Cubic Feet

APPENDIX C

TANKS AND LOADING EMISSIONS CALCULATIONS

THIS PAGE LEFT BLANK INTENTIONALLY

BASELINE - Fixed Roof Tank Calculations

These equations and constants are consistent with the 09/97 version of AP-42. revised: 7/27/99			Company: Plains Exploration					Facility No. 43		
	Tank No.		10401	10435	10436	10397	10398	10399	10433	10434
	Product		crude	crude	crude	crude	crude	crude	crude	crude
standing loss										
vapor space volume										
tank roof height (ft)	Hr		2	2	2	2	2	2	2	2
tank shell height (ft)	Hs		16	16	16	16	16	16	16	16
average liquid height (ft)	Hl	(a)	8	8	8	8	8	8	8	8
tank diameter (feet)	D		21.5	29.7	29.7	29.7	29.7	29.7	21.5	21.5
vapor space outage (ft)	***Hvo***		8.67	8.67	8.67	8.67	8.67	8.67	8.67	8.67
Hvo=Hs-Hl+(Hr/3) (E1-4, 6), cone roof										
See AP-42 for dome roof tank calcs.										
vapor space volume (cf)	***Vv***		3,146.4	6,004.2	6,004.2	6,004.2	6,004.2	6,004.2	3,146.4	3,146.4
Vv=(3.14/4)D^2(Hvo) (E1-3)										
vapor density										
average ambient temp, R, adjusted to 623	Tavg	(b)	623	623	623	623	623	623	623	623
shell solar absorbancy	as	(c)	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
liquid bulk temp (R)	***Tb***		625.24	625.24	625.24	625.24	625.24	625.24	625.24	625.24
Tb=Tavg+6as-1 (E1-15)										
If the Tbulk is known, adjust Tavg so that Tb = Tbulk.	Tbulk		625	625	625	625	625	625	625	625
insolation (BTU/sf-day)	i	(b)	1608	1608	1608	1608	1608	1608	1608	1608
average liquid surface temp (R)	***Tla***		631.11	631.11	631.11	631.11	631.11	631.11	631.11	631.11
Tla=0.44Tavg+0.56Tb+0.0079asi (E1-13)										
If the surface temperature is known for insulated tanks, adjust Tavg so Tla = Tsurf.	Tsurf									
Reid vapor pressure (psi), adjusted so Pva=TVP	RVP		0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
adjust RVP so Pva = TVP, if TVP known True Vapor Pressure	**TVP**		**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**
vapor pressure constant A	***A***		14.72	14.72	14.72	14.72	14.72	14.72	14.72	14.72
A=12.82-0.9672ln(RVP) (F1-16)										
vapor pressure constant B	***B***		9,652	9,652	9,652	9,652	9,652	9,652	9,652	9,652
B=7261-1216ln(RVP) (F1-16)										
vapor pressure at avg liq surface temp	***Pva***		0.565	0.565	0.565	0.565	0.565	0.565	0.565	0.565
Pva=exp(A-(B/Tla)) (E1-12a)										
vapor molecular weight (lb/lb-mole)	**Mv**		**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**
vapor density (lb/cf)	***Wv***		0.0042	0.0042	0.0042	0.0042	0.0042	0.0042	0.0042	0.0042
Wv=(MvPva)/(10.731Tla) (E1-9)										
vapor space expansion factor										
roof solar absorbancy	ar	(c)	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
ambient temp difference (R)	Td	(b)	23	23	23	23	23	23	23	23
vapor temperature range	***Tv***		40.9	40.9	40.9	40.9	40.9	40.9	40.9	40.9
Tv=0.72Td+0.028ari (E1-17)										
max liquid surface temp (R)	***Tlx***		641.3	641.3	641.3	641.3	641.3	641.3	641.3	641.3
Tlx=Tla+0.25Tv (F1-17)										
max liquid vapor pressure	***Pvx***		0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Pvx=exp(A-(B/Tlx)) (E1-12a)										
min liquid surface temp (R)	***Tln***		620.9	620.9	620.9	620.9	620.9	620.9	620.9	620.9
Tln=Tla-0.25Tv (F1-17)										
min liquid vapor pressure	***Pvn***		0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
Pvn=exp(A-(B/Tln)) (E1-12a)										
vapor pressure range (psi)	***Pv***		0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
Pv=Pvx-Pvn (E1-18)										
breather vent pressure range (psi)	Pb	(d)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
vapor space expansion factor	***Ke***		0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080
Ke=(Tv/Tla)+((Pv-Pb)/(14.7-Pva)) (E1-16)										
vented vapor saturation factor	***Ks***		0.794	0.794	0.794	0.794	0.794	0.794	0.794	0.794
Ks=1/(1+0.053PvaHvo) (E1-22)										
standing storage loss (lb/yr)	***Ls***		306	583	583	583	583	583	306	306
Ls=365VvWvKeKs (E1-2)										

BASELINE - Fixed Roof Tank Calculations

These equations and constants are consistent with the 09/97 version of AP-42. revised: 7/27/99			Company: Plains Exploration					Facility No. 43		
	Tank No.		10401	10435	10436	10397	10398	10399	10433	10434
	Product		crude	crude	crude	crude	crude	crude	crude	crude
working loss										
annual throughput (Mbbl/yr)	Q		**0.0**	**146.0**	**146.0**	**0.0**	**146.0**	**146.0**	**0.0**	**0.0**
annual throughput (gall/yr)			-	6,131,580	6,131,580	-	6,131,580	6,131,580	-	-
daily throughput (bbl/day)			-	400.0	400.0	-	400.0	400.0	-	-
turnovers (per APCD)	N		-	182	182	-	100	100	-	-
turnover factor	***Kn***	(e)	-	0.33	0.33	-	0.47	0.47	-	-
product factor	Kp		-	0.75	0.75	-	0.75	0.75	-	-
working loss (lb/yr)	***Lw***		0.00	1,024.66	1,024.66	0.00	1,442.46	1,442.46	0.00	0.00
lw=MvPvaQKnKp (E1-23), in mbbls throughput										
Total fixed roof losses (pounds/year)										
Lt = Ls + Lw (E1-1), lb/yr	***Lt***		305.7	1,608.1	1,608.1	583.4	2,025.9	2,025.9	305.7	305.7
Control Efficiency, %, use 0 for no control	CE		95	95	95	95	95	95	95	95
emfac = Lt x (100-CE)/annual throughput/100	***emfac***		-	0.551	0.551	-	0.694	0.69	-	-
TOC, tons/year				**0.040**	**0.040**	-	**0.051**	**0.051**	-	-
Use a CE of 100 to reduce emfac to zero for unused tanks.				CE = 100 for empty tank with no standing losses						**TOTAL TOG**
Legend AP-45 values - normal				calculated.						**0.18**
tank constants - normal Italics										**Tons/yr**
tank variables - bold										
equations - bold Italics										

(a) AP-42 is not specific so average liq ht is assumed here because outage vapor volume has a significant impact on emissions. 75% of the tank shell height is recommended here, unless specific data is available.

(b) inland county based on 7.1-6, Bakersfield: insolation=1749 BTU/ft2-day, Tmax=77.7F, Tmin=53.3, Tdiff=24.4, Tavg=65.5
coastal county based on 7.1-6, Santa Maria: insolation=1608 BTU/ft2-day, Tmax=68.3F, Tmin=45.3F, Tdiff=23F, Tavg=56.8F
For the calculation, the Tavg. Has been adjusted so that Tb = Tbulk.

(c) Table 7.1-6 solar absorbancy factors vs paint condition.

(d) assume pressure setting of 0.03 psig and vacuum setting of -0.03 psig for range of 0.06 psi unless more specific info available

(e) turnover factor = 1.0 for turnovers of 36 or less; above 36 use (180+n)/6n. See AP-42 notes to E1-23.

(f) RVP has been adjusted so Pva = TVP. The TVP as per December 2007 analysis.

PROJECT - Fixed Roof Tank Calculations

These equations and constants are consistent with the 09/97 version of AP-42. revised: 7/27/99			Company:	Plains Exploration			Facility No. 43			
	Tank No.		10401	10435	10436	10397	10398	10399	10433	10434
	Product		crude	crude	crude	crude	crude	crude	crude	crude
standing loss										
vapor space volume										
tank roof height (ft)	Hr		2	2	2	2	2	2	2	2
tank shell height (ft)	Hs		16	16	16	16	16	16	16	16
average liquid height (ft)	Hl	(a)	8	8	8	8	8	8	8	8
tank diameter (feet)	D		21.5	29.7	29.7	29.7	29.7	29.7	21.5	21.5
vapor space outage (ft)	***Hvo***		8.67	8.67	8.67	8.67	8.67	8.67	8.67	8.67
Hvo=Hs-Hl+(Hr/3) (E1-4, 6), cone roof										
See AP-42 for dome roof tank calcs.										
vapor space volume (cf)	***Vv***		3,146.4	6,004.2	6,004.2	6,004.2	6,004.2	6,004.2	3,146.4	3,146.4
Vv=(3.14/4)D^2(Hvo) (E1-3)										
vapor density										
average ambient temp ® (adjusted to 623 R)	Tavg	(b)	623	623	623	623	623	623	623	623
shell solar absorbancy	as	(c)	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
liquid bulk temp (R)	***Tb***		625.24	625.24	625.24	625.24	625.24	625.24	625.24	625.24
Tb=Tavg+6as-1 (E1-15)										
If the Tbulk is known, adjust Tavg so that Tb = Tbulk.	Tbulk		625	625	625	625	625	625	625	625
insolation (BTU/sf-day)	i	(b)	1608	1608	1608	1608	1608	1608	1608	1608
average liquid surface temp (R)	***Tla***		631.11	631.11	631.11	631.11	631.11	631.11	631.11	631.11
Tla=0.44Tavg+0.56Tb+0.0079asi (E1-13)										
If the surface temperature is known for insulated tanks, adjust Tavg so Tla = Tsurf.	Tsurf									
Reid vapor pressure (psi), adjusted so Pva=TVP	RVP	(f)	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
adjust RVP so Pva = TVP, if TVP known										
True Vapor Pressure	TVP		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
vapor pressure constant A	***A***		14.72	14.72	14.72	14.72	14.72	14.72	14.72	14.72
A=12.82-0.9672ln(RVP) (F1-16)										
vapor pressure constant B	***B***		9,651.8	9,651.8	9,651.8	9,651.8	9,651.8	9,651.8	9,651.8	9,651.8
B=7261-1216ln(RVP) (F1-16)										
vapor pressure at avg liq surface temp	***Pva***		0.5646	0.5646	0.5646	0.5646	0.5646	0.5646	0.5646	0.5646
Pva=exp(A-(B/Tla)) (E1-12a)										
vapor molecular weight (lb/lb-mole)	Mv		50	50	50	50	50	50	50	50
vapor density (lb/cf)	***Wv***		0.00417	0.00417	0.00417	0.00417	0.00417	0.00417	0.00417	0.00417
Wv=(MvPva)/(10.731Tla) (E1-9)										
vapor space expansion factor										
roof solar absorbancy	ar	(c)	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
ambient temp difference (R)	Td	(b)	23	23	23	23	23	23	23	23
vapor temperature range	***Tv***		40.9	40.9	40.9	40.9	40.9	40.9	40.9	40.9
Tv=0.72Td+0.028ari (E1-17)										
max liquid surface temp (R)	***Tlx***		641.3	641.3	641.3	641.3	641.3	641.3	641.3	641.3
Tlx=Tla+0.25Tv (F1-17)										
max liquid vapor pressure	***Pvx***		0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Pvx=exp(A-(B/Tlx)) (E1-12a)										
min liquid surface temp (R)	***Tln***		620.9	620.9	620.9	620.9	620.9	620.9	620.9	620.9
Tln=Tla-0.25Tv (F1-17)										
min liquid vapor pressure	***Pvn***		0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
Pvn=exp(A-(B/Tln)) (E1-12a)										
vapor pressure range (psi)	***Pv***		0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
Pv=Pvx-Pvn (E1-18)										
breather vent pressure range (psi)	Pb	(d)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
vapor space expansion factor	***Ke***		0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080
Ke=(Tv/Tla)+((Pv-Pb)/(14.7-Pva)) (E1-16)										
vented vapor saturation factor	***Ks***		0.794	0.794	0.794	0.794	0.794	0.794	0.794	0.794
Ks=1/(1+0.053PvaHvo) (E1-22)										
standing storage loss (lb/yr)	***Ls***		305.7	583.4	583.4	583.4	583.4	583.4	305.7	305.7
Ls=365VvWvKeKs (E1-2)										

PROJECT - Fixed Roof Tank Calculations

These equations and constants are consistent with the 09/97 version of AP-42. revised: 7/27/99	Company:		Plains Exploration				Facility No. 43			
	Tank No.		10401	10435	10436	10397	10398	10399	10433	10434
	Product		crude	crude	crude	crude	crude	crude	crude	crude
working loss										
annual throughput (Mbbl/yr)	Q		**228**	**228**	**228**	**228**	**228**	**228**	**228**	**228**
annual throughput (gall/yr)			9581250	9581250	9581250	9581250	9581250	9581250	9581250	9581250
daily throughput (bbl/day)			625.0	625.0	625.0	625.0	625.0	625.0	625.0	625.0
turnovers	N		114	114	114	114	114	114	114	114
turnover factor	***Kn***	(e)	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
product factor	Kp		0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
working loss (lb/yr)	***Lw***		2,075.3	2,075.3	2,075.3	2,075.3	2,075.3	2,075.3	2,075.3	2,075.3
lw=MvPvaQKnKp (E1-23), in mbbls throughput										
Total fixed roof losses (pounds/year)										
Lt = Ls + Lw (E1-1), lb/yr	***Lt***		2,381.1	2,658.8	2,658.8	2,658.8	2,658.8	2,658.8	2,381.1	2,381.1
Control Efficiency, %, use 0 for no control	CE		95	95	95	95	95	95	95	95
emfac = Lt x (100-CE)/annual throughput/100	***emfac***		0.522	0.583	0.583	0.583	0.583	0.58	0.52	0.522
TOC, tons/year			**0.060**	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**	**0.060**	**0.060**
										TOTAL
Legend AP-45 values										**TOG**
tank constants										**0.51**
tank variables										**Tons/yr**
equations										

(a) AP-42 is not specific so average liq ht is assumed here because outage vapor volume has a significant impact on emissions. 75% of the tank shell height is recommended here, unless specific data is available.

(b) inland county based on 7.1-6, Bakersfield: insolation=1749 BTU/ft2-day, Tmax=77.7F, Tmin=53.3, Tdiff=24.4, Tavg=65.5
coastal county based on 7.1-6, Santa Maria: insolation=1608 BTU/ft2-day, Tmax=68.3F, Tmin=45.3F, Tdiff=23F, Tavg=56.8F
For the calculation, the Tavg. Has been adjusted so that Tb = Tbulk.

(c) Table 7.1-6 solar absorbancy factors vs paint condition.

(d) assume pressure setting of 0.03 psig and vacuum setting of -0.03 psig for range of 0.06 psi unless more specific info available

(e) turnover factor = 1.0 for turnovers of 36 or less; above 36 use (180+n)/6n. See AP-42 notes to E1-23.

(f) RVP has been adjusted so Pva = TVP. The TVP as per December 2007 analysis.

Data for Calculation of Emissions from Storage Tanks and Truck Loading

Table A. Gas in Gas Plant

Time	Specific Gravity*
Quarter	**Air = 1**
1 Qtr	1.311
2 Qtr	1.315
3 Qtr	1.346
4 Qtr	1.365
Average	**1.334**

Source: 2006 Emission Inventory, Gas Plant Gas Analysis Lab Report

* Specific Gravity = Density of gas / Density of Air = MW of gas / MW air
Density of Air at standard conditions, kg/m3 = **1.2**
Density of gas at standard conditions, kg/m3 = **1.6**

Table B. HAPs in Emissions from Tanks and Truck Loading

HAP	Mol Wt	Gas Phase*** ppbv	Gas Phase ppmv	Specific Gravity*	Vapor Density kg/m3	Weight**** ratio
Xylene	106	200	0.200	3.66	4.39	5.48E-07
Benzene	78	6500	6.500	2.69	3.23	1.31E-05
Ethylbenzene	106	310	0.310	3.66	4.39	8.49E-07
Toluene	92	1000	1.000	3.17	3.81	2.38E-06
H2S**	34		9210	1.17	1.41	8.09E-03

Source:
* Specific Gravity = Density of gas / Density of Air = MW of gas / MW air
** H2S concentration is from 2000 gas report of tank head space.
*** December 2007 Tank Head Space Analysis (see lab report).
**** Weight ratio = ppmv HAP / 1,000,000 x density of HAP / density of gas =
= ppmv HAP / 1,000,000 x kg/m3 of HAP / kg/m3 of gas =
= kg HAP / kg of Gas

Emissions From Truck Loading (AP-42, Chapter 5)

Emissions from loading petroleum liquid can be estimated using the following expression:

L_L = 12.46 x S x P x M/T **Total Loading Loss = L_L x Cf**

Total Loading Loss with Vapor Control, lbs/1000 gallons loaded	**0.0249**
L_L = loading loss, pounds per 1000 gallons (lb/10^3 gal) of liquid loaded	**0.498**
S = a saturation factor (see AP-42, Table 5.2-1)	1
P = true vapor pressure of liquid loaded, pounds per sq. inch absolute (psia)	0.5
M = MW of vapors, pounds per pound-mole (lb/lb-mole)	50
T = temperature of bulk liquid loaded, °R (°F + 460)	625
Cf = Vapor Recovery System Control Factor, per SLO APCD	95%

THIS PAGE LEFT BLANK INTENTIONALLY

APPENDIX D

REVERSE OSMOSIS PERMEATE WATER LABORATORY REPORTS

1. VOCs (ZALCO Labs): Benzene, Ethylbenzene, Naphthalene, Toluene

2. VOCs (Cal Labs): MEK, Chlorbenzene

3. AMMONIA (Cal Labs)

THIS PAGE LEFT BLANK INTENTIONALLY

ZALCO LABORATORIES, INC.
Analytical and Consulting Services
4309 Armour Avenue
Bakersfield, California 93308
(661) 395-0539
FAX (661) 395-3069

CLIENT:	Plains Exploration Co	**Report Date:**	1/10/06
Lab Order:	0512203	**DateReceived:**	12/14/05 4:30:00 PM
Project:		**Lab ID:**	0512203-001F
Client Sample ID:	ROP #1- ROP #11, Processed Produced Water	**Collection Date:**	12/14/05 11:45:00 AM
Report Comment:		**Matrix:**	WATER

Analyses	Method	Result	Units	DLR	Date Analyzed	Qual.
PURGEABLE ORGANIC COMPOUNDS						
1,1,1,2-Tetrachloroethane	E524.2	ND	µg/L	0.50	12/21/05	
1,1,1-Trichloroethane	E524.2	ND	µg/L	0.50	12/21/05	
1,1,2,2-Tetrachloroethane	E524.2	ND	µg/L	0.50	12/21/05	
1,1,2-Trichloro-1,2,2-Trifluoroethane	E524.2	ND	µg/L	0.50	12/21/05	
1,1,2-Trichloroethane	E524.2	ND	µg/L	0.50	12/21/05	
1,1-Dichloroethane	E524.2	ND	µg/L	0.50	12/21/05	
1,1-Dichloroethene	E524.2	ND	µg/L	0.50	12/21/05	
1,1-Dichloropropene	E524.2	ND	µg/L	0.50	12/21/05	
1,2,3-Trichlorobenzene	E524.2	ND	µg/L	0.50	12/21/05	
1,2,3-Trichloropropane	E524.2	ND	µg/L	0.50	12/21/05	
1,2,4-Trichlorobenzene	E524.2	ND	µg/L	0.50	12/21/05	
1,2,4-Trimethylbenzene	E524.2	ND	µg/L	0.50	12/21/05	
Dichlorobenzene	E524.2	ND	µg/L	0.50	12/21/05	
1,2-Dichloroethane	E524.2	ND	µg/L	0.50	12/21/05	
1,2-Dichloropropane	E524.2	ND	µg/L	0.50	12/21/05	
1,3,5-Trimethylbenzene	E524.2	ND	µg/L	0.50	12/21/05	
1,3-Dichlorobenzene	E524.2	ND	µg/L	0.50	12/21/05	
1,3-Dichloropropane	E524.2	ND	µg/L	0.50	12/21/05	
1,4-Dichlorobenzene	E524.2	ND	µg/L	0.50	12/21/05	
2,2-Dichloropropane	E524.2	ND	µg/L	0.50	12/21/05	
2-Chloroethylvinylether	E524.2	ND	µg/L	0.50	12/21/05	
2-Chlorotoluene	E524.2	ND	µg/L	0.50	12/21/05	
4-Chlorotoluene	E524.2	ND	µg/L	0.50	12/21/05	
4-Isopropyltoluene	E524.2	ND	µg/L	0.50	12/21/05	
Benzene	E524.2	1.5	µg/L	0.50	12/21/05	
Bromobenzene	E524.2	ND	µg/L	0.50	12/21/05	
Bromochloromethane	E524.2	ND	µg/L	0.50	12/21/05	
Bromodichloromethane	E524.2	ND	µg/L	0.50	12/21/05	
Bromoform	E524.2	ND	µg/L	0.50	12/21/05	
Bromomethane	E524.2	ND	µg/L	0.50	12/21/05	
Carbon tetrachloride	E524.2	ND	µg/L	0.50	12/21/05	
Chlorobenzene	E524.2	ND	µg/L	0.50	12/21/05	
Chloroethane	E524.2	ND	µg/L	0.50	12/21/05	
Chloroform	E524.2	ND	µg/L	0.50	12/21/05	
Chloromethane	E524.2	ND	µg/L	0.50	12/21/05	

Qualifiers / Abbreviations:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
H - Hold Time Exceeded
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
DLR: Detection Limit for Reporting
NSS - Non-Sufficient Sample Amount

ZALCO LABORATORIES, INC.
Analytical and Consulting Services
4309 Armour Avenue
Bakersfield, California 93308
(661) 395-0539
FAX (661) 395-3069

CLIENT:	Plains Exploration Co	**Report Date:**	1/10/06
Lab Order:	0512203	**DateReceived:**	12/14/05 4:30:00 PM
Project:		**Lab ID:**	0512203-001F
Client Sample ID:	ROP #1- ROP #11, Processed Produced Water	**Collection Date:**	12/14/05 11:45:00 AM
Report Comment:		**Matrix:**	WATER

Analyses	Method	Result	Units	DLR	Date Analyzed	Qual.
PURGEABLE ORGANIC COMPOUNDS						
cis-1,2-Dichloroethene	E524.2	ND	µg/L	0.50	12/21/05	
cis-1,3-Dichloropropene	E524.2	ND	µg/L	0.50	12/21/05	
Dibromochloromethane	E524.2	ND	µg/L	0.50	12/21/05	
Dibromomethane	E524.2	ND	µg/L	0.50	12/21/05	
Dichlorodifluoromethane	E524.2	ND	µg/L	0.50	12/21/05	
Ethyl-tert-Butyl Ether, ETBE	E524.2	ND	µg/L	0.50	12/21/05	
Ethylbenzene	E524.2	0.79	µg/L	0.50	12/21/05	
Hexachlorobutadiene	E524.2	ND	µg/L	0.50	12/21/05	
Isopropylbenzene	E524.2	ND	µg/L	0.50	12/21/05	
m,p-Xylene	E524.2	ND	µg/L	0.50	12/21/05	
Methyl tert-butyl ether, MTBE	E524.2	ND	µg/L	0.50	12/21/05	
Methylene chloride	E524.2	ND	µg/L	0.50	12/21/05	
n-Butylbenzene	E524.2	ND	µg/L	0.50	12/21/05	
n-Propylbenzene	E524.2	ND	µg/L	0.50	12/21/05	
Naphthalene	E524.2	9.4	µg/L	0.50	12/21/05	
o-Xylene	E524.2	ND	µg/L	0.50	12/21/05	
sec-Butylbenzene	E524.2	ND	µg/L	0.50	12/21/05	
Styrene	E524.2	ND	µg/L	0.50	12/21/05	
tert-Amyl Methyl Ether, TAME	E524.2	ND	µg/L	0.50	12/21/05	
tert-Butylbenzene	E524.2	ND	µg/L	0.50	12/21/05	
Tetrachloroethene	E524.2	ND	µg/L	0.50	12/21/05	
Toluene	E524.2	0.67	µg/L	0.50	12/21/05	
trans-1,2-Dichloroethene	E524.2	ND	µg/L	0.50	12/21/05	
trans-1,3-Dichloropropene	E524.2	ND	µg/L	0.50	12/21/05	
Tributyl Alcohol, TBA	E524.2	ND	µg/L	10	12/21/05	
Trichloroethene	E524.2	ND	µg/L	0.50	12/21/05	
Trichlorofluoromethane	E524.2	ND	µg/L	0.50	12/21/05	
Vinyl chloride	E524.2	ND	µg/L	0.50	12/21/05	

Qualifiers / Abbreviations:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
H - Hold Time Exceeded
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
DLR: Detection Limit for Reporting
NSS - Non-Sufficient Sample Amount

ZALCO LABORATORIES, INC.
Analytical and Consulting Services
4309 Armour Avenue
Bakersfield, California 93308
(661) 395-0539
FAX (661) 395-3069

CLIENT:	Plains Exploration Co	**Report Date:**	1/10/06
Lab Order:	0512203	**DateReceived:**	12/14/05 4:30:00 PM
Project:		**Lab ID:**	0512203-001G
Client Sample ID:	ROP #1- ROP #11, Processed Produced Water	**Collection Date:**	12/14/05 11:45:00 AM
Report Comment:		**Matrix:**	WATER

Analyses	Method	Result	Units	DLR	Date Analyzed	Qual.
CHLORINATED PESTICIDES/PCB'S						
Aldrin	E508	ND	µg/L	0.08	12/28/05	
Aroclor 1016	E508	ND	µg/L	0.50	12/28/05	
Aroclor 1221	E508	ND	µg/L	0.50	12/28/05	
Aroclor 1232	E508	ND	µg/L	0.50	12/28/05	
Aroclor 1242	E508	ND	µg/L	0.50	12/28/05	
Aroclor 1248	E508	ND	µg/L	0.50	12/28/05	
Aroclor 1254	E508	ND	µg/L	0.50	12/28/05	
Aroclor 1260	E508	ND	µg/L	0.50	12/28/05	
Chlordane	E508	ND	µg/L	0.10	12/28/05	
Dieldrin	E508	ND	µg/L	0.02	12/28/05	
Endrin	E508	ND	µg/L	0.10	12/28/05	
gamma-BHC	E508	ND	µg/L	0.20	12/28/05	
ptachlor	E508	ND	µg/L	0.01	12/28/05	
Heptachlor epoxide	E508	ND	µg/L	0.01	12/28/05	
Hexachlorobenzene	E508	ND	µg/L	0.50	12/28/05	
Hexachlorocyclopentadiene	E508	ND	µg/L	1.00	12/28/05	
Methoxychlor	E508	ND	µg/L	10.0	12/28/05	
Toxaphene	E508	ND	µg/L	1.00	12/28/05	
EPA 504.1						
1,2-Dibromo-3-chloropropane, DBCP	E504.1	ND	µg/L	0.010	12/22/05	
1,2-Dibromoethane, EDB	E504.1	ND	µg/L	0.020	12/22/05	
SEMIVOLATILE ORGANIC COMPOUNDS BY EPA 525.2						
Benzo(a)pyrene	E525.2	ND	µg/L	0.10	12/28/05	
bis(2-Ethylhexyl)adipate	E525.2	ND	µg/L	5.0	12/28/05	
Bis(2-ethylhexyl)phthalate	E525.2	ND	µg/L	3.0	12/28/05	

alifiers / Abbreviations:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
H - Hold Time Exceeded
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
DLR: Detection Limit for Reporting
NSS - Non-Sufficient Sample Amount

Calscience Environmental Laboratories, Inc.

Analytical Report

Water & Power Technologies, Inc.	Date Received:	12/02/05
4740 West 1987 South	Work Order No:	05-12-0114
Salt Lake City, UT 84104-4936	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	ug/L

Project: P.X.P. PILOT STUDY

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
REVERSE OSMOSIS PERMEATE	**05-12-0114-9**	**12/01/05**	**Aqueous**	**12/03/05**	**12/04/05**	**051203L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	3600	500	50		t-1,3-Dichloropropene	ND	1.0	2	
Benzene	ND	1.0	2		Ethylbenzene	ND	2.0	2	
Bromobenzene	ND	2.0	2		2-Hexanone	ND	20	2	
Bromochloromethane	ND	2.0	2		Isopropylbenzene	ND	2.0	2	
Bromodichloromethane	ND	2.0	2		p-Isopropyltoluene	ND	2.0	2	
Bromoform	ND	2.0	2		Methylene Chloride	ND	20	2	
Bromomethane	ND	20	2		4-Methyl-2-Pentanone	ND	20	2	
2-Butanone	560	500	50		Naphthalene	ND	20	2	
n-Butylbenzene	ND	2.0	2		n-Propylbenzene	ND	2.0	2	
sec-Butylbenzene	ND	2.0	2		Styrene	ND	2.0	2	
tert-Butylbenzene	ND	2.0	2		1,1,1,2-Tetrachloroethane	ND	2.0	2	
Carbon Disulfide	ND	20	2		1,1,2,2-Tetrachloroethane	ND	2.0	2	
Carbon Tetrachloride	ND	1.0	2		Tetrachloroethene	ND	2.0	2	
Chlorobenzene	2.2	2.0	2		Toluene	ND	2.0	2	
Chloroethane	ND	2.0	2		1,2,3-Trichlorobenzene	ND	2.0	2	
2-Chloroethyl Vinyl Ether	ND	20	2		1,2,4-Trichlorobenzene	ND	2.0	2	
Chloroform	ND	2.0	2		1,1,1-Trichloroethane	ND	2.0	2	
Chloromethane	ND	20	2		Hexachloro-1,3-Butadiene	ND	40	2	
2-Chlorotoluene	ND	2.0	2		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	20	2	
4-Chlorotoluene	ND	2.0	2		1,1,2-Trichloroethane	ND	2.0	2	
Dibromochloromethane	ND	2.0	2		Iodomethane	ND	40	2	
1,2-Dibromo-3-Chloropropane	ND	10	2		Trichloroethene	ND	2.0	2	
1,2-Dibromoethane	ND	2.0	2		Trichlorofluoromethane	ND	20	2	
Dibromomethane	ND	2.0	2		1,2,3-Trichloropropane	ND	10	2	
1,2-Dichlorobenzene	ND	2.0	2		1,2,4-Trimethylbenzene	ND	2.0	2	
1,3-Dichlorobenzene	ND	2.0	2		1,3,5-Trimethylbenzene	ND	2.0	2	
1,4-Dichlorobenzene	ND	2.0	2		Vinyl Acetate	ND	20	2	
Dichlorodifluoromethane	ND	2.0	2		Vinyl Chloride	ND	1.0	2	
1,1-Dichloroethane	ND	2.0	2		p/m-Xylene	3.0	2.0	2	
1,2-Dichloroethane	ND	1.0	2		o-Xylene	ND	2.0	2	
1,1-Dichloroethene	ND	2.0	2		Methyl-t-Butyl Ether (MTBE)	ND	2.0	2	
c-1,2-Dichloroethene	ND	2.0	2		t-1,4-Dichloro-2-Butene	ND	40	2	
t-1,2-Dichloroethene	ND	2.0	2		Tetrahydrofuran	ND	40	2	
1,2-Dichloropropane	ND	2.0	2		Tert-Butyl Alcohol (TBA)	ND	20	2	
Acrolein	ND	40	2		Diisopropyl Ether (DIPE)	ND	4.0	2	
Acrylonitrile	ND	40	2		Ethyl-t-Butyl Ether (ETBE)	ND	4.0	2	
1,3-Dichloropropane	ND	2.0	2		Tert-Amyl-Methyl Ether (TAME)	ND	4.0	2	
2,2-Dichloropropane	ND	2.0	2		Ethanol	ND	200	2	
1,1-Dichloropropene	ND	2.0	2		Cyclohexane	ND	20	2	
c-1,3-Dichloropropene	ND	1.0	2		Thiophene	ND	20	2	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	103	74-140		1,2-Dichloroethane-d4	103	74-146	
Toluene-d8	99	88-112		1,4-Bromofluorobenzene	95	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Water & Power Technologies, Inc.
4740 West 1987 South
Salt Lake City, UT 84104-4936

Date Received: 12/02/05
Work Order No: 05-12-0114

Project: P.X.P. PILOT STUDY

Client Sample Number	Lab Sample Number	Date Collected	Matrix
REVERSE OSMOSIS PERMEATE	**05-12-0114-9**	**12/01/05**	**Aqueous**

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Specific Conductance	1100	10	1		umhos/cm	N/A	12/02/05	EPA 120.1
Hardness, Total	ND	2.0	1		mg/L	N/A	12/08/05	EPA 130.2
pH	11.68	0.01	1		pH units	N/A	12/02/05	EPA 150.1
Solids, Total Dissolved	230	1.0	1		mg/L	N/A	12/06/05	EPA 160.1
Solids, Total Suspended	ND	1.0	1		mg/L	N/A	12/05/05	EPA 160.2
Hexane Extractable Material	ND	1.0	1		mg/L	N/A	12/08/05	EPA 1664A
Hexane Extractable Material - SGT	ND	1.0	1		mg/L	N/A	12/09/05	EPA 1664A
Chloride	39	10	10		mg/L	N/A	12/02/05	EPA 300.0
Nitrate (as N)	ND	0.10	1		mg/L	N/A	12/03/05	EPA 300.0
Sulfate	1.5	1.0	1		mg/L	N/A	12/03/05	EPA 300.0
Fluoride	ND	0.10	1		mg/L	12/06/05	12/06/05	EPA 340.2
Ammonia	15	0.10	1		mg/L	12/08/05	12/08/05	EPA 350.2
Sulfide, Total	ND	0.050	1		mg/L	N/A	12/09/05	EPA 376.2
Oil and Grease	1.2	1.0	1		mg/L	N/A	12/08/05	EPA 413.1
Carbon, Total Organic	7.3	0.5	1		mg/L	N/A	12/02/05	EPA 415.1
Alkalinity, Total (as CaCO3)	240	5.0	1		mg/L	N/A	12/02/05	SM 2320B
Bicarbonate (as CaCO3)	ND	1.0	1		mg/L	N/A	12/02/05	SM 2320B
Carbonate (as CaCO3)	20	1.0	1		mg/L	N/A	12/02/05	SM 2320B
Hydroxide (as CaCO3)	220	5.0	1		mg/L	N/A	12/02/05	SM 2320B

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

THIS PAGE LEFT BLANK INTENTIONALLY

APPENDIX E
BIOLOGICAL RESOURCES

THIS PAGE LEFT BLANK INTENTIONALLY

CNDDB LIST

THIS PAGE LEFT BLANK INTENTIONALLY

California Department of Fish and Game
Natural Diversity Database
Selected Elements by Scientific Name - Portrait
PXP Produced Water Reclamation Facility SEIR
Arroyo Grande NE and Pismo Beach Quadrangles

	Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1	***Agrostis hooveri*** Hoover's bent grass	PMPOA040M0			G3	S2.2	1B.2
2	***Arctostaphylos luciana*** Santa Lucia manzanita	PDERI040N0			G2	S2.2	1B.2
3	***Arctostaphylos morroensis*** Morro manzanita	PDERI040S0	Threatened		G2	S2.2	1B.1
4	***Arctostaphylos pechoensis*** Pecho manzanita	PDERI04140			G2	S2.2	1B.2
5	***Arctostaphylos pilosula*** Santa Margarita manzanita	PDERI04160			G2	S2.2	1B.2
6	***Arctostaphylos wellsii*** Wells' manzanita	PDERI042B0			G2	S2.1?	1B.1
7	***Arenaria paludicola*** marsh sandwort	PDCAR040L0	Endangered	Endangered	G1	S1.1	1B.1
8	***Branchinecta lynchi*** vernal pool fairy shrimp	ICBRA03030	Threatened		G3	S2S3	
9	***Calochortus obispoensis*** San Luis mariposa lily	PMLIL0D110			G2	S2.1	1B.2
10	***Calochortus simulans*** San Luis Obispo mariposa lily	PMLIL0D170			G2	S2.3	1B.3
1	***Calystegia subacaulis ssp. episcopalis*** Cambria morning-glory	PDCON040J1			G3T1	S1.2	1B.2
12	***Castilleja densiflora ssp. obispoensis*** Obispo Indian paintbrush	PDSCR0D453			G5T2	S2.2	1B.2
13	***Central Foredunes***	CTT21220CA			G1	S1.2	
14	***Central Maritime Chaparral***	CTT37C20CA			G2	S2.2	
15	***Centromadia parryi ssp. congdonii*** Congdon's tarplant	PDAST4R0P1			G4T3	S3.2	1B.2
16	***Charadrius alexandrinus nivosus*** western snowy plover	ABNNB03031	Threatened		G4T3	S2	SC
17	***Chorizanthe breweri*** Brewer's spineflower	PDPGN04050			G2	S2.2	1B.3
18	***Chorizanthe rectispina*** straight-awned spineflower	PDPGN040N0			G1	S1.2	1B.3
19	***Cicindela hirticollis gravida*** sandy beach tiger beetle	IICOL02101			G5T2	S1	
20	***Cirsium fontinale var. obispoense*** Chorro Creek bog thistle	PDAST2E162	Endangered	Endangered	G2T1	S1.2	1B.2
21	***Cirsium rhothophilum*** Surf thistle	PDAST2E2J0		Threatened	G2	S2.2	1B.2
22	***Clarkia speciosa ssp. immaculata*** Pismo clarkia	PDONA05111	Endangered	Rare	G4T1	S1.1	1B.1
23	***Coastal and Valley Freshwater Marsh***	CTT52410CA			G3	S2.1	
24	***Danaus plexippus*** monarch butterfly	IILEPP2010			G5	S3	

	Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
25	***Deinandra increscens ssp. foliosa*** leafy tarplant	PDAST4R0U4			G4G5T2	S2.2	1B.2
26	***Dithyrea maritima*** beach spectaclepod	PDBRA10020		Threatened	G2	S2.1	1B.1
27	***Dudleya abramsii ssp. murina*** San Luis Obispo dudleya	PDCRA04012			G3T2	S2.3	1B.3
28	***Dudleya blochmaniae ssp. blochmaniae*** Blochman's dudleya	PDCRA04051			G2T2	S2.1	1B.1
29	***Emys (=Clemmys) marmorata pallida*** southwestern pond turtle	ARAAD02032			G3G4T2T3Q	S2	SC
30	***Erigeron blochmaniae*** Blochman's leafy daisy	PDAST3M5J0			G2	S2.2	1B.2
31	***Eriodictyon altissimum*** Indian Knob mountainbalm	PDHYD04010	Endangered	Endangered	G2Q	S2.2	1B.1
32	***Eryngium aristulatum var. hooveri*** Hoover's button-celery	PDAPI0Z043			G5T2	S2.1	1B.1
33	***Eucyclogobius newberryi*** tidewater goby	AFCQN04010	Endangered		G3	S2S3	SC
34	***Horkelia cuneata ssp. puberula*** mesa horkelia	PDROS0W045			G4T2	S2.1	1B.1
35	***Layia jonesii*** Jones' layia	PDAST5N090			G1	S1.1	1B.2
36	***Lupinus ludovicianus*** San Luis Obispo County lupine	PDFAB2B2G0			G2	S2.2	1B.2
37	***Oncorhynchus mykiss irideus*** steelhead - south/central California coast esu	AFCHA0209H	Threatened		G5T2Q	S2	
38	***Phrynosoma coronatum (frontale population)*** Coast (California) horned lizard	ARACF12022			G4G5	S3S4	SC
39	***Rana aurora draytonii*** California red-legged frog	AAABH01022	Threatened		G4T2T3	S2S3	SC
40	***Scrophularia atrata*** black-flowered figwort	PDSCR1S010			G2	S2.2	1B.2
41	***Taxidea taxus*** American badger	AMAJF04010			G5	S4	SC

WETLAND ASSESSMENT REPORT

THIS PAGE LEFT BLANK INTENTIONALLY

WETLAND ASSESSMENT REPORT FOR THE PXP PRODUCED WATER RECLAMATION FACILITY SAN LUIS OBISPO, CALIFORNIA

Prepared for:

County of San Luis Obispo
Environmental and Resource Management Division
Department of Planning and Building
San Luis Obispo, California

Prepared By:

Padre Associates, Inc.
811 El Capitan Way, Suite 130
San Luis Obispo, California 93401

July 2007

Project No. 0702-0291

THIS PAGE LEFT BLANK INTENTIONALLY

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

TABLE OF CONTENTS

Page

1.0 INTRODUCTION 1

1.1 Project Location....1

1.2 Physical Setting....1

1.3 Project Background....1

2.0 VEGETATION 2

3.0 WETLAND ASSESSMENT 2

3.1 METHODOLOGY....2

3.1.1 Federal Jurisdiction Determination.... 3

3.1.2 Hydrophytic Vegetation.... 3

3.1.3 Hydric Soils.... 3

3.1.4 Wetland Hydrology....3

3.2 RESULTS 3

3.2.1 Federal Jurisdiction Determination.... 3

3.2.2 Hydrophytic Vegetation.... 4

3.2.3 Hydric Soils.... 4

3.2.4 Wetland Hydrology....5

3.2.5 Federal Wetland Determination.... 5

3.2.6 CDFG Wetlands....5

3.2.7 Wetland Functions and Values.... 5

4.0 LITERATURE CITED 6

FIGURES

1 – Site Location Map

2 – Limits of Jurisdictional Waters

3 – Focused Jurisdictional Wetlands Map

APPENDICES

Appendix A – Site Photographs

Appendix B – Data Forms

THIS PAGE LEFT BLANK INTENTIONALLY

1.0 INTRODUCTION

Padre Associates, Inc. (Padre) is pleased to present this report documenting the recent wetland delineation conducted for the Proposed Plains Exploration and Production Company (PXP), Arroyo Grande Oil Field Produced Water Reclamation Facility (Project). The objective of this report is to present the findings of a wetland assessment conducted within the proposed project area. Wetland features analyzed include a section of Pismo Creek, two unnamed tributaries to Pismo Creek, a proposed tempering pond, three man-made storm water conveyance structures, an ephemeral swale and roadside drainage. The field survey of the subject property was conducted on June 18, 2007. This report is intended to supplement the Subsequent Environmental Impact Report (SEIR) for the proposed Project.

1.1 PROJECT LOCATION

The PXP Arroyo Grande Oil Field is located in Price Canyon about three miles northeast of the City of Pismo Beach in San Luis Obispo County, California (Project Site). The Project Site is located at 1821 Price Canyon Road, east and west of Price Canyon Road near its intersection with Ormonde Road, between Highway 101 and Highway 227. The location is illustrated on the following Figure 1 – Site Location Map.

1.2 PHYSICAL SETTING

Several wetland features are present within the project area including the proposed tempering pond located within an isolated man-made storm water collection basin northeast of the existing facility, three man-made storm water conveyance structures, an ephemeral swale area and a roadside drainage along the existing roadway southeast of Tank 202 (see Figure 2 – Limits of Jurisdictional Waters). In addition, a small portion of the riparian corridor along Pismo Creek and two unnamed tributaries to Pismo Creek are within the proposed Project Impact Area (PIA). The Project Site is highly disturbed due to historical and ongoing activities within the existing oil field.

1.3 PROJECT BACKGROUND

Development of the proposed Project would include construction of a water treatment facility and various associated structures (i.e., water tanks, air-stripper, heat exchangers, etc.) to process the produced water resulting from increased oil recovery activities. New facilities would be constructed within the existing disturbed plant area, plus a two- to three-acre area of oak woodland habitat west of the existing plant. The proposed facility will also require construction of water transmission pipelines for re-use on/off-site, placement of a permanent reclaimed water outfall structure along Pismo Creek, and creation of a smooth-bottom tempering pond. Specifically, water transmission pipelines would be placed within existing facility roadways or in existing pipe racks to the north and south of the project area. The proposed water transmission pipeline along the southern disposal route would intersect two unnamed tributaries to Pismo Creek; however, installation of the pipeline would occur along previously existing roadways and pipe racks. Installation of the reclaimed water outfall structure would include placement of a

series of three to four, 25 to 30-foot long perforated pipes on the existing rip-rap bank area along Pismo Creek. Placement of the outfall structure would include clearing a portion of the vegetation along the bank and reinforcing the existing rip-rap slope protection with gunite. Prior to use as a tempering pond, the existing storm water collection basin would be cleared of all vegetation and the bottom would be smoothed and lined with a low-permeability material.

2.0 VEGETATION

Vegetation within the wetland features was identified to the extent feasible during the June 18, 2007 field survey. Plant specimens that were not positively identified in the field were further examined using a dissecting microscope and appropriate botanical keys, including *The Jepson Manual* (Hickman, 1993). Species diversity within the wetland features was low due to the high level of disturbance and ongoing activities within the existing oil field.

3.0 WETLAND ASSESSMENT

The U.S. Army Corps of Engineers (Corps) has jurisdiction over waters of the United States (U.S.). The limit of jurisdiction in non-tidal waters extends to the ordinary high water mark and includes all adjacent wetlands. Waters of the U.S. are defined as:

> "All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; including all interstate waters including interstate wetlands, all other waters such as intrastate lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce."
>
> The Corps and U.S. Environmental Protection Agency define wetlands as:
>
> "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

3.1 METHODOLOGY

The purpose of the wetland delineation was to determine the area of jurisdiction of the Corps under Section 404 of the Clean Water Act. The delineation was performed in accordance with the routine procedures for areas less than 2.02 ha (5 ac) detailed in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Environmental Laboratory, 2006). Data forms are provided as Appendix B.

Jurisdictional wetlands were determined to be present if evidence of all three Federal criteria were observed (hydrophytic vegetation, hydric soils, and wetland hydrology). However, the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) wetland definition requires that only one of the wetland criteria be present to define a wetland.

3.1.1 Federal Jurisdiction Determination

The limit of Corps jurisdiction in non-tidal waters extends to the ordinary high water mark and includes all adjacent wetlands. The ordinary high water (OHW) mark was established at Pismo Creek and the two unnamed tributaries to Pismo Creek using the presence of hydrophytic vegetation, drift lines, and bank shelving patterns as a boundary. Drift lines (organic materials deposited along the banks) are direct evidence of the highest water elevation of the most recent rain year. Bank shelving patterns (eroded benches) indicate long-term patterns in high water elevation. The width of waters of the U.S. (distance between OHW marks) was measured within the PIA at each of these locations. In addition, sample points were established within the proposed tempering pond, the ephemeral swale, and roadside drainage southeast of Tank 202.

3.1.2 Hydrophytic Vegetation

The predominance of hydrophytic (water-loving) vegetation was established by identifying dominant species within a 1.0-meter (m) (3.3-foot) radius circle (sample plot) at each sample point and determining the hydrophytic class (i.e., facultative, facultative-wetland or obligate wetland species) as listed in Reed (1988).

3.1.3 Hydric Soils

Soil pits were excavated within the proposed tempering pond, ephemeral swale, and roadside drainage. Soil pits were not excavated within the man-made storm water conveyance structures/ponds due to the presence of a concrete lining. Based the *Soil Survey of San Luis Obispo County, California, Coastal Part,* soils in the vicinity of the proposed impact areas have been designated as Briones loamy sand (Ernstrom, 1984).

Briones loamy sand is a moderately deep, somewhat excessively drained, moderately steep soil on foothills and mountains. It is formed in residual material weathered from soft sandstone. Typically, the surface layer is gray loamy sand approximately 91.44 centimeter (cm) (36 inches) thick. The subsoil is pale brown loamy sand to a depth of 81.28 cm (32 inches) with an underlying layer of soft, fractured sandstone (Ernstrom, 1984). Briones loamy sand is considered non-hydric by the Natural Resources Conservation Service (1992).

3.1.4 Wetland Hydrology

Observations were conducted at each sample plot to identify evidence of inundation or soil saturation, such as drift lines, sediment deposits, drainage patterns, and oxidized root channels.

3.2 RESULTS

3.2.1 Federal Jurisdictional Determination

The area of waters of the U.S. located within the Project Site include the roadside drainage, a section of Pismo Creek, and the two unnamed tributaries to Pismo Creek intersected by the southern water transmission pipeline route. However, the two unnamed tributaries will not be impacted due to project activities. Therefore, the area of waters of the U.S. within the proposed PIA is limited to the roadside drainage, approximately 0.012 ha (0.03-

acre) and the portion of Pismo Creek affected by installation of the proposed reclaimed water outfall structure, approximately (0.006 ha) (0.014-acre).

The proposed tempering pond appears to qualify as waters of the U.S. based on the presence of all three wetland criteria; however, it is bermed on all sides with no apparent connectivity to the adjacent tributary to Pismo Creek. Due to the lack of connectivity to the adjacent tributary to Pismo Creek it is not considered a Federal wetland. The limits of jurisdictional waters within the proposed PIA are illustrated on the following Figure 2.

3.2.2 Hydrophytic Vegetation

The total area of hydrophytic vegetation found within the PIA is approximately 0.43 ha (1.07-acre). This value is based on the combined average areas of the proposed tempering pond, ephemeral swale, roadside drainage, and man-made storm conveyance structures, and the PIA along the bank of Pismo Creek. The tributaries intersected by the water transmission pipeline were not assessed because no vegetation will be impacted due to project implementation. Appendix A provides site photos of the wetland features.

The approximate areas of hydrophytic vegetation found within each of the wetland features are described below:

- Proposed Tempering Pond: 0.25 ha (0.62-acre), dominated by California bulrush (*Scirpus californicus*) and cattail (*Typha latifolia*);
- Ephemeral swale: 0.04 ha (0.09-acre), dominated by brown-headed rush (*Juncus phaeocephalus* var. *phaeocephalus*), cattail, Italian ryegrass (*Lolium multiflorum*), and western ragweed (*Ambrosia psilostachya*);
- Roadside Drainage: 0.012 ha (0.03-acre), dominated by cattail and California bulrush;
- Man-made Storm Water Conveyance Structures: 0.028 ha (0.07-acre), dominated by cattail, umbrella flatsedge (*Cyperus eragrostis*), western ragweed, and Italian ryegrass; and,
- Pismo Creek: 0.004 ha (0.01-acre), dominated by Arroyo (*Salix lasiolepis)* and yellow willows (*Salix lucida* ssp. *lasiandra)*.

3.2.3 Hydric Soils

Soil pits were excavated within the ephemeral swale, roadside drainage, and the proposed tempering pond. Hydric soils as indicated by dark soil color (10YR 2/1) and sandy gleyed matrix (Gley1 4/10 Y) were identified in the roadside drainage as well as reddish yellow (7.5YR 6/8) and black (10YR 2/1) concentrations. In addition, hydric soils were also identified in the proposed tempering pond as indicated by the presence of (7.5YR 5/6 – strong brown) concentrations. Two soil pits were excavated within the ephemeral swale area; however, this area contained dry sandy material and did not support hydric soil. Test pits were not excavated within the man-made conveyance structures due to the existing concrete lining. In addition, test pits were not excavated within the two unnamed tributaries because construction activities will remain within the existing roadways or pre-disturbed areas and will not result in fill activities.

Further, test pits were not excavated along the bank of Pismo Creek due to the presence of rip-rap slope protection.

3.2.4 Wetland Hydrology

Evidence of wetland hydrology was present within the roadside drainage and the proposed tempering pond. Specifically, saturated soil conditions exist within the roadside drainage and oxidized rhizopheres and surface soil cracks were present within the proposed tempering pond.. Additionally, two of the three man-made conveyance structures contained standing water. No wetland hydrology indicators were identified within the ephemeral swale area.

It was assumed that the entire area located between OHW marks within Pismo Creek, as well as within the two unnamed tributaries is inundated at a frequency to meet the wetland hydrology criterion of the Wetland Delineation Manual.

3.2.5 Federal Wetland Determination

Corps-defined wetlands are present where hydrophytic vegetation, wetland hydrology and hydric soils co-occur. Based on the information presented above all three wetland criteria, wetland hydrology, hydrophytic vegetation, and hydric soil, were evident within the roadside drainage and the proposed tempering pond. However, due to the lack of connectivity between the proposed tempering pond and the adjacent tributary to Pismo Creek it is not considered a Federal wetland. Therefore, within the proposed PIA only the roadside drainage, consisting of 0.012 ha (0.03-acre), is considered Corps-defined wetlands (see Figure 3 – Focused Jurisdictional Wetlands Map).

3.2.6 CDFG Wetlands

Both USFWS and CDFG consider an area to be a wetland if it meets only one of the three Federal criteria (hydric soils, hydrology and hydrophytic vegetation). As such, the presence of hydrophytic vegetation was used to define CDFG wetlands. Therefore, the total area of CDFG wetlands within the PIA includes all of the wetland features described above and is approximately 0.33 ha (0.82-acre).

3.2.7 Wetland Functions and Values

Functions are physical, chemical and biological attributes of a wetland without regard to their importance to society. The term "values" is used to describe those functions generally regarded as beneficial to society. Functions and values assessed in this document are described in the Wetland Evaluation Technique by Adamus et al. (1987), including:

- Groundwater recharge;
- Groundwater discharge;
- Flood flow alteration;
- Sediment stabilization;
- Sediment/toxicant retention;
- Nutrient removal/transformation;

- Production export;
- Wildlife habitat (aquatic and terrestrial);
- Uniqueness/heritage; and,
- Recreation.

The wetlands of the PIA, excluding the concrete-lined storm water conveyance structures, facilitate groundwater recharge by reducing current velocity and increasing residence time. These wetlands also alter flood flows, and stabilize and retain sediment. The riparian vegetation of Pismo Creek and associated tributaries may remove and transform nutrients, and may export production in terms of the downstream movement of organic matter and organisms. These wetlands provide habitat for fish, and resident and migratory wildlife.

4.0 LITERATURE CITED

Adamus, P.R., E.J. Clarain Jr., R.D. Smith and R.E. Young. 1987. Wetland Evaluation Technique (WET). U.S. Army Engineers Waterway Experiment Station.

Ernstrom, Daniel J. 1984. *Soil Survey of San Luis Obispo County, California, Coastal Part.* Prepared for the U.S. Department of Agriculture, Soil Conservation Service.

Hickman, James C. 1993. *The Jepson Manual, Higher Plants of California.* University of California Press. Berkeley, CA.

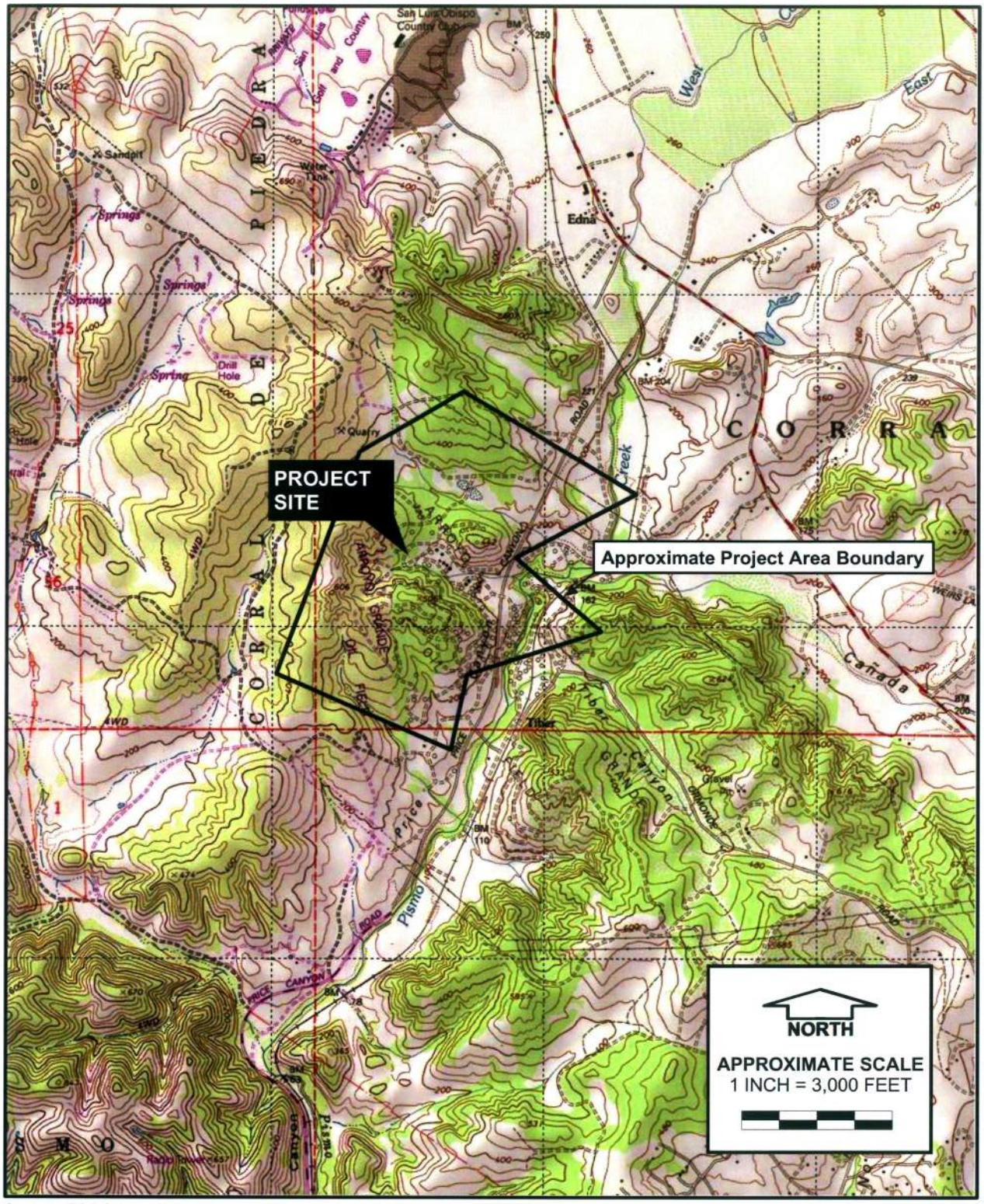
Natural Resources Conservation Service. 1992. Field Office Official List of Hydric Soil Map Units for San Luis Obispo County, California, Coastal Part.

Reed, P.B. Jr. 1988. *National List of Plant Species that occur in Wetlands: California (Region 0).* (U.S. Fish and Wildl. Serv. Biol. Rep. 88(26.10)). St. Petersburg, FL.

FIGURES

THIS PAGE LEFT BLANK INTENTIONALLY

July 2007
Project No.0702-0291



Source: TOPO! c 2001 National Geographic Holdings (www.topo.com)

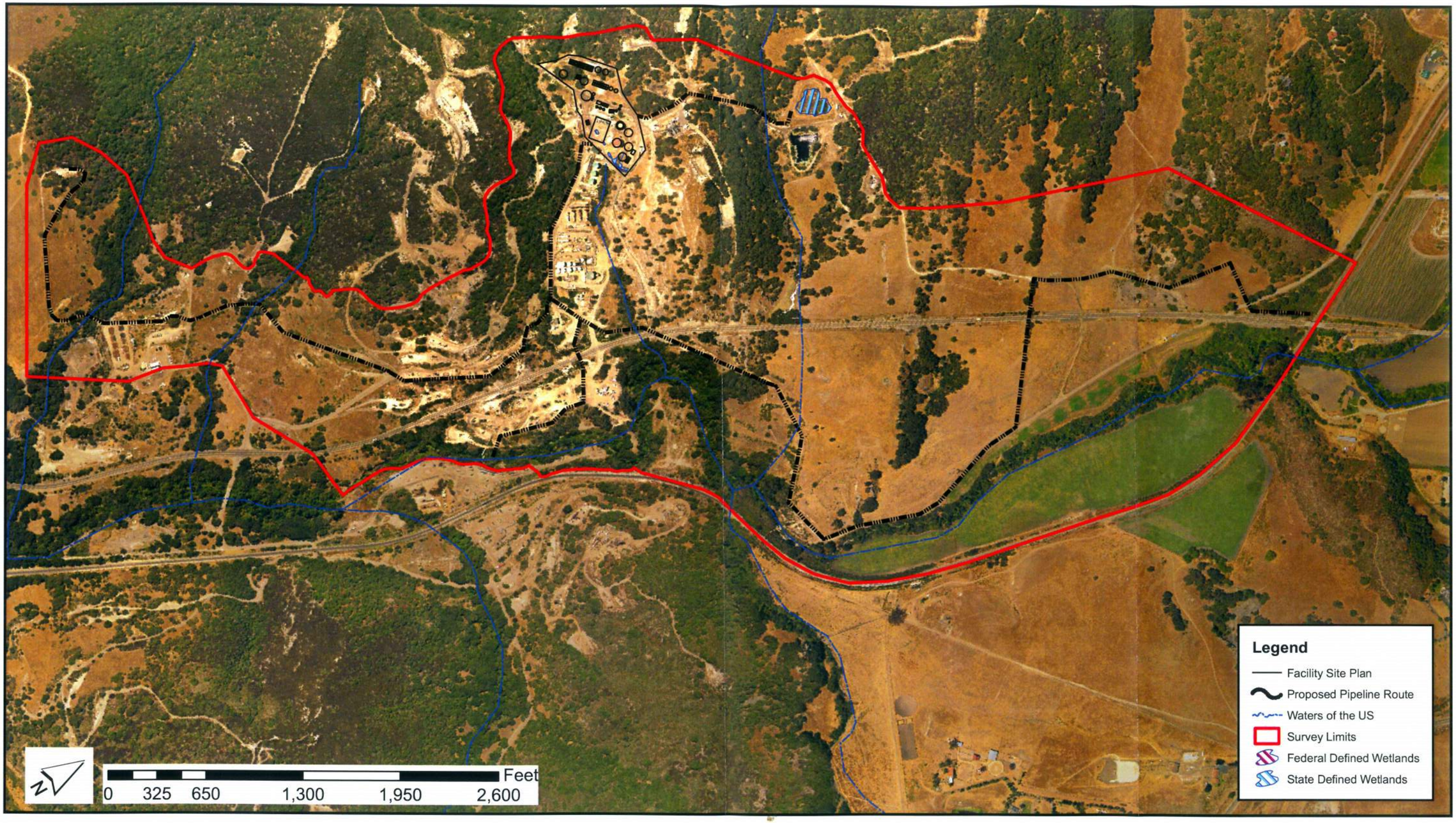
padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

SITE LOCATION MAP

PXP Produced Water Reclamation Facility

FIGURE 1

July 2007
Project No. 0702-0291



Source: ADAIR

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

PXP Produced Water Reclamation Facility SEIR

LIMITS OF JURISDICTIONAL WATERS
FIGURE 2

July 2007
Project No. 0702-0291



Source: ADAIR

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

PXP Produced Water Reclamation Facility SEIR

FOCUSED JURISDICTIONAL WETLANDS MAP
FIGURE 3

APPENDIX A

SITE PHOTOGRAPHS

THIS PAGE LEFT BLANK INTENTIONALLY



PHOTO 1: View of proposed tempering pond (Aspect: East).



PHOTO 2: View of gradual swale area (Aspect: Northeast).



PHOTO 3: View of roadside drainage (Aspect: East).



PHOTO 4: View of man-made storm water conveyance structures (Aspect: East).

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

PXP Produced Water Reclamation Facility

SITE PHOTOGRAPHS

PLATE 1



PHOTO 5: View of stormwater conveyance structures (Aspect: East).



PHOTO 3: View of roadside drainage (Aspect: East).



PHOTO 6: View of proposed imapact area along Pismo Creek (Aspect: Northeast).



PHOTO 8: View of second tributary intersected by south bound pipeline route (Aspect: Southeast).

APPENDIX B

DATA FORMS

THIS PAGE LEFT BLANK INTENTIONALLY

-PXP-

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Produced Water Reclamation Facility City/County: SLO County Sampling Date: 6/18/07

Applicant/Owner: PXP (Ag Oil Field) State: CA Sampling Point: 1

Investigator(s): JPeak / BDugas Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): LRRC Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes No X

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	Is the Sampled Area within a Wetland? Yes No X
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks: site highly disturbed, sampling point adjacent to perennial wetland/drainage feature & man-made drainage conveyance structures/ponds; area grazed (gradual swale area)

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. n/a			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Ambrosia psilostachya	30	yes	FAC
2. Lolium multiflorum	15	yes	FAC
3. Juncus phaeocephalus	30	yes	OBL
4. Avena barbata	2	no	UPL
5. Rumex salicifolius	3	no	OBL
6. Trillis arvensis	2	no	UPL
7. Vicia sativa ssp. nigra	1	no	FACU
8.			
Total Cover:	93		
Woody Vine Stratum			
1. n/a			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 07 % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks: area highly disturbed, grazed.

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
12"	10YR 3/2	100%					CSL	coarse sandy material

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: reached impenetrable material @ 12", very dry sandy soils area highly disturbed, grazed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: no visible hydrologic features present

- PXP -

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Produced Water Reclamation Facility City/County: SLO County Sampling Date: 6/18/07

Applicant/Owner: PXP (AG oil Field) State: CA Sampling Point: 2

Investigator(s): JPeale / BDugas Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%): 0

Subregion (LRR): LRRC Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes No X

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	Is the Sampled Area within a Wetland? Yes No X
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks: Site highly disturbed, area grazed; Sampling point adjacent to perennial wetland drainage feature & man-made drainage conveyance structures/ponds. (gradual swale area)

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Baccharis pilularis	3	No	UPL
2.			
3.			
4.			
5.			
Total Cover: 3			
Herb Stratum			
1. Ambrosia psilostachya	2	No	FAC
2. Typha latifolia	20	Yes	OBL
3. Juncus phaeocephalus	50	Yes	OBL
4. Solanum multiflorum	10	No	FAC
5. Juncus effusus	5	No	OBL
6.			
7.			
8.			
Total Cover: 87			
Woody Vine Stratum			
1. n/a			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks: area disturbed, grazed

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
12"	10YR 3/2	100%					FSL	fine sandy material

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No X

Remarks: reached impenetrable material @ 12", dry sandy soil

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: no hydrologic features present

- PXP -

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Reduced Water Reclamation Facility City/County: SLO County Sampling Date: 6/18/07

Applicant/Owner: PXP (Ag oil Field) State: CA Sampling Point: 3

Investigator(s): JPeak / BDuggs Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%): 0

Subregion (LRR): LRR C Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes No X

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	Is the Sampled Area within a Wetland? Yes X No
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks: site highly disturbed; along existing roadway, adjacent to perennial drainage feature (roadside drainage)

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Baccharis pilularis	2	No	UPL
2.			
3.			
4.			
5.			
Total Cover: 2			
Herb Stratum			
1. Typha latifolia	90	Yes	OBL
2. Juncus effusus	3	No	OBL
3. Ambrosia psilostachya	2	No	FAC
4. Cyperus niger	1	No	FACW
5. Cirsium vulgare	1	No	FACU
6. Epilobium ciliatum	1	No	FACW
7.			
8.			
Total Cover: 98			
Woody Vine Stratum			
1. n/a			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0% % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks: sampling point adjacent to existing roadway – swale along road

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0"-5"	10YR 3/4	90%	10YR 3/1	10%	C	RC	loamy sand	
5"-7"	10YR 2/1	100%					loamy sand	
7"-16"	Gley1 4/10Y	99%	7.5YR 4/6	1%	C	M	loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- X Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): <1"

Water Table Present? Yes X No ____ Depth (inches): 12"

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): >16"

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

-PXP-

WETLAND DETERMINATION DATA FORM – Arid West Region

P /Site: Produced Water Reclamation Facility City/County: SLO County Sampling Date: 6/18/07

Applicant/Owner: PXP (AG oil Field) State: CA Sampling Point: 4

Investigator(s): _____ Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 0

Subregion (LRR): LRR C Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks: Isolated man-made storm water collection basin (Proposed tempering pond); No apparent connectivity to adjacent drainage

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
Total Cover:			
Sapling/Shrub Stratum			
1. n/a			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Typha latifolia	20	Yes	OBL
2. Scirpus californicus	80	Yes	OBL
3. polypogon monspeliensis	1	No	FACW
4.			
5.			
6.			
7.			
8.			
Total Cover: 101%			
Woody Vine Stratum			
1. n/a			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0% % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
2"-8"	10YR 3/2	95%	7.5YR 5/6	5%	C	RC	loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks: reached impenetrable material @ 8"; man-made feature, storm water ~~detention~~ collection basin

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

OAK TREE DATA

THIS PAGE LEFT BLANK INTENTIONALLY

Oak Tree Data for the Plains ploration and Production
Produced Water Reclamation Facility Impact Areas, San Luis Obispo County, California

Tree No.	Species	Size (DBH")	Canopy-N (ft)	Canopy-E (ft)	Canopy-S (ft)	Canopy-W (ft)	CRZ-N (ft)	CRZ-E (ft)	CRZ-S (ft)	CRZ-W (ft)
1	Coast live oak	13.6,7.6,9.1,9.7,8.2,8.9,11,9.1,9.2,7.7	22	21	25	20	27	26	30	25
2	Coast live oak	24.5, 32	20	26	23	30	25	31	28	35
3	Coast live oak	11.8	3	16	2	21	8	21	7	26
4	Coast live oak	16.5, 15.8	13	27	6	27	18	32	11	32
5	Coast live oak	13.2, 14.5, 6.2, 7.5	16	9	21	17	21	14	26	22
6	Coast live oak	13.4	9	16	10	15	14	21	15	20
7	Coast live oak	14.5, 12.1, 13.8, 12.6	20	19	17	18	25	24	22	23
8	Coast live oak	16.4, 14.5	24	15	15	12	29	20	20	17
9	Coast live oak	6.4, 15, 11, 10, 12.8, 12.2, 7	22	37	31	30	27	42	36	35
10	Coast live oak	12, 14	15	12	4	20	20	17	9	25
11	Coast live oak	13.1	26	13	6	5	31	18	11	10
12	Coast live oak	15	17	6	3	32	22	11	8	37
13	Coast live oak	24, 31, 14.6	32	27	30	41	37	32	35	46
14	Coast live oak	7.8, 13, 6.7, 12.5	15	20	22	12	20	25	27	17
15	Coast live oak	13, 26	15	21	20	12	20	26	25	17
16	Coast live oak	14.2	18	4	9	15	23	9	14	20
17	Coast live oak	18.5	9	3	24	22	14	8	29	27
18	Coast live oak	23.8, 24.7, 17, 18.6	32	43	36	14	37	48	41	19
19	Coast live oak	13.6, 11.5	18	12	8	15	23	17	13	20
20	Coast live oak	12.2	6	4	4	13	11	9	9	18
21	Coast live oak	8.4	12	0	6	15	17	5	11	20
22	Coast live oak	7, 21.5, 21.8	30	28	30	16	35	33	35	21
23	Coast live oak	5.9, 13.1	17	0	6	31	22	5	11	36
24	Coast live oak	11.9, 9.1, 6.9, 3.9, 5.8	0	18	16	15	5	23	21	20
25	Coast live oak	13	18	18	20	0	23	23	25	5
26	Coast live oak	13.5, 14, 17	18	15	22	14	23	20	27	19
27	Coast live oak	8.8, 15.3	30	9	0	20	35	14	5	25
28	Coast live oak	14.5, 12.7, 11, 15.2	18	27	21	24	23	32	26	29
29	Coast live oak	29.5	19	14	21	15	24	19	26	20
30	Coast live oak	15, 9.5, 5.5, 11	15	21	16	12	20	26	21	17
31	Coast live oak	15.8	18	20	0	15	23	25	5	20
32	Coast live oak	9.9, 20.5, 16.8, 19.9, 14.6	15	21	25	27	20	26	30	32

Definitions:
DBH - Diameter at Breast Height (inches)
CRZ - Critical Root Zone

THIS PAGE LEFT BLANK INTENTIONALLY

PLANT SPECIES LIST

THIS PAGE LEFT BLANK INTENTIONALLY

Vascular Plant Flora of the Plains Exploration and Production
Produced Water Reclamation Facility Impact Areas, San Luis Obispo County, California

Scientific Name	Common Name	Habit	Wetland Indicator Status	Family	Habitat AG	CS	OW	WM	R	D	Non-Native? Yes=1, No=0
Adenostoma fasciculatum	Chamise	S	.	Rosaceae				X			0
*Aira caryophyllea**	Silver European hair-grass	AG	.	Poaceae	X						1
Ambrosia psilostachya	Western ragweed	PH	FAC	Asteraceae	X					X	0
Amsinkia menziesii var. *intermedia*	Common fiddleneck	AH	.	Boraginaceae	X					X	0
Anagallis arvensis *	Scarlet pimpernel	AH	FAC	Primulaceae	X					X	1
*Anthemis cotula**	Mayweed	AH	FACU	Asteraceae	X						1
*Apera spica -venti**	Common windgrass	AG	.	Poaceae						X	1
Arctostaphylos wellsii	Wells manzanita	S	.	Ericaceae				X			0
Artemisia californica	California sagebrush	S	.	Asteraceae	X	X		X			0
Artemisia douglasiana	Mugwort	PH	FACW	Asteraceae	X				X		0
*Avena barbata**	Slender wild oat	AG	.	Poaceae	X					X	1
Baccharis douglasii	Marsh Baccharis	PH	OBL	Asteraceae					X		0
Baccharis pilularis [B.p. var. consanguinea]	Coyote brush	S	.	Asteraceae		X		X		X	0
Baccharis salicifolia [B. viminea; B. glutinosa]	Mule fat, seep-willow	S	FACW	Asteraceae	X				X		0
*Brassica nigra**	Black mustard	AH	.	Brassicaceae	X	X			X	X	1
*Bromus diandrus**	Ripgut grass	AG	.	Poaceae	X	X				X	1
*Bromus hordeaceus**	Soft chess	AG	FACU-	Poaceae	X	X					1
*Bromus madritensis ssp. rubens**	Red brome	AG	NI	Poaceae	X	X				X	1
Calystegia macrostegia ssp. cyclostegia [Convolvulus c.]	Morning-glory	PV	.	Convolvulaceae	X	X					0
Camissonia micrantha	Miniature suncup	AH	.	Onagraceae	X						0
*Carduus pycnocephalus**	Italian thistle	AH	.	Asteraceae	X					X	1
*Carpobrotus edulis**	Hotten-tot fig (ice plant)	PV	.	Aizoaceae						X	1
Castilleja attenuata	Valley tassels	AH	.	Scrophulariaceae	X						0
Castilleja exserta ssp. exserta [Orthocarpus purpurascens vars. p. & pallidus]	Purple owl's clover	AH	.	Scrophulariaceae	X						0
*Centaurea melitensis**	Tocalote	AH	.	Asteraceae	X					X	1
*Chamaesyce maculata**	Spotted spurge	AH	.	Euphorbiaceae						X	1
*Chamomilla suaveolens**	Pineapple weed	AH	.	Asteraceae						X	1
Chlorogalum pomeridianum	Soap plant	PH	.	Liliaceae	X						0
Chorizanthe staticoides	Turkish rugging	AH	.	Polygonaceae	X						0
Clarkia epilobioides [Godetia e.]	Willow herb godetia	AH	.	Onagraceae	X						0
Clarkia purpurea ssp. quadrivulnera	Four-spotted purple clarkia	AH	.	Onagraceae	X					X	0
Clarkia speciosa ssp. immaculata	Pismo clarkia	AH	.	Onagraceae	X		X				0
Clarkia unguiculata [C. elegans]	Elegant clarkia	AH	.	Onagraceae	X	X				X	0
*Conium maculatum**	Poison hemlock	BH	FACW	Apiaceae	X				X	X	1
*Convolvulus arvensis**	Bind weed	PV	.	Convolvulaceae						X	1
Conyza canadensis [var. canadensis]	Horseweed	AH	FAC	Asteraceae	X					X	0
Cordylanthus rigidus ssp. rigidus	Birds beak	AH	.	Scrophulariaceae	X						0
*Cortaderia selloana**	Pampas grass	PG	.	Poaceae	X						1
*Cotula coronopifolia**	Brass buttons	PH	OBL	Asteraceae						X	1
Croton californicus	California croton	S	.	Euphorbiaceae	X						0
*Cynodon dactylon**	Bermuda grass	PG	FAC	Poaceae	X					X	1
Cyperus eragrostis	Tall flatsedge	AH	FACW	Cyperaceae	X				X		0
Dichelostemma capitatum ssp. capitatum [D. pulchella]	Blue dicks	PH	.	Amaryllidaceae	X						0
Deinandra congesta ssp. luzulifolia [Hemizonia congesta ssp. luzulifolia]	Hayfield tarweed	AH	.	Asteraceae	X						0
Deinandra increscens ssp. foliosa [Hemizonia increscens ssp. foliosa]	Tarplant	AH	.	Asteraceae	X	X					0
*Ehrharta calycina**	Veldt grass	PG	.	Poaceae	X	X				X	1
Equisetum telmateia ssp. *braunii*	Giant horsetail	PH	OBL	Equisetaceae					X		0
Eremocarpus setigerus	Dove weed	AH	.	Euphorbiaceae	X						0
Eriophyllum confertiflorum var. confertiflorum [vars. discoideum & laxiflorum]	Golden yarrow	PH	.	Asteraceae	X	X					0
*Erodium botrys**	Storks bill	AH	.	Geraniaceae	X					X	1
*Erodium cicutarium**	Redstem filaree	AH	.	Geraniaceae						X	1

Vascular Plant Flora of the Plains Exploration and Production
Produced Water Reclamation Facility Impact Areas, San Luis Obispo County, California

Scientific Name	Common Name	Habit	Wetland Indicator Status	Family	Habitat AG	CS	OW	WM	R	D	Non-Native? Yes=1, No=0
*Eucalyptus corynocalyx**	Sugar gum	T	.	Myrtaceae						X	1
Filago californica	California filago	AH	.	Asteraceae	X					X	0
Foeniculum vulgare *	Sweet fennel	PH	FACU	Apiaceae	X					X	1
*Galium aparine**	Goose grass, catchweed bedstraw	AH	FACU	Rubiaceae			X				1
*Geranium dissectum**	Geranium	AH	.	Geraniaceae	X						1
Gnaphalium californicum	Green everlasting	A/BH	.	Asteraceae	X	X					0
Gnaphalium luteo-album *	Cudweed everlasting	AH	FACW-	Asteraceae	X					X	1
Helianthemum scoparium	Peak rush-rose	S	.	Cistaceae	X	X					0
Heteromeles arbutifolia [var. macrocarpa]	Toyon	S	.	Rosaceae		X	X	X			0
Heterotheca grandiflora	Telegraph weed	PH	.	Asteraceae	X					X	0
*Hirschfeldia incana**	Summer mustard	BH	.	Brassicaceae	X	X				X	1
*Hordeum marinum**	Mediteranean barley	AG	FAC	Poaceae	X						1
Hordeum murinum ssp. leporinum *	Hare barley	AG	NI	Poaceae	X					X	1
*Hypochaeris glabrata**	Smooth cat's ear	AH	.	Asteraceae	X					X	1
Hypochaeris radicata	Rough cat's ear	PH	.	Asteraceae	X					X	1
Isocoma menziesii var. menziesii	Coastal goldenbush	S	.	Asteraceae	X	X					0
Juncus effusus var. *brunneus*	Common rush	PH	OBL	Juncaceae					X		0
Lactuca serriola *	Prickly wild lettuce	AH	FAC	Asteraceae	X					X	1
*Lamarckia aurea**	Golden top	AG	.	Poaceae	X						1
Lemna minor	Duckweed	PH	OBL	Lemnaceae					X		0
*Lolium multiflorum**	Italian ryegrass	AG	FAC	Poaceae	X						1
Lotus purshianus var. pushianus [var. glaber	Purshs lotus	AH	.	Fabaceae	X					X	0
Lotus scoparius var. [ssp.] scoparius	Deerweed, California broom	PH	.	Fabaceae	X	X					0
Lupinus bicolor [sspp.& vars.; L. congdonii; L. polycarpus; L. micranthus]	Bicolored or miniature lupine	AH	.	Fabaceae	X	X				X	0
Lupinus nanus	Lupine	AH	.	Fabaceae	X						0
*Lythrum hyssopifolium**	Loosestrife	AH	FACW	Lythraceae	X						1
*Malva parviflora**	Cheese weed	AH	.	Malvaceae	X					X	1
*Medicago polymorpha**	Bur clover	AH	.	Fabaceae	X					X	1
Melilotus alba *	White sweetclover	A/BH	FACU+	Fabaceae	X						1
Melilotus indica *	Sourclover	AH	FAC	Fabaceae	X					X	1
Mimulus aurantiacus [Diplacus a.; D. longiflorus ssp. l.]	Bush monkeyflower	S	.	Scrophulariaceae		X	X	X			0
Nassella pulchra [Stipa p.]	Purple needlegrass	PG	.	Poaceae	X						0
Navarretia hamata	Hooked skunkweed	AH	.	Polemoniaceae	X					X	0
Nicotiana glauca *	Tree tobacco	S	FAC	Solanaceae	X	X				X	1
*Oxalis corniculata**	Oxalis	PH	.	Oxalidaceae						X	1
*Pennisetum clandestinum**	Kikuyu grass	PG	FACU+	Poaceae	X						1
Picris echioides *	Bristly ox-tongue	AH	FAC*	Asteraceae	X						1
Pinus muricata	Bishop pine	T	.	Pinaceae				X			0
Plantago lanceolata *	Narrowleaf or English plantain	PH	FAC-	Plantaginaceae	X					X	1
Platanus racemosa	Western sycamore	T	FACW	Plantanaceae	X				X		0
Polygonum arenastrum *	Common knotweed, doorweed	AH	FAC	Polygonaceae	X					X	1
*Polypogon monspeliensis**	Rabbitsfoot or annual beard grass	AG	FACW+	Poaceae	X						1
Populus balsamifera ssp. *trichocarpa*	Black cottonwood	T	FACW	Salicaceae					X		0
Pteridium aquilinum	Bracken fern	PF	FACU	Dennstaedtiaceae	X		X				0
Quercus agrifolia var. agrifolia	Coast live oak	T	.	Fagaceae	X		X	X	X		0
Raphanus sativus	Radish	AH	.	Brassicaceae	X					X	1
Rhamnus californica	California coffee-berry	S	.	Rhamnaceae			X				0
Rubus ursinus	California blackberry	PV	FACW*	Rosaceae			X		X		0
*Rumex acetosella**	Sheep sorrel	PH	FAC-	Polygonaceae	X						1
Rumex crispus *	Curly dock	PH	FACW-	Polygonaceae	X				X		1
Rumex salicifolius	Willow dock	PH	OBL	Polygonaceae	X						0
Salix laevigata	Red willow	S/T	.	Salicaceae					X		0
Salix lasiolepis [vars. bracelinae & sandbergii; S. lutea var. nivaria; S. tracyi]	Arroyo willow	T	FACW	Salicaceae	X		X		X		0
Salix lucida ssp. *lasiandra*	Yellow willow	S/T	OBL	Salicaceae					X		0
Salvia mellifera	Black sage	S	.	Lamiaceae	X	X					0
Salvia spathaceae	Pitcher sage	PH	.	Lamiaceae			X				0

Vascular Plant Flora of the Plains Exploration and Production
Produced Water Reclamation Facility Impact Areas, San Luis Obispo County, California

Scientific Name	Common Name	Habit	Wetland Indicator Status	Family	Habitat AG	CS	OW	WM	R	D	Non-Native? Yes=1, No=0
*Schinus molle**	Peruvian pepper tree	T	.	Anacardiaceae						X	1
Scirpus californicus	California tule	PH	OBL	Cyperaceae					X		0
Scirpus microcarpus	Panicled bulrush	PH	OBL	Cyperaceae					X		0
Senecio mikanioides	German-ivy	PV	.	Asteraceae					X		1
*Silene gallica **	Windmill pink	AH	.	Caryophyllaceae	X	X				X	1
*Silybum marianum**	Milk thistle	AH	.	Asteraceae	X					X	1
*Sisymbrium orientale**	Sisymbrium	AH	.	Brassicaceae						X	1
Sisyrinchium bellum [S. eastwoodiae; S. greenei; S. hesperium]	Blue eyed grass	PH	FAC	Iridaceae	X						0
*Sonchus asper**	Prickly sow thistle	AH	FAC	Asteraceae						X	1
*Sonchus oleraceus**	Common sow thistle	AH	NI*	Asteraceae	X					X	1
*Spergularia rubra**	Sand spurrey	AH	FAC-	Caryophyllaceae	X					X	1
Toxicodendron diversilobum [Rhus diversiloba]	Poison oak	S/V	.	Anacardiaceae		X	X	X	X		0
*Trifolium fragiferum**	Strawberry clover	AH	.	Fabaceae	X						1
*Trifolium hirtum**	Rose clover	AH	.	Fabaceae	X					X	1
Typha latifolia	Broad-leaved cattail	PH	OBL	Typhaceae					X		0
Verbesina encelioides ssp. *exauriculata**	Golden crownbeard	AH	FAC	Asteraceae						X	1
*Vicia benghalensis**	Purple vetch	AV	.	Fabaceae	X					X	1
*Vicia sativa ssp. nigra**	Narrow-leaf vetch	AV	FACU	Fabaceae	X						1
*Vinca major**	Greater periwinkle	PV	.	Apocynaceae	X		X		X		1
Xanthium strumarium [sspp./vars. canadense & glabratum]	Cocklebur	AH	FAC+	Asteraceae	X						0
											64

Notes: Scientific nomenclature follows Hickman (1993) and Skinner and Pavlik (1994) for native taxa and Bailey and Bailey (1976).
Common names follow Abrams and Ferris (1960), Neihaus and Ripper (1976), and DeGarmo (1980).
An "*" indicates non-native species which have become naturalized or persist without cultivation.

Habit definitions:
- AF = annual fern or fern ally.
- AG = annual grass.
- AH = annual herb.
- BH = biennial herb.
- PF = perennial fern or fern ally.
- PG = perennial grass.
- PH = perennial herb.
- PV = perennial vine.
- S = shrub.
- T = tree.

Habitat Definitions:
- AG = Annual grassland
- CS = Coyote brush scrub
- OW = Coast live oak woodland
- WM = Wells manzanita scrub
- D = Disturbed areas
- R = Riparian woodland/scrub

Wetland indicator status (Reed 1988): OBL = obligate wetland species, occurs almost always in wetlands (>99% probability)
- FACW = facultative wetland species, usually found in wetlands (67-99% probability).
- FAC = facultative species, equally likely to occur in wetlands or nonwetlands (34-67% probability).
- FACU = facultative upland species, usually occur in nonwetlands (67-99% probability).
- + or - symbols are modifiers that indicate greater or lesser affinity for wetland habitats.
- NI = no indicator has been assigned due to a lack of information to determine indicator status.
- * = a tentative assignment to that indicator status by Reed (1988).
- A period "." indicates that no wetland indicator status has been given in Reed (1988).
- Parentheses around an indicator status indicates the wetland status as suggested by David Magney.

THIS PAGE LEFT BLANK INTENTIONALLY

WILDLIFE SPECIES LIST

THIS PAGE LEFT BLANK INTENTIONALLY

WILDLIFE SPECIES OBSERVED OR LIKELY TO OCCUR IN THE VICINITY OF THE PLAINS EXPLORATION AND PRODUCTION OIL FACILITY, SAN LUIS OBISPO, CALIFORNIA

Common Name	*Scientific Name*	Residence Status	Protected Status	Habitat
Fishes				
South-central California coast steelhead*	*Oncorhynchus mykiss irideus*	R	FT, CSC	A
Tidewater goby	*Eucyclogobius newberryi*	R	FE, CSC	A
Speckled dace*	*Rhinichthys osculus*	R	--	A
Threespine stickleback*	*Gasterosteus aculeatus*	R	--	A
Prickly sculpin*	*Cottus asper*	R	--	A
Amphibians				
California tiger salamander	*Ambystoma californiense*	R	FC, CSC	A,R
Ensatina	*Ensatina eschscholtzii*	R	--	R,G,P
Western toad	*Bufo boreas*	R	--	A,R
Pacific treefrog*	*Hyla regilla*	R	--	A,R
California red-legged frog	*Rana aurora draytonii*	R	FT, CSC	A,R
Bullfrog*	*Rana catesbeiana*	R	--	A,R
Reptiles				
Southwestern pond turtle*	*Clemmys marmorata pallida*	R	CSC	A,R
Western fence lizard*	*Sceloporus occidentalis*	R	--	G,D,P,M
Sagebrush lizard	*Sceloporus graciosus*	R	--	G,P
Side-blotched lizard	*Uta stanburiana*	R	--	G,D,P,M
Coast horned lizard	*Phrynosoma coronatum frontale*	R	CSC	G,P
Western skink	*Eumeces skiltonianus*	R	--	G
Western whiptail*	*Cnemidophorus tigris*	R	--	G,P
Southern alligator lizard*	*Gerrhonotus multicarinatus*	R	--	A,R,G
Common kingsnake	*Lampropeltis getulus*	R	--	A,R,P,M
Ringneck snake	*Diadophis punctatus*	R	--	R,G,P
Racer	*Coluber constrictor*	R	--	G
Gopher snake	*Pituophis melanoleucus*	R	--	R,G,P
Common garter snake	*Thamnophis sirtalis*	R	--	R,G,P
Terrestrial garter snake	*Thamnophis elegans*	R	--	R,G,P
Western aquatic garter snake	*Thamnophis couchi*	R	--	A,R
Western rattlesnake	*Crotalus viridis*	R	--	R,G,P
Birds				
Black-crowned night-heron	*Nycticorax nycticorax*	R	M	W,G,R
Green heron	*Butorides virescens*	R	M	W,G,R
Snowy egret	*Egretta thula*	W	M	W,G,R
Great egret	*Ardea alba*	R	M	W,G,R
Great blue heron	*Ardea herodias*	R	M	W,G,R
Mallard	*Anas platyrhynchos*	R	M	W,G,R
Turkey vulture*	*Cathartes aura*	R	M	R,G,P
Osprey	*Pandion haliaetus*	W	M, CSC (nesting)	A,W
White-tailed kite*	*Elanus leucurus*	R	M, FSC (nesting), FP	G,P
Northern harrier	*Circus cyaneus*	R	M, CSC (wintering)	W,G
Golden eagle	*Aquila chrysaetos*	R	M, CSC (nesting and wintering), CFP	R,G,P
Sharp-shinned hawk	*Accipiter striatus*	W	M, CSC (nesting)	P,R,G
Cooper's hawk*	*Accipiter cooperii*	R	M, CSC (nesting)	R,G
Red-shouldered hawk*	*Buteo lineatus*	R	M	R,G

WILDLIFE SPECIES OBSERVED OR LIKELY TO OCCUR IN THE VICINITY OF THE PLAINS EXPLORATION AND PRODUCTION OIL FACILITY, SAN LUIS OBISPO, CALIFORNIA

Common Name	*Scientific Name*	Residence Status	Protected Status	Habitat
Red-tailed hawk*	*Buteo jamaicensis*	R	M	R,G
Ferruginous hawk	*Buteo regalis*	W	CSC (wintering), M	R,G
American kestrel*	*Falco sparverius*	R	M	R,G,P
Merlin	*Falco columbarius*	W	M, CSC (wintering)	R,G,P
Prairie falcon	*Falco mexicanus*	W	M, CSC (nesting)	G
American peregrine falcon*	*Falco peregrinus*	R	SE, FP, M	R,G,P
Wild turkey*	*Meleagris gallopavo*	R	--	P
California quail*	*Cillipepla californica*	R	--	R,P
Mountain quail	*Oreotyx pictus*	R	M	P
Killdeer	*Charadrius vociferus*	R	M	W,G
Band-tailed pigeon	*Columba fasciata*	R	M	R
Rock dove	*Columba livia*	R	--	D
Mourning dove*	*Zenaida macroura*	R	M	R,G
Barn owl	*Tyto alba*	R	M	R,G,P
Short-eared owl	*Asio flammeus*	W	CSC (nesting), M	R,P,W
Long-eared owl	*Asio otus*	R	CSC (nesting), M	R,P,W
Great horned owl*	*Bubo virginianus*	R	M	R,G,P
Western screech-owl	*Otus kennicottii*	R	M	R,G,P
Northern pygmy-owl	*Glaucidium gnoma*	R	M	R
Northern saw-whet owl	*Aegolius acadicus*	R	M	R,G,P
White throated swift	*Aeronautes saxatalis*	R	M	R,G,P
Black-chinned hummingbird	*Archilochus alexandri*	B	M	R,G,P
Costa's hummingbird	*Calypte costae*	B	CSC (nesting), M	R,G,P
Anna's hummingbird*	*Calypte anna*	R	M	R,G,P
Allen's hummingbird	*Selasphorus sasin*	B	M	R,G,P
Belted kingfisher	*Ceryle alcyon*	R	M	R,A
Acorn woodpecker*	*Melanerpes formicivorous*	R	M	P
Lewis's woodpecker	*Melanerpes lewis*	W	M	P
Northern flicker*	*Colaptes auratus*	R	M	R,P
Red-breasted sapsucker*	*Sphyrapicus ruber*	B	M	R,P
Nuttall's woodpecker	*Picoides nuttallii*	R	M	R,P
Downy woodpecker	*Picoides pubescens*	R	M	R,P
Hairy woodpecker*	*Picoides villosus*	R	M	P
Olive-sided flycatcher	*Contopus cooperi*	B	M	R,P
Western wood-pewee	*Contopus sordidulus*	B	M	R,P
Southwestern willow flycatcher	*Empidonax trailli extimus*	B	SE (nesting), M	R,G,P
Pacific-slope flycatcher*	*Empidonax difficilis*	B	M	R,G,P
Black phoebe	*Sayornis nigricans*	R	M	R,G,P
Say's phoebe*	*Sayornis saya*	R	M	G
Ash-throated flycatcher*	*Myiarchus cinerascens*	B	M	R,G,P
Western kingbird*	*Tyrannus verticalis*	B	M	G
Cassin's kingbird	*Tyrannus vociferans*	B	M	G
Loggerhead shrike	*Lanius ludovicianus*	R	CSC (nesting), M	M
Hutton's vireo	*Vireo huttoni*	R	M	W,R
Cassin's vireo	*Vireo cassinii*	B	M	W,R
Steller's jay*	*Cyanocitta stelleri*	R	M	R,G
Western scrub-jay*	*Aphelocoma c. californica*	R	M	R,G,P

WILDLIFE SPECIES OBSERVED OR LIKELY TO OCCUR IN THE VICINITY OF THE PLAINS EXPLORATION AND PRODUCTION OIL FACILITY, SAN LUIS OBISPO, CALIFORNIA

Common Name	*Scientific Name*	Residence Status	Protected Status	Habitat
Yellow-billed magpie	*Pica nuttalli*	R	M	W,G
American crow*	*Corvus brachyrhynchos*	R	M	M
Common raven*	*Corvus corax*	R	M	M
Tree swallow	*Tachycineta bicolor*	R	M	R,G
Violet-green swallow	*Tachycineta thalassina*	R	M	R,G
Purple martin	*Progne subis*	B	CSC (nesting), M	R,G
Cliff swallow*	*Hirundo pyrrhonota*	B	M	R,G
Northern rough-winged swallow	*Stelgidopteryx serripennis*	B	M	R,G
Barn swallow*	*Hirundo rustica*	B	M	R,G
Wrentit	*Chamaea fasciata*	R	--	R
Oak titmouse*	*Baeolophus inornatus*	R	M	R,P
Chestnut-backed chickadee*	*Parus rufescens*	R	M	R,P
Bushtit*	*Psaltriparus minimus*	R	M	P
Brown creeper	*Certhia americana*	R	M	W,R,P
White-breasted nuthatch*	*Sitta carolinensis*	R	M	P
Red-breasted nuthatch	*Sitta canadensis*	W	M	P
House wren*	*Troglodytes aedon*	R	M	R,G
Bewick's wren*	*Thryomanes bewickii*	R	M	R,G
Canyon wren	*Catherpes mexicanus*	R	M	R,G
Marsh wren	*Cistothorus palustris*	R	M	R,P
Golden-crowned kinglet*	*Regulus satrapa*	W	M	R
Ruby-crowned kinglet	*Regulus calendula*	W	M	P
Blue-gray gnatcatcher*	*Polioptila caerulea*	B	M	R,G
Western bluebird*	*Sialia mexicana*	R	M	R
Swainson's thrush	*Catharus ustulatus*	B	M	P
Hermit thrush	*Catharus guttatus*	W	M	R,G
Varied thrush	*Ixoreus naevius*	W	M	P
American robin*	*Turdus migratorius*	R	M	P,G
Northern mockingbird	*Mimus polyglottos*	R	M	R
California thrasher*	*Toxostoma redivivum*	R	M	W,G
European starling*	*Sturnus vulgaris*	R	--	R,P
American pipit	*Anthus rubescens*	W	M	M
Cedar waxwing	*Bombycilla cedrorum*	W	M	G,W
Orange-crowned warbler	*Vermivora celata*	R	M	G,P
Yellow-rumped warbler	*Dendroica coronata*	B	M	G,P
Black-throated gray warbler*	*Dendroica nigrescens*	B	M	G,P
Townsend's warbler	*Dendroica townsendi*	W	M	P
Hermit warbler	*Dendroica occidentalis*	W	M	P
Yellow warbler*	*Dendroica petechia*	B	CSC (nesting), M	R
MacGillivray's warbler	*Oporonis tolmiei*	B	M	W,R
Wilson's warbler	*Wilsonia pusilla*	B	M	W,R
Common yellowthroat*	*Geothlypis trichas*	R	M	W,R
Yellow-breasted chat	*Icteria virens*	B	CSC (nesting), M	R
Western tanager	*Piranga ludoviviana*	B	M	P
California towhee*	*Pipilo crissalis*	R	M	R,P
Spotted towhee*	*Pipilo maculatus*	R	M	R,P
Rufous-crowned sparrow	*Aimophila ruficeps*	R	M	G

WILDLIFE SPECIES OBSERVED OR LIKELY TO OCCUR IN THE VICINITY OF THE PLAINS EXPLORATION AND PRODUCTION OIL FACILITY, SAN LUIS OBISPO, CALIFORNIA

Common Name	*Scientific Name*	Residence Status	Protected Status	Habitat
Lark sparrow	*Chondestes grammacus*	B	M	G
Sage sparrow	*Amphispiza b. belli*	R	CSC, M	G,W
Fox sparrow	*Passerella iliaca*	W	M	G,W
Savannah sparrow	*Passerculus sandwichensis*	R	M	G
Lincoln's sparrow	*Melospiza lincolnii*	W	M	W,R
Song sparrow*	*Melospiza melodia*	R	M	G,W
White-crowned sparrow	*Zonotrichia leucophrys*	R	M	R,W,G
Golden-crowned sparrow	*Zonotrichia atricapilla*	W	M	W,R
Dark-eyed junco*	*Junco hyemalis*	R	M	R,W,G
Black-headed grosbeak*	*Pheucticus melanocephalus*	B	M	R,P
Blue grosbeak	*Guiraca caerulea*	B	M	R,W,G
Lazuli bunting	*Passerina amoena*	B	M	R,W,G
Western meadowlark	*Sturnella neglecta*	R	M	W
Red-winged blackbird*	*Agelaius phoeniceus*	R	M	R
Tricolored blackbird	*Agelaius tricolor*	R	CSC, M	W
Great-tailed grackle	*Quiscalus mexicanus*	R	M	M
Brewer's blackbird*	*Euphagus cyanocephalus*	R	M	R,W,G
Brown-headed cowbird	*Molothrus ater*	R	M	R,W,G
Hooded oriole	*Icterus cucullatus*	B	M	M
Bullock's oriole*	*Icterus bullockii*	B	M	R,P
Purple finch	*Carpodacus purpureus*	R	M	R,G,P
House finch*	*Carpodacus mexicanus*	R	M	R,G,P
Pine siskin*	*Carduelis pinus*	W	M	R,P
American goldfinch	*Carduelis tristis*	R	M	R,P
Lesser goldfinch	*Carduelis psaltria*	B	M	R,P
Lawrence's goldfinch	*Carduelis lawrencei*	R	M	R,P
House sparrow	*Passer domesticus*	R	--	D
Common snipe*	*Gallinago gallinago*	R	M	R
Mammals				
Virginia opossum	*Didelphis virginiana*	R	--	R,P
Broad-footed mole	*Scapanus latimanus*	R	--	R,G
California myotis	*Myotis californicus*	R	--	P
Yuma myotis bat	*Myotis yumanensis*	R	--	R
Small-footed myotis	*Myotis ciliolabrum*	R	--	R,P
Long-eared myotis bat	*Myotis evotis*	R	--	R,P
Long-legged myotis bat	*Myotis volans*	R	--	P
Red bat	*Lasiurus borealis*	R	--	M
Fringed myotis bat	*Myotis thysanodes*	R	--	P
Hoary bat	*Lasiurus cinereus*	R	--	M
Big brown bat	*Episticus fuscus*	R	--	M
Townsend's big-eared bat	*Plecotus townsendii*	R	CSC	M
Pallid bat	*Antrozous pallidus*	R	CSC	M
Brazilian free-tailed bat	*Tadarida brasiliensis*	R	--	R,P,G
Western mastiff bat	*Eumops perotis*	R	CSC	M
Desert cottontail	*Sylvilagus audubonii*	R	--	G
Brush rabbit	*Sylvilagus bachmani*	R	--	R
Black-tailed jackrabbit*	*Lepus californicus*	R	--	P,G

WILDLIFE SPECIES OBSERVED OR LIKELY TO OCCUR IN THE VICINITY OF THE PLAINS EXPLORATION AND PRODUCTION OIL FACILITY, SAN LUIS OBISPO, CALIFORNIA

Common Name	*Scientific Name*	Residence Status	Protected Status	Habitat
Merriam's chipmunk	*Tamias merriami*	R	--	G
California ground squirrel	*Spermophilus beecheyi*	R	--	G
Western gray squirrel	*Sciurus griseus*	R	--	R,P
Botta's pocket gopher	*Thomomys bottae*	R	--	R,G,P
California pocket mouse	*Chaetodipus californicus*	R	--	M
Beaver	*Castor canadensis*	R	--	A,R
Western harvest mouse	*Reithrodontomys megalotis*	R	--	G
Brush mouse	*Peromyscus boylii*	R	--	G
California mouse	*Peromyscus californicus*	R	--	G
Deer mouse	*Peromyscus maniculatus*	R	--	M
Dusky-footed woodrat*	*Neotoma fuscipes*	R	CSC	R,P
California vole*	*Microtus californicus*	R	--	R,G,W
Norway rat	*Rattus norvegicus*	R	--	D
Black rat	*Rattus rattus*	R	--	M
House mouse	*Mus musculus*	R	--	D
Domestic dog	*Canis familiaris*	R	--	D
Coyote*	*Canis latrans*	R	--	M
Gray fox*	*Urocyon cinereoargenteus*	R	--	M
Black bear	*Ursus americanus*	R	--	R,P,G
Ringtail	*Bassariscus astutus*	R	--	R
Raccoon*	*Procyon lotor*	R	--	M
Long-tailed weasel	*Mustela frenata*	R	--	M
American badger	*Taxidea taxus*	R	--	M
Western spotted skunk	*Spilogale gracilis*	R	--	R
Striped skunk	*Mephitis mephitis*	R	--	R,G
Domestic cat	*Felis catus*	R	--	M
Mountain lion	*Felis concolor*	R	--	R,P
Bobcat*	*Lynx rufus*	R	--	R
Mule deer*	*Odocoileus hemionus*	R	--	R,G

*Observed and/or signs (e.g., scat, tracks, vocalization, etc.) detected during field surveys conducted by Padre.

Residence Status
- R = Permanent resident
- W = Winter resident
- B = Summer resident

Protected Status
- FE – Federal endangered species
- FT -- Federal threatened species
- FC – Federal candidate species
- M – Migratory Bird Treaty Act
- SE – State endangered species
- ST – State threatened species
- CSC – California Species of Special Concern
- CFP – California Fully Protected Species

Typical Habitat
- A – Freshwater aquatic
- D – Developed areas
- G – Grassland
- M – Multiple habitats
- P – Woodland
- R – Riparian
- W - Wetland

THIS PAGE LEFT BLANK INTENTIONALLY

CALIFORNIA RED-LEGGED FROG REPORT

THIS PAGE LEFT BLANK INTENTIONALLY

CALIFORNIA RED-LEGGED FROG (*RANA AURORA DRAYTONII*) SURVEY RESULTS FOR THE PXP PRODUCED WATER RECLAMATION FACILITY SAN LUIS OBISPO, CALIFORNIA

Prepared for:

County of San Luis Obispo
Environmental and Resource Management Division
Department of Planning and Building
San Luis Obispo, California

Prepared By:

Padre Associates, Inc.
811 El Capitan Way, Suite 130
San Luis Obispo, California 93401

July 2007

Project No. 0702-0291

THIS PAGE LEFT BLANK INTENTIONALLY

TABLE OF CONTENTS

Page

1.0 INTRODUCTION 1

2.0 CALIFORNIA RED-LEGGED FROG LITERATURE REVIEW 1

3.0 SURVEY METHODOLOGY 1

4.0 SURVEY SITE CHARACTERISTICS 2

4.1 PISMO CREEK 2

4.2 STOCK POND AND PROPOSED TEMPERING POND 2

5.0 SURVEY RESULTS 3

6.0 CALIFORNIA RED-LEGGED FROG PREDATOR CONTROL 4

7.0 CONCLUSION 4

8.0 REFERENCES 5

TABLES

TABLE 1. Survey Results for Pismo Creek

TABLE 2. Survey Results for the Stock Ponds

APPENDICES

APPENDIX A – Photo-documentation of the Survey Sites

APPENDIX B – Figure 1. Map of the Survey Sites

APPENDIX C – CRLF Survey Forms

APPENDIX D – Padre Staff Resumes

THIS PAGE LEFT BLANK INTENTIONALLY

1.0 INTRODUCTION

The following report documents recent California red-legged frog (CRLF) (*Rana aurora draytonii*) survey results for the Plains Exploration and Production Company (PXP) Arroyo Grande Oil Field Produced Water Reclamation Facility Subsequent Environmental Impact Report (SEIR) located in San Luis Obispo County, California. The surveys were conducted to determine the presence or absence of the federally-threatened CRLF and assess the potential impacts associated with the proposed installation of a permanent reclaimed water outfall structure at Pismo Creek and creation of the proposed tempering pond located within an existing stormwater collection basin.

All survey sites were selected based on the CRLF literature review (see below) and encompass proposed project impact areas that have the potential to affect aquatic habitats with the potential to contain CRLF.

2.0 CALIFORNIA RED-LEGGED FROG LITERATURE REVIEW

Prior to conducting CRLF field surveys, a literature review was conducted to investigate the historical presence of CRLF proximate to the proposed reclaimed water outfall structure at Pismo Creek and the proposed tempering pond. The literature review examined multiple sources of information including a query of the California Natural Diversity Database (CNDDB 2007) and the Revised Hydrological, Water Quality, and Biological Characterization of Pismo Creek (Entrix 2006). The CNDDB indicated that CRLF have recently been identified approximately 2.5 miles downstream of the subject project area in an unnamed tributary of Pismo Creek. Additionally, the Revised Hydrological, Water Quality, and Biological Characterization of Pismo Creek identified suitable habitat for CRLF, but did not indicate their presence (Entrix 2006).

3.0 SURVEY METHODOLOGY

All surveys were conducted in accordance to the USFWS Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog (USFWS 2005). When surveyors arrived at the site, attempts were made to identify CRLF vocalizations. Following auditory identification attempts, surveys were conducted by walking or boating transects of opportunity within all available CRLF habitat. The majority of the survey effort was focused on riparian areas that had the highest potential to contain CRLF. Surveys were conducted 500-feet up and downstream of the identified potential project impact area in Pismo Creek, within the proposed tempering pond, and in all nearby potential CRLF habitat areas including the existing stock pond located directly southeast of the proposed tempering pond. One or two biologists with prior experience with CRLF performed each respective survey. A thermometer (Traceable® Calibration Control Company) and a wind meter (Kestrel® 2000) were utilized to record weather data. Binoculars (Swift 10x42, Leica 10x42, and Audubon 10x42) and lights (Nite Lite® with < 100,000 candle power) were utilized to scan all available CRLF habitat, detect the species via eye-shine during night surveys, and to investigate potential CRLF refugium during the day.

4.0 SURVEY SITE CHARACTERISTICS

The following discussion details the respective survey site characteristics observed during the surveys. These characterizations include a physical description of the available aquatic habitat, dominant vegetation observed, and wildlife observed. Additionally, Figure 1 (Contained in Appendix B) provides the location of each survey site.

4.1 PISMO CREEK

Available CRLF habitat in Pismo Creek predominately consists of a narrow strip of willow scrub which comprises the riparian corridor of the creek (Refer to Appendix A – Photo 1). Ruderal areas surround the willow scrub habitat and include roadsides and oil production activities. The channel width of Pismo Creek is approximately 20 feet and the maximum depth exceeds 5 feet. Vegetation observed in this habitat includes Arroyo willow (*Salix lasiolepis*), coast live oak (*Quercus agrifolia*), black cottonwood (*Populus balsamifera ssp. trichocarpa*), western sycamore (*Platanus racemosa*), poison oak (*Toxicodendron diversilobum*), California blackberry (*Rubus ursinus*), Himalayan blackberry (*Rubus discolor*), periwinkle (*Vinca major*), and German ivy (*Senecio mikanioides*). Wildlife observed at this site included crayfish (*Procambria clarkii*), American bullfrog (*Rana catesbeiana*), Pacific treefrog (*Pseduacris regilla*), Pacific pond turtle (*Actinemys marmorata pallida*), speckled dace (*Rhinichthys osculus*), rainbow (steelhead) trout (*Oncorhynchus mykiss*), prickly sculpin (*Cottus asper*), mallard (*Anas platyrhynchos*), yellow warbler (*Dendroica petechia*), black-headed grosbeak (*Pheucticus melanocephalus*), Pacific slope flycatcher (*Empidonax difficilis*), golden eagle (*Aquila chrysaetos*), turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), lesser goldfinch (*Carduelis psaltria*), house finch (*Carpodacus mexicanus*), house wren (*Troglodytes aedon*), and beaver (*Castor canadensis*).

4.2 STOCK POND AND PROPOSED TEMPERING POND

Available CRLF habitat proximate to the stock pond predominately consists of a narrow strip of California bulrush (*Scripus californicus*) and Arroyo willow dominated wetland surrounding the perimeter of the stock pond (Refer to Appendix A – Photos 2 and 3). The stock pond has a 60-foot width and a 110-foot length, and is predominantly oblong in shape. Surface water was present in the stock pond during each survey. The depth of the pool was not estimated during the surveys. Emergent vegetation observed in this habitat includes California bulrush, Arroyo willow, and greater duckweed (*Lemna major*). The areas surrounding the stock pond consist of relatively undisturbed oak woodland habitat and annual grasslands. A limited number of dirt access roads transect this area. Wildlife observed at this site included Pacific tree frog, American bullfrog, largemouth bass (*Micropterus salmoides*), red-winged blackbird (*Agelaius phoeniceus*), mallard, American turkey (*Meleagris gallopavo*), and common snipe (*Gallinago gallinago*). The proposed tempering pond is dominated by California bulrush and broad-leaved cattails (*Typha latifolia*) and no surface water was present during the surveys. Therefore, this area was surveyed, but the majority of the survey effort was committed to the stock pond which had surface water.

5.0 SURVEY RESULTS

The following tables depict the results of the CRLF surveys conducted at the sites described above. As required in the USFWS protocol, if CRLF were identified, surveys would be ceased at the respective site and further survey effort would not be exerted (USFWS 2005). When CRLF are not detected a total of eight surveys (2 day and 6 night) must be conducted to determine CRLF absence. Padre Biologists did not observe CRLF; therefore, a total of eight surveys were conducted at each respective site (Table 1 and 2).

TABLE 1: Survey Results for Pismo Creek.

Survey Number	Survey Date Start Time	Survey Type	Air Temp. Water Temp.	Weather Conditions	CRLF Detected
1	Date: 4/13/07 Time: 1500	Day	Air: 72.4°F Water: 61.8°F	0% cloud cover, 5.2 mph E wind	No
2	Date: 4/18/07 Time: 2045	Night	Air: 51.0°F Water: 56.7°F	0% cloud cover, new moon, 2.7 mph S wind	No
3	Date: 4/25/07 Time: 2100	Night	Air: 57.0°F Water: 59.5°F	10% cloud cover, ½ waxing moon, 0.5 mph S wind	No
4	Date: 5/02/07 Time: 2130	Night	Air: 54.5°F Water: 60.1°F	0% cloud cover, full moon, 3 mph SW wind	No
5	Date: 5/09/07 Time: 2200	Night	Air: 52.3°F Water: 60.7°F	100% cloud cover, ½ waning moon, 0.5 mph NE wind	No
6	Date: 5/17/07 Time: 2115	Night	Air: 56.6°F Water: 60.6°F	0% cloud cover, new moon, 0 mph wind	No
7	Date: 7/03/07 Time: 1352	Day	Air: 84.4°F Water: 71.1°F	0% cloud cover, 3.4 mph E wind	No
8	Date: 7/03/07 Time: 2130	Night	Air: 61.0°F Water: 67.0°F	0% cloud cover, ½ waxing moon, 0 mph wind	No

TABLE 2: Survey Results for the Stock Pond and Proposed Tempering Pond.

Survey Number	Survey Date Start Time	Survey Type	Air Temp. Water Temp.	Weather Conditions	CRLF Detected
1	Date: 4/13/07 Time: 1345	Day	Air: 74.7°F Water: 65.3°F	0% cloud cover, 6.1 mph NW wind	No
2	Date: 4/18/07 Time: 2200	Night	Air: 51.0°F Water: 61.7°F	0% cloud cover, new moon, 2.0	No

				mph S wind	
3	Date: 4/25/07 Time: 2020	Night	Air: 54.0°F Water: 63.0°F	15% cloud cover, ½ waxing moon, 3.5 mph S wind	**No**
4	Date: 5/02/07 Time: 2035	Night	Air: 55.5°F Water: 66.1°F	10% cloud cover, full moon, 1.7 mph SW wind	**No**
5	Date: 5/09/07 Time: 2100	Night	Air: 60.7°F Water: 67.3°F	100% cloud cover, full moon, ½ waning moon, 0 mph wind	**No**
6	Date: 5/17/07 Time: 2035	Night	Air: 52.9°F Water: 66.2°F	0% cloud cover, new moon, 1.6 mph W wind	**No**
7	Date: 7/03/07 Time: 1352	Day	Air: 81.4°F Water: 75.6°F	0% cloud cover, 4.6 mph E wind	**No**
8	Date: 7/03/07 Time: 2100	Night	Air: 60.3°F Water: 73.9°F	0% cloud cover, ½ waxing moon, 0 mph wind	**No**

6.0 CALIFORNIA RED-LEGGED FROG PREDATOR CONTROL

During the night surveys approximately 3 adult bullfrogs were eliminated from the Pismo Creek survey area (one bullfrog observed was dispatched on 4/18/07; 1 of 2 bullfrogs observed was dispatched on 5/02/07; and 1 of 2 bullfrogs observed was dispatched on 5/17/07). Prior to eradication, each frog was identified to species level. Following species identification, capture and subsequent dispatching was performed. Additionally, crayfish were observed in Pismo Creek and largemouth bass were observed in the stock pond near the proposed tempering pond.

7.0 CONCLUSION

CRLF were not observed at any of the surveyed sites. Although suitable habitat exists in both Pismo Creek and the existing stock ponds, the presence of bullfrogs in these areas may have assisted with the extirpation of CRLF from these locations. Correlations between the presence of bullfrogs and the absence of CRLF have been identified (Jennings and Hayes 1986); therefore, it is unlikely that CRLF will be identified in this area of Pismo Creek. Additionally, the southern stock pond maintains a population of largemouth bass. Scientific literature on the effects of largemouth bass on CRLF populations is nonexistent. Although the interactions of largemouth bass and CRLF populations remain obscure, researchers have identified negative effects to northern red-legged frogs (*Rana aurora aurora*) and CRLF in the presence of other centarchids including smallmouth bass (*Micropterus dolomieui*) (Kiesecker and Blaustein 1998; Scott and Crossman 1973; Krise and Francis 1977; Adams et al. 2003).

8.0 REFERENCES

Adams M. J., C. A. Pearl, and R.B. Bury. 2003. Indirect facilitation of an anuran invasion by non-native fishes. Ecology Letters 6: 343-351.

California Natural Diversity Database (CNDDB). 2006. Rarefind 3 Query. California Department of Fish and Game. Sacramento, Ca.

Entrix Inc. 2006. Revised hydrological, water quality, and biological characterization of Pismo Crook. Prepared for the Plains Exploration and Production Company Arroyo Grande Produced Water Reclamination Facility. San Luis Obispo, Ca.

Hayes M.P., and M.R. Jennings. 1986. Decline of ranid frog species in western North America: are bullfrogs (*Rana catesbeiana*) responsible? Journal of Herpetology 20: 490-509.

Kiesecker, J.M. and A.R. Blaustein. 1998. Effects of introduced bullfrogs and smallmouth bass on microhabitat use, growth, and survival of native red-legged frogs (*Rana aurora*). Conservation Biology 12(4): 776-787.

Kruse, K.C., and M.G. Francis. 1977. A predation deterrent in the larvae of the bullfrog (*Rana catesbeiana*). Transactions of the American Fisheries Society. 106: 248-252.

Scott, W.B., and E.J. Crossman. 1973. Freshwater fish of Canada. Bulletin of the Fisheries Research Board of Canada 184: 1-996.

U.S. Fish and Wildlife Service (USFWS). 2005. Revised guidance on site assessments and field surveys for the California red-legged frog. U.S. Fish and Wildlife Service, Portland, Oregon. 26.

* * *

THIS PAGE LEFT BLANK INTENTIONALLY

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

APPENDIX A

Photo-documentation of Survey Sites.

THIS PAGE LEFT BLANK INTENTIONALLY



Photo 1: Representative Photo of the CRLF Habitat observed in the Pismo Creek survey area.



Photo 2: Representative Photo of the CRLF Habitat Observed at the Stock Pond.

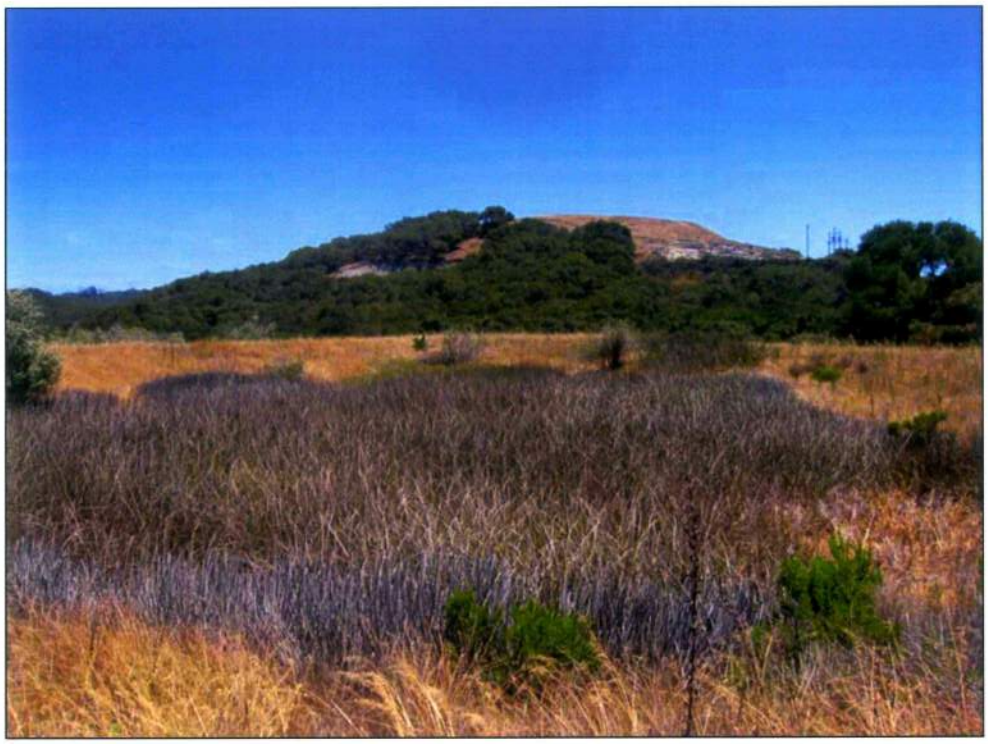


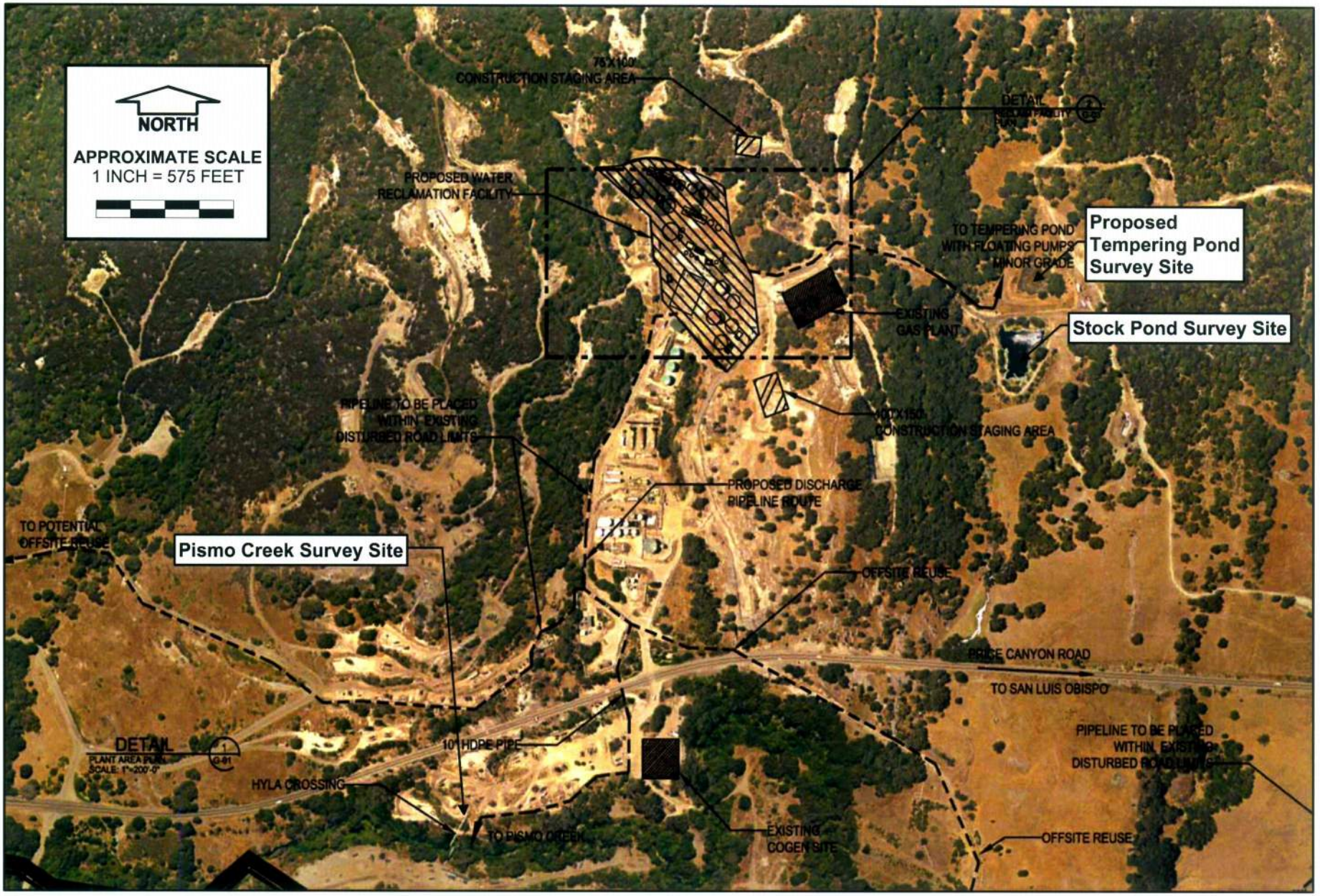
Photo 3: Representative Photo of the CRLF Habitat Observed at the Tempering Pond proposed for Land Management Modification.

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

APPENDIX B

Figure 1 – Map of Survey Sites

THIS PAGE LEFT BLANK INTENTIONALLY



Source: ADAIR

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

CRLF SURVEY SITES

FIGURE 1

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

APPENDIX C
CRLF Survey Forms

THIS PAGE LEFT BLANK INTENTIONALLY

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

DATE: 4/13/07	PROJECT: PXP RO WATER EIR PISMO CREEK CRLF SURVEY		
SURVEY BIOLOGIST(S): K. HELLELAND B. DUGAS			
Time Start: 1500	Time End: 1545	Survey Duration: 45 MIN	Unit-Effort:

LOCATION

City/County SLO/SLO ; ___ ¼; ___ -¼ Section ___ Township ___ Range ___

Latitude ___ Longitude ___; Quadrangle ___; Elevation ___

ATTACH MAP (include habitat types, important features, and species locations)

TYPE OF SURVEY

☒ Day ☐ Night; ☐ Breeding ☐ Non-Breeding; Survey Number: (1) 2 3 4 5 6 7 8

Brand name/model of light used to conduct survey: Brand/model/power of binoculars used: SWIFT 10X42 LEICA 10X42

WEATHER CONDITIONS AT START OF SURVEY

Air Temperature 72.4 °F (3"); Water Temperature 61.8 °F; Wind Speed: 5.2 mph; Wind Direction E; Cloud Cover 0 %

Precipitation ___ in.; Humidity 20 %; Moon Phase NA

AQUATIC HABITAT TYPE

☐ River ☒ Stream ☐ Swale ☐ Ditch ☐ Lake ☐ Natural Pond ☐ Stock Pond ☐ Impoundment ☐ Vernal Pool ☐ Marsh/Wetland

Hydrogeomorphology Class: ☐ Depression ☐ Slope ☐ Riverine

HYDROPERIOD

☒ Permanent ☐ Intermittent ☐ Ephemeral

STREAM MORPHOMETRY/FEATURES

River/Creek Name PISMO CREEK River Mile ___ Stream Order ___

Hydroperiod: ☐ Permanent ☐ Intermittent ☐ Ephemeral Reach Length ___ Right Bank Height ___ Left Bank Height ___

Top Bank Width ___ Stream Width ___ Channel Width @ OHWM ___ Right Bank Slope ___ Left Bank Slope ___

Water Depth ___ Sinuosity Index ___ Stream Gradient ___ Flow Velocity ___ Wetted Perimeter ___

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Riffles ☐ Pools (max. depth ___) ☐ Glides ☐ Undercut Banks ☐ LOD (jams/snags) ☐ Other ___

Channel Condition: ☐ Terracing ☐ Bank or Bed Degradation

LAKE/POND MORPHOMETRY/FEATURES

Pond/Lake Name: ___ Hydroperiod: ☐ Permanent ☐ Seasonal

Area: ___ Maximum Width ___ Maximum Length ___ Maximum Depth ___

Shore Line ___ Shoreline Development ___ Width of Drawdown Zone ___

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Shoals ☐ Undercut Banks ☐ LOD (jams/snags ☐ Other ___

SUBSTRATE (Percent)

☐ Silt ☐ Sand ☐ Gravel ☐ Cobble ☐ Boulder ☐ Bedrock ☐ Other:

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

STREAM/POND VEGETATION

Canopy Cover(mid-day): 50%; Emergent Vegetation: X; Floating Vegetation ^; Open Water X
Dominant Species: COTTONWOOD, ARUNDO, WE SYCAMORE, CLO

ADJACENT COVER TYPE(S)

☒ Woodland ☐ Shrub ☐ Savanna ☒ Grassland ☐ Wetland ☐ Agriculture ☒ Developed ☐ Other

SPECIES AND NUMBERS OBSERVED

Species	Egg Masses	Larvae	Metamorphs (w/legs)	Juvenile	Adult	Detection Method
PSEUDACRIS REGILLA					X	☐ Visual ☒ Call ☐ Capture ☐ Spotlight
CRAYFISH				X		☐ Visual ☐ Call ☐ Capture ☐ Spotlight
SPECIAL DACE				X		☐ Visual ☐ Call ☒ Capture ☐ Spotlight
ALTINEMUS MARMORATA					X	☐ Visual ☐ Call ☒ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight

Describe potential threats to California red-legged frogs observed, including non-native and native fish predators such as fish, bullfrogs, and raccoons:

DIAGRAM

NOTES

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

DATE: 4/18/07 | PROJECT: PXP Produced Water Reclamation Facility (Existing Pond & Proposed Temporary Pon

SURVEY BIOLOGIST(S): KLG / JKP

Time Start: 10:00 pm | Time End: 10:45 pm | Survey Duration: 45 min | Unit-Effort: _____

LOCATION

City/County San Luis Obispo County ; ___ ¼; ___ -¼ Section ___ Township ___ Range ___

Latitude ___ Longitude ___; Quadrangle Pismo Beach & Arroyo Grande NE ; Elevation ___

ATTACH MAP (include habitat types, important features, and species locations)

TYPE OF SURVEY

☐ Day ☒ Night; ☒ Breeding ☐ Non-Breeding; Survey Number: 1 (2) 3 4 5 6 7 8

Brand name/model of light used: Nite Lite Brand/model/power of binoculars used: Audobon / Swift 10x42

WEATHER CONDITIONS AT START OF SURVEY

Air Temperature 51 °F (3"); Water Temperature 61.7 °F; Wind Speed: 2.0 mph; Wind Direction S ; Cloud Cover 0 %

Precipitation 0 in.; Humidity ___ %; Moon Phase ___

AQUATIC HABITAT TYPE

☐ River ☐ Stream ☐ Swale ☐ Ditch ☐ Lake ☐ Natural Pond ☒ Stock Pond ☐ Impoundment ☐ Vernal Pool ☐ Marsh/Wetland

Hydrogeomorphology Class: ☐ Depression ☐ Slope ☐ Riverine

HYDROPERIOD

☒ Permanent ☐ Intermittent ☐ Ephemeral

STREAM MORPHOMETRY/FEATURES

River/Creek Name ___ River Mile ___ Stream Order ___

Hydroperiod: ☐ Permanent ☐ Intermittent ☐ Ephemeral Reach Length ___ Right Bank Height ___ Left Bank Height ___

Top Bank Width ___ Stream Width ___ Channel Width @ OHWM ___ Right Bank Slope ___ Left Bank Slope ___

Water Depth ___ Sinuosity Index ___ Stream Gradient ___ Flow Velocity ___ Wetted Perimeter ___

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Riffles ☐ Pools (max. depth ___) ☐ Glides ☐ Undercut Banks ☐ LOD (jams/snags) ☐ Other ___

Channel Condition: ☐ Terracing ☐ Bank or Bed Degradation

LAKE/POND MORPHOMETRY/FEATURES

Pond/Lake Name: unnamed pond Hydroperiod: ☒ Permanent ☐ Seasonal

Area: ___ Maximum Width ___ Maximum Length ___ Maximum Depth ___

Shore Line ___ Shoreline Development ___ Width of Drawdown Zone ___

Water Clarity: ☐ Clear ☒ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Shoals ☐ Undercut Banks ☐ LOD (jams/snags ☐ Other ___

SUBSTRATE (Percent)

☐ Silt ☐ Sand ☐ Gravel ☐ Cobble ☐ Boulder ☐ Bedrock ☐ Other:

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

STREAM/POND VEGETATION

Canopy Cover(mid-day): 10 %; Emergent Vegetation: ✓; Floating Vegetation ✓; Open Water 90%
Dominant Species: Scirpus californicus, Lemna minor, Salix spp.

ADJACENT COVER TYPE(S)

☐ Woodland ☒ Shrub (Riparian) ☐ Savanna ☐ Grassland ☐ Wetland ☐ Agriculture ☐ Developed ☐ Other

SPECIES AND NUMBERS OBSERVED

Species	Egg Masses	Larvae	Metamorphs (w/legs)	Juvenile	Adult	Detection Method
Rana catesbeiana					1	☒ Visual ☐ Call ☐ Capture ☒ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight

Describe potential threats to California red-legged frogs observed, including non-native and native fish predators such as fish, bullfrogs, and raccoons:

DIAGRAM

NOTES

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

DATE: 4/25/07 | PROJECT: PXP Produced Water Reclamation Facility (Existing Pond & Proposed Temporary Pond)

SURVEY BIOLOGIST(S): KLG / JKP

Time Start: 8:20 pm | Time End: 9:50 pm | Survey Duration: 30 min | Unit-Effort: _____

LOCATION

City/County San Luis Obispo County ; ___ ¼; ___ -¼ Section ___ Township ___ Range ___

Latitude ___ Longitude ___; Quadrangle Pismo Beach & Arroyo Grande NE; Elevation ___

ATTACH MAP (include habitat types, important features, and species locations)

TYPE OF SURVEY

☐ Day ☒ Night; ☒ Breeding ☐ Non-Breeding; Survey Number: 1 2 (3) 4 5 6 7 8

Brand name/model of light used to conduct survey: Nite Lite Brand/model/power of binoculars used: Audubon / Swift 10x42

WEATHER CONDITIONS AT START OF SURVEY

Air Temperature 54 °F (3"); Water Temperature 63 °F; Wind Speed: 3-5 mph; Wind Direction S ; Cloud Cover 15 %

Precipitation 0 in.; Humidity ___ %; Moon Phase ½ waxing

AQUATIC HABITAT TYPE

☐ River ☐ Stream ☐ Swale ☐ Ditch ☐ Lake ☐ Natural Pond ☒ Stock Pond ☐ Impoundment ☐ Vernal Pool ☐ Marsh/Wetland

Hydrogeomorphology Class: ☐ Depression ☐ Slope ☐ Riverine

HYDROPERIOD

☒ Permanent ☐ Intermittent ☐ Ephemeral

STREAM MORPHOMETRY/FEATURES

River/Creek Name ___ River Mile ___ Stream Order ___

Hydroperiod: ☐ Permanent ☐ Intermittent ☐ Ephemeral Reach Length ___ Right Bank Height ___ Left Bank Height ___

Top Bank Width ___ Stream Width ___ Channel Width @ OHWM ___ Right Bank Slope ___ Left Bank Slope ___

Water Depth ___ Sinuosity Index ___ Stream Gradient ___ Flow Velocity ___ Wetted Perimeter ___

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Riffles ☐ Pools (max. depth ___) ☐ Glides ☐ Undercut Banks ☐ LOD (jams/snags) ☐ Other ___

Channel Condition: ☐ Terracing ☐ Bank or Bed Degradation

LAKE/POND MORPHOMETRY/FEATURES

Pond/Lake Name: unnamed pond Hydroperiod: ☐ Permanent ☐ Seasonal

Area: ___ Maximum Width ___ Maximum Length ___ Maximum Depth ___

Shore Line ___ Shoreline Development ___ Width of Drawdown Zone ___

Water Clarity: ☐ Clear ☒ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Shoals ☐ Undercut Banks ☐ LOD (jams/snags ☐ Other ___

SUBSTRATE (Percent)

☐ Silt ☐ Sand ☐ Gravel ☐ Cobble ☐ Boulder ☐ Bedrock ☐ Other:

AQUATIC SURVEY DATA FORM

padre associates, inc.

STREAM/POND VEGETATION

Canopy Cover(mid-day):_____; Emergent Vegetation:✓; Floating Vegetation✓; Open Water_____
Dominant Species: Refer to survey 2 data (4/18/07)

ADJACENT COVER TYPE(S)

☐ Woodland ☒ Shrub ☐ Savanna ☐ Grassland ☐ Wetland ☐ Agriculture ☐ Developed ☐ Other

SPECIES AND NUMBERS OBSERVED

Species	Egg Masses	Larvae	Metamorphs (w/legs)	Juvenile	Adult	Detection Method
NONE						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlig
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight

Describe potential threats to California red-legged frogs observed, including non-native and native fish predators such as fish, bullfrogs, and raccoons:

DIAGRAM

NOTES

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

DATE: 5/2/07	PROJECT: PXP Produced Water Project (Temporary pond/existing pond
SURVEY BIOLOGIST(S): KLG / JKP	

Time Start: 2035	Time End: 2115	Survey Duration: 40 min	Unit-Effort:

LOCATION

City/County San Luis Obispo County; ___ ¼; ___ -¼ Section ___ Township ___ Range ___

Latitude ___ Longitude ___; Quadrangle Pismo Beach / Arroyo Grande NE; Elevation ___

ATTACH MAP (include habitat types, important features, and species locations)

TYPE OF SURVEY

☐ Day ☒ Night; ☒ Breeding ☐ Non-Breeding; Survey Number: 1 2 3 (4) 5 6 7 8

Brand name/model of light used: Nite Lite Brand/model/power of binoculars used: Swift / Audubon 10×42

WEATHER CONDITIONS AT START OF SURVEY

Air Temperature 65.5 °F (3"); Water Temperature [illegible] °F; Wind Speed: 1-7 mph; Wind Direction S; Cloud Cover 10 %

Precipitation 0 in.; Humidity ___ %; Moon Phase ___

AQUATIC HABITAT TYPE

☐ River ☐ Stream ☐ Swale ☐ Ditch ☐ Lake ☐ Natural Pond ☒ Stock Pond ☐ Impoundment ☐ Vernal Pool ☐ Marsh/Wetland

Hydrogeomorphology Class: ☐ Depression ☐ Slope ☐ Riverine

HYDROPERIOD

☒ Permanent ☐ Intermittent ☐ Ephemeral

STREAM MORPHOMETRY/FEATURES

River/Creek Name ___ River Mile ___ Stream Order ___

Hydroperiod: ☐ Permanent ☐ Intermittent ☐ Ephemeral Reach Length ___ Right Bank Height ___ Left Bank Height ___

Top Bank Width ___ Stream Width ___ Channel Width @ OHWM ___ Right Bank Slope ___ Left Bank Slope ___

Water Depth ___ Sinuosity Index ___ Stream Gradient ___ Flow Velocity ___ Wetted Perimeter ___

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Riffles ☐ Pools (max. depth ___) ☐ Glides ☐ Undercut Banks ☐ LOD (jams/snags) ☐ Other ___

Channel Condition: ☐ Terracing ☐ Bank or Bed Degradation

LAKE/POND MORPHOMETRY/FEATURES

Pond/Lake Name: Unnamed pond Hydroperiod: ☒ Permanent ☐ Seasonal

Area: ___ Maximum Width ___ Maximum Length ___ Maximum Depth ___

Shore Line ___ Shoreline Development ___ Width of Drawdown Zone ___

Water Clarity: ☐ Clear ☒ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Shoals ☐ Undercut Banks ☐ LOD (jams/snags ☐ Other ___

SUBSTRATE (Percent)

☐ Silt ☐ Sand ☐ Gravel ☐ Cobble ☐ Boulder ☐ Bedrock ☐ Other:

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

STREAM/POND VEGETATION

Canopy Cover(mid-day):_____; Emergent Vegetation:_____; Floating Vegetation_____; Open Water_____
Dominant Species: Refer to survey 2 data (4/18/07)

ADJACENT COVER TYPE(S)

☒ Woodland ☒ Shrub ☐ Savanna ☐ Grassland ☐ Wetland ☐ Agriculture ☐ Developed ☐ Other

SPECIES AND NUMBERS OBSERVED

Species	Egg Masses	Larvae	Metamorphs (w/legs)	Juvenile	Adult	Detection Method
None						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight

Describe potential threats to California red-legged frogs observed, including non-native and native fish predators such as fish, bullfrogs, and raccoons:

DIAGRAM

NOTES

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

DATE: 5/9/07	PROJECT: PXP AG FIELD		
INVESTIGATOR(S): K. GILLELAND C. SANTACA			
Time Start: ~~2000~~ 2100	Time End: 2145	Survey Duration: 45	Unit-Effort:

LOCATION

City/County TEMPERENA POND ; ___ ¼; ___ -¼ Section ___ Township ___ Range ___

Latitude ___ Longitude ___; Quadrangle ___; Elevation ___

WEATHER CONDITIONS AT START OF SURVEY

Air Temperature 60.7 °F (3"); Water Temperature 67.3 °F; Wind Speed: 0 mph; Wind Direction NA; Cloud Cover 100 % Precipitation ___ in.
HEAVY FOG

AQUATIC HABITAT TYPE FULL MOON

☐ River ☐ Stream ☐ Swale ☐ Ditch ☐ Lake ☐ Natural Pond ☐ Stock Pond ☐ Impoundment ☐ Vernal Pool ☐ Marsh/Wetland

Hydrogeomorphology Class: ☐ Depression ☐ Slope ☐ Riverine

HYDROPERIOD

☐Permanent ☐Intermittent ☐Ephemeral

STREAM MORPHOMETRY/FEATURES

River/Creek Name TEMPERENA PONDS River Mile ___ Stream Order ___

Hydroperiod: ☒ Permanent ☐ Intermittent ☐ Ephemeral Reach Length ___ Right Bank Height ___ Left Bank Height ___

Top Bank Width ___ Stream Width ___ Channel Width @ OHWM ___ Right Bank Slope ___ Left Bank Slope ___

Water Depth ___ Sinuosity Index ___ Stream Gradient ___ Flow Velocity ___ Wetted Perimeter ___

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Riffles ☐ Pools (max. depth ___) ☐ Glides ☐ Undercut Banks ☐ LOD (jams/snags ☐ Other ___

Channel Condition: ☐ Terracing ☐ Bank or Bed Degradation

LAKE/POND MORPHOMETRY/FEATURES

Pond/Lake Name: ___ Hydroperiod: ☐ Permanent ☐ Seasonal

Area: ___ Maximum Width ___ Maximum Length ___ Maximum Depth ___

Shore Line ___ Shoreline Development ___ Width of Drawdown Zone ___

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Shoals ☐ Undercut Banks ☐ LOD (jams/snags ☐ Other ___

SUBSTRATE (Percent)

☐ Silt ☐ Sand ☐ Gravel ☐ Cobble ☐ Boulder ☐ Bedrock ☐ Other:

STREAM/POND VEGETATION

Canopy Cover(mid-day):___; Emergent Vegetation:___; Floating Vegetation___; Open Water___

Dominant Species:

ADJACENT COVER TYPE(S)

☐Woodland ☐Shrub ☐Savanna ☐Grassland ☐Wetland ☐Agriculture ☐Developed ☐Other

AQUATIC SURVEY DATA FORM

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

SPECIES AND NUMBERS OBSERVED

Species	Egg Masses	Larvae	Metamorphs (w/legs)	Juvenile	Adult	Detection Method
RANA CATESBEIANA					1	☒ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight

DIAGRAM

NOTES

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

DATE: 5/17/07 | PROJECT: PXP Produced Water Reclamation Facility (Tempering pond)

SURVEY BIOLOGIST(S): KLG / JKP

Time Start: 2035 | Time End: 2150 | Survey Duration: 25 min | Unit-Effort: _____

LOCATION

City/County San Luis Obispo Co. _____; ____ ¼; ____ -¼ Section _____ Township _____ Range _____

Latitude _____ Longitude _____; Quadrangle Pismo Beach & Arroyo Grande NE; Elevation _____

ATTACH MAP (include habitat types, important features, and species locations)

TYPE OF SURVEY

☐ Day ☒ Night; ☒ Breeding ☐ Non-Breeding; Survey Number: 1 2 3 4 5 6 7 8

Brand name/model of light used: Nite Lite Brand/model/power of binoculars used: Audubon/Swift 10x42

WEATHER CONDITIONS AT START OF SURVEY

Air Temperature 72.9 °F (3"); Water Temperature 66.2 °F; Wind Speed: 1-6 mph; Wind Direction W; Cloud Cover 0 %

Precipitation 0 in.; Humidity 60 %; Moon Phase new moon

AQUATIC HABITAT TYPE

☐ River ☐ Stream ☐ Swale ☐ Ditch ☐ Lake ☐ Natural Pond ☒ Stock Pond ☐ Impoundment ☐ Vernal Pool ☐ Marsh/Wetland

Hydrogeomorphology Class: ☐ Depression ☐ Slope ☐ Riverine

HYDROPERIOD

☒ Permanent ☐ Intermittent ☐ Ephemeral

STREAM MORPHOMETRY/FEATURES

River/Creek Name _____ River Mile _____ Stream Order _____

Hydroperiod: ☐ Permanent ☐ Intermittent ☐ Ephemeral Reach Length _____ Right Bank Height _____ Left Bank Height _____

Top Bank Width _____ Stream Width _____ Channel Width @ OHWM _____ Right Bank Slope _____ Left Bank Slope _____

Water Depth _____ Sinuosity Index _____ Stream Gradient _____ Flow Velocity _____ Wetted Perimeter _____

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color _____)

Instream Structure: ☐ Riffles ☐ Pools (max. depth ____) ☐ Glides ☐ Undercut Banks ☐ LOD (jams/snags) ☐ Other _____

Channel Condition: ☐ Terracing ☐ Bank or Bed Degradation

LAKE/POND MORPHOMETRY/FEATURES

Pond/Lake Name: unnamed pond Hydroperiod: ☒ Permanent ☐ Seasonal

Area: _____ Maximum Width _____ Maximum Length _____ Maximum Depth _____

Shore Line _____ Shoreline Development _____ Width of Drawdown Zone _____

Water Clarity: ☐ Clear ☒ Turbid Water Color: ☐ Clear ☐ Stained (Color _____)

Instream Structure: ☐ Shoals ☐ Undercut Banks ☐ LOD (jams/snags ☐ Other _____

SUBSTRATE (Percent)

☐ Silt ☐ Sand ☐ Gravel ☐ Cobble ☐ Boulder ☐ Bedrock ☐ Other:

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

STREAM/POND VEGETATION

Canopy Cover(mid-day):_____; Emergent Vegetation:_____; Floating Vegetation_____; Open Water_____
Dominant Species: Refer to survey 2 data (4/18/07)

ADJACENT COVER TYPE(S)

☐ Woodland ☒ Shrub ☐ Savanna ☐ Grassland ☐ Wetland ☐ Agriculture ☐ Developed ☐ Other

SPECIES AND NUMBERS OBSERVED

Species	Egg Masses	Larvae	Metamorphs (w/legs)	Juvenile	Adult	Detection Method
Rana catesbeiana					2	☒ Visual ☐ Call ☐ Capture ☒ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight

Describe potential threats to California red-legged frogs observed, including non-native and native fish predators such as fish, bullfrogs, and raccoons:

DIAGRAM

NOTES

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

DATE: 7/3/07	PROJECT: PXP		
SURVEY BIOLOGIST(S):			
Time Start: 1352	Time End: 1435	Survey Duration:	Unit-Effort:

LOCATION

City/County SLO; ___ ¼; ___ -¼ Section ___ Township ___ Range ___

Latitude ___ Longitude ___; Quadrangle ___; Elevation ___

ATTACH MAP (include habitat types, important features, and species locations)

TYPE OF SURVEY

☒ Day ☐ Night; ☐ Breeding ☐ Non-Breeding; Survey Number: 1 2 3 4 5 6 (7) 8

Brand name/model of light used: Brand/model/power of binoculars used:

WEATHER CONDITIONS AT START OF SURVEY

Air Temperature 81.9 °F (3"); Water Temperature 75.6 °F; Wind Speed: 4.6 mph; Wind Direction E; Cloud Cover 0 %

Precipitation N/A in.; Humidity ___ %; Moon Phase N/A

AQUATIC HABITAT TYPE

☐ River ☐ Stream ☐ Swale ☐ Ditch ☐ Lake ☐ Natural Pond ☐ Stock Pond ☐ Impoundment ☐ Vernal Pool ☐ Marsh/Wetland

Hydrogeomorphology Class: ☐ Depression ☐ Slope ☐ Riverine

HYDROPERIOD

☐ Permanent ☐ Intermittent ☐ Ephemeral

STREAM MORPHOMETRY/FEATURES

River/Creek Name TEMPERING PONDS (EXISTING STOCK POND/PROPOSED TEMPERING POND) River Mile ___ Stream Order ___

Hydroperiod: ☐ Permanent ☐ Intermittent ☐ Ephemeral Reach Length ___ Right Bank Height ___ Left Bank Height ___

Top Bank Width ___ Stream Width ___ Channel Width @ OHWM ___ Right Bank Slope ___ Left Bank Slope ___

Water Depth ___ Sinuosity Index ___ Stream Gradient ___ Flow Velocity ___ Wetted Perimeter ___

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Riffles ☐ Pools (max. depth ___) ☐ Glides ☐ Undercut Banks ☐ LOD (jams/snags) ☐ Other ___

Channel Condition: ☐ Terracing ☐ Bank or Bed Degradation

LAKE/POND MORPHOMETRY/FEATURES

Pond/Lake Name: ___ Hydroperiod: ☐ Permanent ☐ Seasonal

Area: ___ Maximum Width ___ Maximum Length ___ Maximum Depth ___

Shore Line ___ Shoreline Development ___ Width of Drawdown Zone ___

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Shoals ☐ Undercut Banks ☐ LOD (jams/snags ☐ Other ___

SUBSTRATE (Percent)

☐ Silt ☐ Sand ☐ Gravel ☐ Cobble ☐ Boulder ☐ Bedrock ☐ Other:

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

STREAM/POND VEGETATION

Canopy Cover(mid-day):_____; Emergent Vegetation:_____; Floating Vegetation_____; Open Water_____
Dominant Species:

ADJACENT COVER TYPE(S)

☐ Woodland ☐ Shrub ☐ Savanna ☐ Grassland ☐ Wetland ☐ Agriculture ☐ Developed ☐ Other

SPECIES AND NUMBERS OBSERVED

Species	Egg Masses	Larvae	Metamorphs (w/legs)	Juvenile	Adult	Detection Method
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight

Describe potential threats to California red-legged frogs observed, including non-native and native fish predators such as fish, bullfrogs, and raccoons:

DIAGRAM

NOTES

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

DATE: 7/3/07 | PROJECT: PXP Produced Water Project (stock pond / tempering pond)

SURVEY BIOLOGIST(S): C. Santala, J. Peak

Time Start: ~~PM~~ 2100 | Time End: 2120 | Survey Duration: 20 min | Unit-Effort: _____

LOCATION

City/County San Luis Obispo County ; ___ ¼; ___ -¼ Section ___ Township ___ Range ___

Latitude ___ Longitude ___ ; Quadrangle Arroyo Grande NE & Pismo Beach Elevation ___

ATTACH MAP (include habitat types, important features, and species locations)

TYPE OF SURVEY

☐ Day ☒ Night; ☒ Breeding ☒ Non-Breeding; Survey Number: 1 2 3 4 5 6 7 (8)

Brand name/model of light used: Brand/model/power of binoculars used:

WEATHER CONDITIONS AT START OF SURVEY

Air Temperature 60.3 °F (3"); Water Temperature 73.9 °F; Wind Speed: 0 mph; Wind Direction N/A; Cloud Cover 0 %

Precipitation 0 in.; Humidity ___ %; Moon Phase ¼ waning

AQUATIC HABITAT TYPE

☐ River ☐ Stream ☐ Swale ☐ Ditch ☐ Lake ☐ Natural Pond ☒ Stock Pond ☐ Impoundment ☐ Vernal Pool ☐ Marsh/Wetland

Hydrogeomorphology Class: ☐ Depression ☐ Slope ☐ Riverine

HYDROPERIOD

☒ Permanent ☐ Intermittent ☐ Ephemeral

STREAM MORPHOMETRY/FEATURES

River/Creek Name ___ River Mile ___ Stream Order ___

Hydroperiod: ☐ Permanent ☐ Intermittent ☐ Ephemeral Reach Length ___ Right Bank Height ___ Left Bank Height ___

Top Bank Width ___ Stream Width ___ Channel Width @ OHWM ___ Right Bank Slope ___ Left Bank Slope ___

Water Depth ___ Sinuosity Index ___ Stream Gradient ___ Flow Velocity ___ Wetted Perimeter ___

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Riffles ☐ Pools (max. depth ___) ☐ Glides ☐ Undercut Banks ☐ LOD (jams/snags) ☐ Other ___

Channel Condition: ☐ Terracing ☐ Bank or Bed Degradation

LAKE/POND MORPHOMETRY/FEATURES

Pond/Lake Name: Unnamed pond Hydroperiod: ☒ Permanent ☐ Seasonal

Area: ___ Maximum Width ___ Maximum Length ___ Maximum Depth ___

Shore Line ___ Shoreline Development ___ Width of Drawdown Zone ___

Water Clarity: ☐ Clear ☒ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Shoals ☐ Undercut Banks ☐ LOD (jams/snags ☐ Other ___

SUBSTRATE (Percent)

☐ Silt ☐ Sand ☐ Gravel ☐ Cobble ☐ Boulder ☐ Bedrock ☐ Other:

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

STREAM/POND VEGETATION

Canopy Cover(mid-day): 10%; Emergent Vegetation: _____; Floating Vegetation _____; Open Water 90%
Dominant Species: See SURVEY 3 data

ADJACENT COVER TYPE(S)

☐ Woodland ☒ Shrub ☐ Savanna ☐ Grassland ☐ Wetland ☐ Agriculture ☐ Developed ☐ Other

SPECIES AND NUMBERS OBSERVED

Species	Egg Masses	Larvae	Metamorphs (w/legs)	Juvenile	Adult	Detection Method
None						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight

Describe potential threats to California red-legged frogs observed, including non-native and native fish predators such as fish, bullfrogs, and raccoons:

DIAGRAM

NOTES

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

DATE: 4/13/07	PROJECT: PXP RD WATER FOR TEMPORARY POND		
SURVEY BIOLOGIST(S): B. DOUGLAS / K. HELLELAND			
Time Start: 1345	Time End: 1425	Survey Duration:	Unit-Effort:

LOCATION

City/County SLO/SLO PXP AG FIELD ; ¼; -¼ Section Township Range

Latitude Longitude ; Quadrangle ; Elevation

ATTACH MAP (include habitat types, important features, and species locations)

TYPE OF SURVEY

☒ Day ☐ Night; ☐ Breeding ☐ Non-Breeding; Survey Number: (1) 2 3 4 5 6 7 8

Brand name/model of light used to conduct survey: Brand/model/power of binoculars used: SWIFT 10X42 LEICA 10X42

WEATHER CONDITIONS AT START OF SURVEY

Air Temperature 74.7 °F (3"); Water Temperature 65.3 °F; Wind Speed: 6.1 mph; Wind Direction NW ; Cloud Cover 0 %

Precipitation in.; Humidity 20 %; Moon Phase NA

AQUATIC HABITAT TYPE

☐ River ☒ Stream ☐ Swale ☐ Ditch ☐ Lake ☐ Natural Pond ☐ Stock Pond ☒ Impoundment ☐ Vernal Pool ☐ Marsh/Wetland

Hydrogeomorphology Class: ☐ Depression ☐ Slope ☐ Riverine

HYDROPERIOD

☒ Permanent ☐ Intermittent ☐ Ephemeral

STREAM MORPHOMETRY/FEATURES

River/Creek Name TEMPORARY POND River Mile Stream Order

Hydroperiod: ☒ Permanent ☐ Intermittent ☐ Ephemeral Reach Length Right Bank Height Left Bank Height

Top Bank Width Stream Width Channel Width @ OHWM Right Bank Slope Left Bank Slope

Water Depth Sinuosity Index Stream Gradient Flow Velocity Wetted Perimeter

Water Clarity: ☒ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color)

Instream Structure: ☐ Riffles ☐ Pools (max. depth) ☐ Glides ☐ Undercut Banks ☐ LOD (jams/snags) ☐ Other

Channel Condition: ☐ Terracing ☐ Bank or Bed Degradation

LAKE/POND MORPHOMETRY/FEATURES

Pond/Lake Name: Hydroperiod: ☐ Permanent ☐ Seasonal

Area: Maximum Width Maximum Length Maximum Depth

Shore Line Shoreline Development Width of Drawdown Zone

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color)

Instream Structure: ☐ Shoals ☐ Undercut Banks ☐ LOD (jams/snags ☐ Other

SUBSTRATE (Percent)

☐ Silt ☐ Sand ☐ Gravel ☐ Cobble ☐ Boulder ☐ Bedrock ☐ Other:

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

STREAM/POND VEGETATION

Canopy Cover(mid-day): 10%; Emergent Vegetation: X; Floating Vegetation X; Open Water X
Dominant Species:

ADJACENT COVER TYPE(S)

☒ Woodland ☐ Shrub ☐ Savanna ☒ Grassland ☐ Wetland ☐ Agriculture ☐ Developed ☐ Other

SPECIES AND NUMBERS OBSERVED

Species	Egg Masses	Larvae	Metamorphs (w/legs)	Juvenile	Adult	Detection Method
LARGE MOUTH BASS				X		☐ Visual ☐ Call ☒ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight

Describe potential threats to California red-legged frogs observed, including non-native and native fish predators such as fish, bullfrogs, and raccoons:

DIAGRAM

NOTES

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

DATE: 4/18/07 | PROJECT: PXP Produced Water Reclamation Facility (Pismo Creek)

SURVEY BIOLOGIST(S): KLG / JKP

Time Start: 8:45 pm | Time End: 10:00 pm | Survey Duration: 1hr 15min | Unit-Effort: _____

LOCATION

City/County San Luis Obispo County; ___ ¼; ___ -¼ Section ___ Township ___ Range ___

Latitude ___ Longitude ___; Quadrangle Pismo Beach & Arroyo Grande NE; Elevation ___

ATTACH MAP (include habitat types, important features, and species locations)

TYPE OF SURVEY

☐ Day ☒ Night; ☒ Breeding ☐ Non-Breeding; Survey Number: 1 (2) 3 4 5 6 7 8

Brand name/model of light used: Nite Lite Brand/model/power of binoculars used: Audobon / Swift 10x42

WEATHER CONDITIONS AT START OF SURVEY

Air Temperature 51 °F (3"); Water Temperature 56.1 °F; Wind Speed: 2.7 mph; Wind Direction S; Cloud Cover 0 %

Precipitation 0 in.; Humidity ___ %; Moon Phase ___

AQUATIC HABITAT TYPE

☐ River ☒ Stream ☐ Swale ☐ Ditch ☐ Lake ☐ Natural Pond ☐ Stock Pond ☐ Impoundment ☐ Vernal Pool ☐ Marsh/Wetland

Hydrogeomorphology Class: ☐ Depression ☐ Slope ☐ Riverine

HYDROPERIOD

☒ Permanent ☐ Intermittent ☐ Ephemeral

STREAM MORPHOMETRY/FEATURES

River/Creek Name Pismo Creek River Mile ___ Stream Order ___

Hydroperiod: ☒ Permanent ☐ Intermittent ☐ Ephemeral Reach Length ___ Right Bank Height ___ Left Bank Height ___

Top Bank Width ___ Stream Width ___ Channel Width @ OHWM ___ Right Bank Slope ___ Left Bank Slope ___

Water Depth ___ Sinuosity Index ___ Stream Gradient ___ Flow Velocity ___ Wetted Perimeter ___

Water Clarity: ☐ Clear ☒ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Riffles ☐ Pools (max. depth ___) ☐ Glides ☒ Undercut Banks ☐ LOD (jams/snags) ☒ Other Beaver Dam

Channel Condition: ☐ Terracing ☐ Bank or Bed Degradation

LAKE/POND MORPHOMETRY/FEATURES

Pond/Lake Name: ___ Hydroperiod: ☐ Permanent ☐ Seasonal

Area: ___ Maximum Width ___ Maximum Length ___ Maximum Depth ___

Shore Line ___ Shoreline Development ___ Width of Drawdown Zone ___

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Shoals ☐ Undercut Banks ☐ LOD (jams/snags ☐ Other ___

SUBSTRATE (Percent)

☒ Silt ☐ Sand ☐ Gravel ☐ Cobble ☐ Boulder ☐ Bedrock ☐ Other:

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

STREAM/POND VEGETATION

Canopy Cover(mid-day): 60%; Emergent Vegetation: ✓; Floating Vegetation ✓; Open Water 40%

Dominant Species: Platanus racemosa, Salix spp., Toxicodendron diversilobum, Rubus ursinus, R. discolor, Populus fremontii, Vinca major, Quercus agrifolia, Senecio mikanioides

ADJACENT COVER TYPE(S)

☒ Woodland (Riparian) ☐ Shrub ☐ Savanna ☐ Grassland ☐ Wetland ☐ Agriculture ☐ Developed ☐ Other

SPECIES AND NUMBERS OBSERVED

Species	Egg Masses	Larvae	Metamorphs (w/legs)	Juvenile	Adult	Detection Method
Rana catesbeiana					1	☒ Visual ☐ Call ☐ Capture ☒ Spotlight
Pseudacris regilla					+10	☐ Visual ☒ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
Other:						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
Castor canadensis (Beaver)					1	☒ Visual ☐ Call ☐ Capture ☒ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight

Describe potential threats to California red-legged frogs observed, including non-native and native fish predators such as fish, bullfrogs, and raccoons:

DIAGRAM

NOTES

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

DATE: 4/25/07 | PROJECT: PXP Produced Water Reclamation Facility (Pismo Creek)

SURVEY BIOLOGIST(S): KLG/JKP

Time Start: 9:00pm | Time End: 10:00 pm | Survey Duration: 1 hr. | Unit-Effort:

LOCATION

City/County San Luis Obispo County ; ¼; -¼ Section Township Range

Latitude Longitude ; Quadrangle Pismo Beach & Arroyo Grande NE; Elevation

ATTACH MAP (include habitat types, important features, and species locations)

TYPE OF SURVEY

☐ Day ☒ Night; ☒ Breeding ☐ Non-Breeding; Survey Number: 1 2 (3) 4 5 6 7 8

Brand name/model of light used to conduct survey: Nite Lite Brand/model/power of binoculars used: Audubon/Swift 10x42

WEATHER CONDITIONS AT START OF SURVEY

Air Temperature 54 °F (3"); Water Temperature 59.5 F; Wind Speed: 0.5 mph; Wind Direction S; Cloud Cover 10 %

Precipitation 0 in.; Humidity %; Moon Phase ½ waxing

AQUATIC HABITAT TYPE

☐ River ☒ Stream ☐ Swale ☐ Ditch ☐ Lake ☐ Natural Pond ☐ Stock Pond ☐ Impoundment ☐ Vernal Pool ☐ Marsh/Wetland

Hydrogeomorphology Class: ☐ Depression ☐ Slope ☐ Riverine

HYDROPERIOD

☒ Permanent ☐ Intermittent ☐ Ephemeral

STREAM MORPHOMETRY/FEATURES

River/Creek Name Pismo Creek River Mile Stream Order

Hydroperiod: ☒ Permanent ☐ Intermittent ☐ Ephemeral Reach Length Right Bank Height Left Bank Height

Top Bank Width Stream Width Channel Width @ OHWM Right Bank Slope Left Bank Slope

Water Depth Sinuosity Index Stream Gradient Flow Velocity Wetted Perimeter

Water Clarity: ☐ Clear ☒ Turbid Water Color: ☐ Clear ☐ Stained (Color)

Instream Structure: ☐ Riffles ☐ Pools (max. depth) ☐ Glides ☒ Undercut Banks ☐ LOD (jams/snags) ☒ Other Beaver dam

Channel Condition: ☐ Terracing ☐ Bank or Bed Degradation

LAKE/POND MORPHOMETRY/FEATURES

Pond/Lake Name: Hydroperiod: ☐ Permanent ☐ Seasonal

Area: Maximum Width Maximum Length Maximum Depth

Shore Line Shoreline Development Width of Drawdown Zone

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color)

Instream Structure: ☐ Shoals ☐ Undercut Banks ☐ LOD (jams/snags ☐ Other

SUBSTRATE (Percent)

☒ Silt ☐ Sand ☐ Gravel ☐ Cobble ☐ Boulder ☐ Bedrock ☐ Other:

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

STREAM/POND VEGETATION

Canopy Cover(mid-day):_____; Emergent Vegetation:_____; Floating Vegetation_____; Open Water_____
Dominant Species: Refer to survey 2 data (4/18/07)

ADJACENT COVER TYPE(S)

☒ Woodland ☐ Shrub ☐ Savanna ☐ Grassland ☐ Wetland ☐ Agriculture ☐ Developed ☐ Other

SPECIES AND NUMBERS OBSERVED

Species	Egg Masses	Larvae	Metamorphs (w/legs)	Juvenile	Adult	Detection Method
Pseudacris regilla					+20	☐ Visual ☒ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
Other:						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
crayfish					1	☒ Visual ☐ Call ☐ Capture ☒ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight

Describe potential threats to California red-legged frogs observed, including non-native and native fish predators such as fish, bullfrogs, and raccoons:

DIAGRAM

NOTES

AQUATIC SURVEY DATA FORM

padre associates, inc.

DATE: 5/2/07 | PROJECT: PXP Produced Water Project (Pismo Creek)

SURVEY BIOLOGIST(S): KLG | JKP

Time Start: 2130 | Time End: 2230 | Survey Duration: 1 hour | Unit-Effort:

LOCATION

City/County San Luis Obispo Co. ; ¼; -¼ Section Township Range

Latitude Longitude ; Quadrangle Pismo Beach & Arroyo Grande NE ; Elevation

ATTACH MAP (include habitat types, important features, and species locations)

TYPE OF SURVEY

☐ Day ☒ Night; ☒ Breeding ☐ Non-Breeding; Survey Number: 1 2 3 (4) 5 6 7 8

Brand name/model of light used: Brand/model/power of binoculars used:

WEATHER CONDITIONS AT START OF SURVEY

Air Temperature 54.5°F (3"); Water Temperature 60.1°F; Wind Speed: 3 mph; Wind Direction SW ; Cloud Cover 0 %

Precipitation 0 in.; Humidity %; Moon Phase

AQUATIC HABITAT TYPE

☐ River ☒ Stream ☐ Swale ☐ Ditch ☐ Lake ☐ Natural Pond ☐ Stock Pond ☐ Impoundment ☐ Vernal Pool ☐ Marsh/Wetland

Hydrogeomorphology Class: ☐ Depression ☐ Slope ☐ Riverine

HYDROPERIOD

☒ Permanent ☐ Intermittent ☐ Ephemeral

STREAM MORPHOMETRY/FEATURES

River/Creek Name Pismo Creek River Mile Stream Order

Hydroperiod: ☒ Permanent ☐ Intermittent ☐ Ephemeral Reach Length Right Bank Height Left Bank Height

Top Bank Width Stream Width Channel Width @ OHWM Right Bank Slope Left Bank Slope

Water Depth Sinuosity Index Stream Gradient Flow Velocity Wetted Perimeter

Water Clarity: ☐ Clear ☒ Turbid Water Color: ☐ Clear ☐ Stained (Color)

Instream Structure: ☐ Riffles ☐ Pools (max. depth) ☐ Glides ☐ Undercut Banks ☐ LOD (jams/snags) ☐ Other

Channel Condition: ☐ Terracing ☐ Bank or Bed Degradation

LAKE/POND MORPHOMETRY/FEATURES

Pond/Lake Name: Hydroperiod: ☐ Permanent ☐ Seasonal

Area: Maximum Width Maximum Length Maximum Depth

Shore Line Shoreline Development Width of Drawdown Zone

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color)

Instream Structure: ☐ Shoals ☐ Undercut Banks ☐ LOD (jams/snags ☐ Other

SUBSTRATE (Percent)

☒ Silt ☐ Sand ☐ Gravel ☐ Cobble ☐ Boulder ☐ Bedrock ☐ Other:

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

STREAM/POND VEGETATION

Canopy Cover(mid-day):_____; Emergent Vegetation:_____; Floating Vegetation_____; Open Water_____
Dominant Species: Refer to Survey 2 data (4/18/07)

ADJACENT COVER TYPE(S)

☒ Woodland ☐ Shrub ☐ Savanna ☐ Grassland ☐ Wetland ☐ Agriculture ☐ Developed ☐ Other

SPECIES AND NUMBERS OBSERVED

Species	Egg Masses	Larvae	Metamorphs (w/legs)	Juvenile	Adult	Detection Method
PSEUDACRIS REGILLA					X	☐ Visual ☒ Call ☐ Capture ☐ Spotlight
RANA CATESBEIANA						☒ Visual ☐ Call ☐ Capture ☐ Spotlight
RAINBOW TROUT						☒ Visual ☐ Call ☐ Capture ☐ Spotlight
SCULPIN						☒ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight

Describe potential threats to California red-legged frogs observed, including non-native and native fish predators such as fish, bullfrogs, and raccoons:

DIAGRAM

NOTES

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

DATE: 5/9/07	PROJECT: PXP AG FIELD		
INVESTIGATOR(S): K. GELLELAND & C. SANTALA			
Time Start: 2200	Time End: 2250	Survey Duration: 50	Unit-Effort:

LOCATION

City/County PISMO CREEK ; ___ ¼; ___ -¼ Section ___ Township ___ Range ___

Latitude ___ Longitude ___; Quadrangle ___; Elevation ___

WEATHER CONDITIONS AT START OF SURVEY

Air Temperature 52.3 °F (3"); Water Temperature 60.7 °F; Wind Speed: 5 mph; Wind Direction WE; Cloud Cover 100 % Precipitation ___ in.

HIGH FOG

FULL MOON

AQUATIC HABITAT TYPE

☐ River ☐ Stream ☐ Swale ☐ Ditch ☐ Lake ☐ Natural Pond ☐ Stock Pond ☐ Impoundment ☐ Vernal Pool ☐ Marsh/Wetland

Hydrogeomorphology Class: ☐ Depression ☐ Slope ☐ Riverine

HYDROPERIOD

☐Permanent ☐Intermittent ☐Ephemeral

STREAM MORPHOMETRY/FEATURES

River/Creek Name PISMO CREEK River Mile ___ Stream Order ___

Hydroperiod: ☒ Permanent ☐ Intermittent ☐ Ephemeral Reach Length ___ Right Bank Height ___ Left Bank Height ___

Top Bank Width ___ Stream Width ___ Channel Width @ OHWM ___ Right Bank Slope ___ Left Bank Slope ___

Water Depth ___ Sinuosity Index ___ Stream Gradient ___ Flow Velocity ___ Wetted Perimeter ___

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Riffles ☐ Pools (max. depth ___) ☐ Glides ☐ Undercut Banks ☐ LOD (jams/snags ☐ Other ___

Channel Condition: ☐ Terracing ☐ Bank or Bed Degradation

LAKE/POND MORPHOMETRY/FEATURES

Pond/Lake Name: ___ Hydroperiod: ☐ Permanent ☐ Seasonal

Area: ___ Maximum Width ___ Maximum Length ___ Maximum Depth ___

Shore Line ___ Shoreline Development ___ Width of Drawdown Zone ___

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Shoals ☐ Undercut Banks ☐ LOD (jams/snags ☐ Other ___

SUBSTRATE (Percent)

☐ Silt ☐ Sand ☐ Gravel ☐ Cobble ☐ Boulder ☐ Bedrock ☐ Other:

STREAM/POND VEGETATION

Canopy Cover(mid-day):___; Emergent Vegetation:___; Floating Vegetation___; Open Water___

Dominant Species:

ADJACENT COVER TYPE(S)

☐Woodland ☐Shrub ☐Savanna ☐Grassland ☐Wetland ☐Agriculture ☐Developed ☐Other

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

SPECIES AND NUMBERS OBSERVED

Species	Egg Masses	Larvae	Metamorphs (w/legs)	Juvenile	Adult	Detection Method
PSEUDACRIS REGILLA					1	☐ Visual ☒ Call ☐ Capture ☐ Spotlight
UNKNOWN RANID					2	☒ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight

DIAGRAM

NOTES

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

DATE: 9/17/07	PROJECT: PXP Produced Water Reclamation Facility (Pismo Creek)		
SURVEY BIOLOGIST(S): KLG / CJKP			
Time Start: 2115	Time End: 2230	Survey Duration: 1hr 15min	Unit-Effort:

LOCATION

City/County San Luis Obispo Co. ; ¼; -¼ Section Township Range

Latitude Longitude ; Quadrangle ; Elevation

ATTACH MAP (include habitat types, important features, and species locations)

TYPE OF SURVEY

☐ Day ☒ Night; ☒ Breeding ☐ Non-Breeding; Survey Number: 1 2 3 4 5 6 7 8

Brand name/model of light used: Nite Lite Brand/model/power of binoculars used: Audobon/SWIFT 10X42

WEATHER CONDITIONS AT START OF SURVEY

Air Temperature 56.6 °F (3"); Water Temperature 50.6 °F; Wind Speed: 0 mph; Wind Direction —; Cloud Cover 0 %

Precipitation 0 in.; Humidity 0 %; Moon Phase new moon waxing

AQUATIC HABITAT TYPE

☐ River ☒ Stream ☐ Swale ☐ Ditch ☐ Lake ☐ Natural Pond ☐ Stock Pond ☐ Impoundment ☐ Vernal Pool ☐ Marsh/Wetland

Hydrogeomorphology Class: ☐ Depression ☐ Slope ☐ Riverine

HYDROPERIOD

☒ Permanent ☐ Intermittent ☐ Ephemeral

STREAM MORPHOMETRY/FEATURES

River/Creek Name Pismo Creek River Mile Stream Order

Hydroperiod: ☒ Permanent ☐ Intermittent ☐ Ephemeral Reach Length Right Bank Height Left Bank Height

Top Bank Width Stream Width Channel Width @ OHWM Right Bank Slope Left Bank Slope

Water Depth Sinuosity Index Stream Gradient Flow Velocity Wetted Perimeter

Water Clarity: ☐ Clear ☒ Turbid Water Color: ☐ Clear ☐ Stained (Color)

Instream Structure: ☐ Riffles ☐ Pools (max. depth) ☐ Glides ☐ Undercut Banks ☐ LOD (jams/snags) ☐ Other

Channel Condition: ☐ Terracing ☐ Bank or Bed Degradation

LAKE/POND MORPHOMETRY/FEATURES

Pond/Lake Name: Hydroperiod: ☐ Permanent ☐ Seasonal

Area: Maximum Width Maximum Length Maximum Depth

Shore Line Shoreline Development Width of Drawdown Zone

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color)

Instream Structure: ☐ Shoals ☐ Undercut Banks ☐ LOD (jams/snags ☐ Other

SUBSTRATE (Percent)

☒ Silt ☐ Sand ☐ Gravel ☐ Cobble ☐ Boulder ☐ Bedrock ☐ Other:

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

STREAM/POND VEGETATION

Canopy Cover(mid-day):_____; Emergent Vegetation:_____; Floating Vegetation_____; Open Water_____
Dominant Species: Refer to survey 2 data (4/18/07)

ADJACENT COVER TYPE(S)

☐ Woodland ☐ Shrub ☐ Savanna ☐ Grassland ☐ Wetland ☐ Agriculture ☐ Developed ☐ Other

SPECIES AND NUMBERS OBSERVED

Species	Egg Masses	Larvae	Metamorphs (w/legs)	Juvenile	Adult	Detection Method
None						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight

Describe potential threats to California red-legged frogs observed, including non-native and native fish predators such as fish, bullfrogs, and raccoons:

DIAGRAM

NOTES

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

DATE:	PROJECT:		
SURVEY BIOLOGIST(S):			
Time Start: 1404	Time End: 1504	Survey Duration:	Unit-Effort:

LOCATION

City/County _____; ____ ¼; ____ -¼ Section ____ Township ____ Range ____

Latitude _____ Longitude _____; Quadrangle _____; Elevation _____

ATTACH MAP (include habitat types, important features, and species locations)

TYPE OF SURVEY

☐ Day ☐ Night; ☐ Breeding ☐ Non-Breeding; Survey Number: 1 2 3 4 5 6 (7) 8

Brand name/model of light used: Brand/model/power of binoculars used:

WEATHER CONDITIONS AT START OF SURVEY

Air Temperature 84.9 °F (3"); Water Temperature 71.1 °F; Wind Speed: 3.4 mph; Wind Direction E; Cloud Cover 0 %

Precipitation N/A in.; Humidity N/A %; Moon Phase N/A

AQUATIC HABITAT TYPE

☐ River ☐ Stream ☐ Swale ☐ Ditch ☐ Lake ☐ Natural Pond ☐ Stock Pond ☐ Impoundment ☐ Vernal Pool ☐ Marsh/Wetland

Hydrogeomorphology Class: ☐ Depression ☐ Slope ☐ Riverine

HYDROPERIOD

☐ Permanent ☐ Intermittent ☐ Ephemeral

STREAM MORPHOMETRY/FEATURES

River/Creek Name PESHO CREEK River Mile _____ Stream Order _____

Hydroperiod: ☐ Permanent ☐ Intermittent ☐ Ephemeral Reach Length _____ Right Bank Height _____ Left Bank Height _____

Top Bank Width _____ Stream Width _____ Channel Width @ OHWM _____ Right Bank Slope _____ Left Bank Slope _____

Water Depth _____ Sinuosity Index _____ Stream Gradient _____ Flow Velocity _____ Wetted Perimeter _____

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color _____)

Instream Structure: ☐ Riffles ☐ Pools (max. depth ____) ☐ Glides ☐ Undercut Banks ☐ LOD (jams/snags) ☐ Other _____

Channel Condition: ☐ Terracing ☐ Bank or Bed Degradation

LAKE/POND MORPHOMETRY/FEATURES

Pond/Lake Name: _____ Hydroperiod: ☐ Permanent ☐ Seasonal

Area: _____ Maximum Width _____ Maximum Length _____ Maximum Depth _____

Shore Line _____ Shoreline Development _____ Width of Drawdown Zone _____

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color _____)

Instream Structure: ☐ Shoals ☐ Undercut Banks ☐ LOD (jams/snags ☐ Other _____

SUBSTRATE (Percent)

☐ Silt ☐ Sand ☐ Gravel ☐ Cobble ☐ Boulder ☐ Bedrock ☐ Other:

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

STREAM/POND VEGETATION

Canopy Cover(mid-day):_____; Emergent Vegetation:_____; Floating Vegetation_____; Open Water_____
Dominant Species:

ADJACENT COVER TYPE(S)

☐ Woodland ☐ Shrub ☐ Savanna ☐ Grassland ☐ Wetland ☐ Agriculture ☐ Developed ☐ Other

SPECIES AND NUMBERS OBSERVED

Species	Egg Masses	Larvae	Metamorphs (w/legs)	Juvenile	Adult	Detection Method
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight

Describe potential threats to California red-legged frogs observed, including non-native and native fish predators such as fish, bullfrogs, and raccoons:

DIAGRAM

NOTES

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

DATE: 7/3/07 | PROJECT: PXP Produced Water Project (Pismo Creek)

SURVEY BIOLOGIST(S): C. Santala, J. Peale

Time Start: 2130 | Time End: 2230 | Survey Duration: 1 hour | Unit-Effort: _____

LOCATION

City/County San Luis Obispo County; ___ ¼; ___ ¼ Section ___ Township ___ Range ___

Latitude ___ Longitude ___; Quadrangle Arroyo Grande NE; Pismo Beach Elevation ___

ATTACH MAP (include habitat types, important features, and species locations)

TYPE OF SURVEY

☐ Day ☒ Night; ☒ Breeding ☒ Non-Breeding; Survey Number: 1 2 3 4 5 6 7 (8)

Brand name/model of light used: Brand/model/power of binoculars used:

WEATHER CONDITIONS AT START OF SURVEY

Air Temperature 61 °F (3"); Water Temperature 61 °F; Wind Speed: 0 mph; Wind Direction N/A; Cloud Cover 0 %

Precipitation 0 in.; Humidity ___ %; Moon Phase ¼ waning

AQUATIC HABITAT TYPE

☐ River ☒ Stream ☐ Swale ☐ Ditch ☐ Lake ☐ Natural Pond ☐ Stock Pond ☐ Impoundment ☐ Vernal Pool ☐ Marsh/Wetland

Hydrogeomorphology Class: ☐ Depression ☐ Slope ☐ Riverine

HYDROPERIOD

☒ Permanent ☐ Intermittent ☐ Ephemeral

STREAM MORPHOMETRY/FEATURES

River/Creek Name Pismo Creek River Mile ___ Stream Order ___

Hydroperiod: ☒ Permanent ☐ Intermittent ☐ Ephemeral Reach Length ___ Right Bank Height ___ Left Bank Height ___

Top Bank Width ___ Stream Width ___ Channel Width @ OHWM ___ Right Bank Slope ___ Left Bank Slope ___

Water Depth ___ Sinuosity Index ___ Stream Gradient ___ Flow Velocity ___ Wetted Perimeter ___

Water Clarity: ☐ Clear ☒ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Riffles ☐ Pools (max. depth ___) ☐ Glides ☒ Undercut Banks ☐ LOD (jams/snags) ☐ Other ___

Channel Condition: ☐ Terracing ☐ Bank or Bed Degradation

LAKE/POND MORPHOMETRY/FEATURES

Pond/Lake Name: ___ Hydroperiod: ☐ Permanent ☐ Seasonal

Area: ___ Maximum Width ___ Maximum Length ___ Maximum Depth ___

Shore Line ___ Shoreline Development ___ Width of Drawdown Zone ___

Water Clarity: ☐ Clear ☐ Turbid Water Color: ☐ Clear ☐ Stained (Color ___)

Instream Structure: ☐ Shoals ☐ Undercut Banks ☐ LOD (jams/snags ☐ Other ___

SUBSTRATE (Percent)

☒ Silt ☒ Sand ☒ Gravel ☐ Cobble ☐ Boulder ☐ Bedrock ☐ Other:

AQUATIC SURVEY DATA FORM

padre associates, inc. ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

STREAM/POND VEGETATION

Canopy Cover(mid-day): 70% Emergent Vegetation: ✓ ; Floating Vegetation ✓ ; Open Water 30%
Dominant Species: see survey 3 data

ADJACENT COVER TYPE(S)

☒ Woodland ☐ Shrub ☐ Savanna ☐ Grassland ☐ Wetland ☐ Agriculture ☐ Developed ☐ Other

SPECIES AND NUMBERS OBSERVED

Species	Egg Masses	Larvae	Metamorphs (w/legs)	Juvenile	Adult	Detection Method
Rana catesbeiana					1	☒ Visual ☐ Call ☐ Capture ☒ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight
						☐ Visual ☐ Call ☐ Capture ☐ Spotlight

Describe potential threats to California red-legged frogs observed, including non-native and native fish predators such as fish, bullfrogs, and raccoons:
observed an opposum along stream channel

DIAGRAM

NOTES

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

APPENDIX D

Padre Staff Resumes

THIS PAGE LEFT BLANK INTENTIONALLY

Kenneth Lee Gilliland

Staff Biologist

Experience Summary: Kenneth L. Gilliland has 5 years of experience as a wildlife biologist with an emphasis on the assessment and monitoring of special-status plant and wildlife species. During this period Mr. Gilliland has conducted habitat assessments; special-status plant and wildlife species surveys; ensured client compliance with the Endangered Species Act (ESA), Clean Water Act, National Pollution Discharge Elimination System, and the California Department of Fish and Game Code; habitat revegetation/restoration; invasive plant removal; wetland mitigation; special-status plant and wildlife biological monitoring; and National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) document preparation for a variety of projects. Project experience has included close coordination with all federal and state agencies involved. In addition, Mr. Gilliland has participated in numerous site-specific U.S. Fish and Wildlife Service (USFWS) protocol surveys for the California red-legged frog (*Rana aurora draytonii*) and arroyo toad (*Bufo californicus*) and has acquired the ability to identify all of their life stages as they occur in their natural habitat. Additionally, Mr. Gilliland been approved by the USFWS to handle and relocate California red-legged frogs during various projects.

Education: B.S. Zoology, Humboldt State University, Arcata, CA. 2002.
Pursuing a Masters of Science in Amphibian Ecology at Cal Poly San Luis Obispo.

Graduate level education applicable to the California red-legged frog

- **Herpetology 488 – (Spring 2000):** Course emphasized the identification and life history of southwestern herpetofauna species, including the California red-legged frog and arroyo toad. Instructor: Dr. Howard Snell (email: howard@fcdarwin.org.ec)

Specific Project Experience: The following represents a chronological list of project experience relevant to the California red-legged frog. It should be noted that all project experience described below has been conducted to USFWS protocol and under the guidance and/or direct supervision of senior level biologists, including Mrs. Jamie Uyehara (U.S. Forest Service), Mr. Tom Murphey (U.S. Forest Service), Mr. David Freed (U.S. Forest Service), Mrs. Katherine Malengo (U.S. Forest Service), Mr. Matt Ingamells (Padre Associates Inc.), Mr. Chris Dunn (Padre Associates Inc.), Mr. Brian Dugas (Padre Associates Inc.), and Mr. Sam Sweet (University of California at Santa Barbara).

- **Nipomo Community Services District Waterline Intertie Project (1/2007).** Mr. Gilliland assisted the Nipomo Community Services District with protocol level California red-legged frog surveys in Nipomo Creek and proximate agricultural ponds and storm water drainages in Santa Barbara and San Luis Obispo Counties, CA.

- **County of Santa Barbara Tajiguas Landfill detention basin cleanout California red-legged frog survey (6/2006).** Mr. Gilliland assisted the County of Santa Barbara with California red-legged frog surveys prior to the implementation of the Tajiguas Landfill basin cleanout. The northern and southern detention basins were surveyed for the presence of tadpoles prior to the conveyance of water to assist with the basin cleanout. Additionally, Mr. Gilliland was approved by the USFWS to handle and relocate California red-legged frogs encountered.
- **Venadito Canyon California red-legged frog surveys and monitoring, Santa Barbara, CA. (10/2006).** Mr. Gilliland assisted Exxon/Mobil with California red-legged frog surveys during emergency storm repair construction projects on Venadito Creek in Santa Barbara, CA. Additionally, Mr. Gilliland was approved by the USFWS to handle and relocate California red-legged frogs encountered.
- **Seneca Resources Hamp Bridge Replacement California red-legged frog survey, Ojai, CA. (5/2006).** Mr. Gilliland assisted Seneca Resources with California red-legged frog surveys during the replacement of Hamp Bridge on Sisar Creek.
- **Rancho Dos Rios California red-legged frog surveys, monitoring and relocation, Oak View, CA. (8/2005).** Mr. Gilliland assisted the owner of Rancho Dos Rios with California red-legged frog surveys and monitoring during a bridge fortification project on San Antonio Creek in Oak View, CA. In addition, Mr. Gilliland was directly involved in the relocation of a number of juvenile California red-legged frogs to areas of USFWS identified suitable habitat outside of the project impact area. These relocation efforts adhered to USFWS protocol and Declining Amphibian Populations Task Force (DAPTF) code and were performed under the direct supervision of Mr. Chris Dunn (Padre Staff Biologist).
- **Las Flores Canyon California red-legged frog surveys and monitoring, Santa Barbara, CA. (5/2005).** Mr. Gilliland assisted Exxon/Mobil with California red-legged frog surveys during emergency storm repair construction projects on Las Flores Creek in Santa Barbara, CA. In addition, Mr. Gilliland was directly involved in the relocation of numerous juvenile California red-legged frogs to areas of USFWS identified suitable habitat outside of the project impact area. These relocation efforts adhered to USFWS protocol and DAPTF code and were performed under the direct supervision of Mr. Chris Dunn (Padre Staff Biologist).
- **Cachuma Operations and Maintenance Board California red-legged frog surveys, Santa Barbara, CA. (6/2005).** Mr Gilliland assisted the Cachuma Operations and Maintenance Board with protocol level California red-legged frog surveys in a tributary of Glen Annie Reservoir in Santa Barbara, CA.
- **Upper Santa Ynez Creek California red-legged frog and arroyo toad monitoring and surveys, Santa Barbara, CA. (12/2002-5/2003).** Mr. Gilliland assisted the U.S. Forest service with California red-legged frog and arroyo toad monitoring and surveys (day and night) at Santa Ynez Creek on the Los Padres National Forest, Santa Barbara, CA.
- **Mono Creek California red-legged frog and arroyo toad monitoring and surveys, Santa Barbara, CA. (12/2002-5/2003).** Mr. Gilliland assisted the U.S. Forest service with California red-legged frog and arroyo toad monitoring and

surveys (day and night) at Mono Creek on the Los Padres National Forest, Santa Barbara, CA.

- **Indian Creek California red-legged frog and arroyo toad monitoring and surveys, Santa Barbara, CA. (12/2002-5/2003).** Mr. Gilliland assisted the U.S. Forest service with California red-legged frog and arroyo toad monitoring and surveys (day and night) at Indian Creek on the Los Padres National Forest, Santa Barbara, CA.
- **Piru Creek California red-legged frog and arroyo toad monitoring and surveys, Piru, CA (12/2002-5/2003).** Mr. Gilliland assisted the U.S. Forest service with California red-legged frog and arroyo toad monitoring and surveys (day and night) at Piru Creek on the Los Padres National Forest Piru, CA.
- **Canton Canyon California red-legged frog and arroyo toad monitoring and surveys, Piru, CA (12/2002-5/2003).** Mr. Gilliland assisted the U.S. Forest service with California red-legged frog and arroyo toad monitoring and surveys (day and night) in Canton Canyon on the Los Padres National Forest Piru, CA.
- **Agua Blanca California red-legged frog and arroyo toad monitoring and surveys, Piru, CA (12/2002-5/2003).** Mr. Gilliland assisted the U.S. Forest service with California red-legged frog and arroyo toad monitoring and surveys (day and night) at Piru Creek on the Los Padres National Forest Piru, CA.
- **Sespe Creek California red-legged frog and arroyo toad monitoring and surveys, Ojai, CA (12/2002-5/2003).** Mr. Gilliland assisted the U.S. Forest service with California red-legged frog and arroyo toad monitoring and surveys (day and night) at Sespe Creek on the Los Padres National Forest Ojai, CA.

Applicable Herpetological Experience: The following represents a chronological list of project experience relevant to the study of herpetology that Ken Gilliland has been involved with. It should be noted that all project experience described below has been conducted under the guidance and/or direct supervision of senior level biologists, including Mrs. Jamie Uyehara (U.S. Forest Service), Mr. Tom Murphey (U.S. Forest Service), Mr. David Freed (U.S. Forest Service), Mr. Sam Sweet (University of California at Santa Barbara), Mr. Howard Snell (University of New Mexico/Charles Darwin Research Station; Galapagos Islands, Ecuador), Mrs. Heidi Snell (Charles Darwin Research Station; Galapagos Islands, Ecuador) Mr. Thomas Fritts (United States Geological Survey), Mr. Cruz Marquez (Charles Darwin Research Station; Galapagos Islands, Ecuador), and the Desert Tortoise Council.

- **Desert Tortoise Council Handling Techniques Workshop Ridgecrest, CA. (11/6/2004).** Mr. Gilliland attended the desert tortoise council's desert tortoise handling technique workshop. The workshop provided an overview of desert tortoise ecology, threats associated with their decline, regulatory mechanisms in place for them (California Department of Fish and Game [CDFG], Bureau of Land Management [BLM], and USFWS), artificial burrow construction, nest relocation, handling techniques, health assessments, and biological monitoring protocol.
- **Herpetofauna of the Southern California Region (12/2002-5/2003).** Mr. Gilliland has been formally trained on the identification and ecology of the herpetofauna of the Southern California region by senior level biologists. The senior level biologists that provided this specific training included Mrs. Jamie Uyehara (U.S. Forest

Service), Mr. Tom Murphey (U.S. Forest Service), Mr. David Freed (U.S. Forest Service), Vallerie Hubbart (U.S. Forest Service) and Mr. Sam Sweet (University of California at Santa Barbara).

- **Galapagos giant tortoise (*Geochelone elephanthopus)* monitoring, and surveys, Galapagos Islands, Ecuador (5/2000-12/2000).** Mr. Gilliland assisted the Charles Darwin Research Station with Galapagos giant tortoise handling, radio tracking, passive integrated transponder (PIT) tagging, ultrasounding, monitoring, and surveys on the islands of Santa Cruz, Isabela, and Espanola in the Galapagos Archipelago, Ecuador.
- **Galapagos land iguana (*Conolophus subcristatus*) monitoring, and surveys, Galapagos Islands, Ecuador (5/2000-12/2000).** Mr. Gilliland assisted the Charles Darwin Research Station with Galapagos land iguana handling, radio tracking, passive integrated transponder (PIT) tagging, monitoring, and surveys on the islands of Santa Cruz, Isabela, and Plazas Sur in the Galapagos Archipelago, Ecuador.
- **Research study on the monitoring of lava lizards (*Microlophus albermarlensis*) at the Charles Darwin Research Station and the Galapagos National Park Headquarters Galapagos Islands, Ecuador (5/2000-12/2000).** Mr. Gilliland investigated the spatial and temporal relative abundance of lava lizards with visual-encounter-surveys in the developed and natural areas of the island of Santa Cruz, in the Galapagos Archipelago, Ecuador.

Applicable Professional Society Memberships:

- Society for the Study of Reptiles and Amphibians (SSAR)

California Red-legged Frog Professional References

Mr. Gilliland's California red-legged frog experience was conducted under the direct supervision of the following biologists:

Dr. Jamie Uyehara
6755 Hollister Ave., Suite 150
Goleta, Ca. 93117
(805) 961-5736
juyehara@fs.fed.us

Mr. Chris Dunn
1861 Knoll Dr.
Ventura, Ca. 93003
(805) 644-2220 ext. 59
c.dunn@padreinc.com

Mr. Matt Ingamells
1861 Knoll Dr.
Ventura, Ca. 93003
(805) 644-2220 ext. 59
m.ingamells@padreinc.com

Mrs. Katherine Malengo
406 S. Mildred
King City, CA 93930
(831) 385-5434 ext.219
kmalengo@fs.fed.us

Brian G. Dugas

Project Manager/Staff Biologist

Experience Summary: Brian Dugas has 10 years of experience in environmental and land use planning with focus on the assessment of biological resources. During this period Mr. Dugas has conducted habitat assessments, biological constraints analyses, special-status plant and wildlife species surveys, revegetation/restoration plans, wetland delineations, rapid-bioassessments, wetlands mitigation, biological monitoring, and CEQA/NEPA document preparation for a variety of projects. Project experience has included close coordination with all responsible agencies. In addition, Mr. Dugas has performed numerous site-specific surveys for the California red-legged frog (*Rana aurora draytonii*) and has acquired the ability to identify them as they occur in their natural habitats.

Education: B.S. Natural Resources Management, California Polytechnic State University, San Luis Obispo (Cal Poly), 1993.

Continued education towards M.S. at Cal Poly, Specialization: General Agriculture, Study Emphasis: Fisheries & Wildlife Management; includes the following coursework (2001-2003):

- **Zoology 329 – Vertebrate Field Zoology (Spring 2001):** Course emphasized the identification and life history of terrestrial vertebrate species, including the California red-legged frog. Instructor: Dr. Roger Gambs

- **Biology 427 – Wildlife Management (Fall 2001):** Course emphasized the important habitats and features critical to wildlife with emphasis on planning and designing habitats to meet the needs of wildlife, including riparian and wetland ecosystems. Instructor: Dr. Michael T. Hanson

- **Zoology 530 – Behavioral Ecology (Winter 2002):** Course emphasized habitat selection, spacing mechanisms, reproductive strategies, feeding strategies, agonistic, parasitic, and altruistic behavior; migration and comparative social systems of vertebrate species. Instructors: Dr. Dennis Frey and Dr. Roger Gambs

California Red-Legged Frog Workshop (April 8-10, 2002): Attended a California Red-Legged Frog Workshop presented by the Sacramento – Shasta Chapter of the Wildlife Society along with the Calif. Dept. of Water Resources, Calif. Dept. of Fish & Game, and Wildlands, Inc. The workshop provided an overview of the status and ecology of the Calif. red-legged frog, their habitat requirements, movements and life cycles, frog identification (field techniques and equipment); USFWS survey protocols and guidance, pit tagging and radio telemetry techniques (hands-on), Federal Endangered Species Act and consultations, and USFWS critical habitat and recovery plan implementation. In addition, the workshop contained a field component, which allowed participants to perform protocol-level day and nighttime surveys for Calif. red-legged frogs with a panel of selected experts at several sites located at Pt. Reyes, CA. Specifically, the hands-on field surveys focused on identification of egg masses,

larvae, subadult and adult stages of the frog, with emphasis on utilization of proper survey and frog handling techniques. Sponsor information: Sacramento-Shasta Chapter of the Wildlife Society, Ms. Melinda Dorin (Phone: 916-654-4024).

Specific Project Experience: The following represents a chronological list of project experience relevant to the California red-legged frog. It should be noted that all project experience described below has been conducted under the guidance and/or direct supervision of senior level biologists, including Mr. Matt Ingamells and Mr. Rick Meredith of Padre Associates, Inc. (Padre):

- **Nipomo Community Services District (NCSD) Waterline Inertie Project, Nipomo, CA (2006-2007).** Mr. Dugas recently led a focused, protocol-level Calif. red-legged frog survey of the proposed pipeline corridor which included several drainages located in northern Santa Maria, the Santa Maria River, Nipomo Creek, and a series of wetlands located along the Nipomo Mesa. Numerous adult and sub-adult Calif. red-legged frogs were identified during the survey.

- **ExxonMobil Las Flores Canyon Emergency Road Repair Project, Gaviota, CA (2005-2006):** As part of this project, Mr. Dugas led focused herpetological surveys of project area and identified Calif. red-legged frogs within Las Flores Canyon drainage and Venadito Creek. Worked with Corps and USFWS to develop appropriate avoidance and minimization measures for project. Additionally, Mr. Dugas conducted pre-activity surveys and performed appropriate worker orientations at the site. Contacts: Katie Drexhage, Biologist / USFWS: (805) 644-1766, Matthew Vandersande / U.S. Army Corps: (805) 585-2151.

- **Mahoney Road Storm Damage Repair Project, Santa Maria, California (2004).** As part of this project, Mr. Dugas conducted a worker orientation on the identification of Calif. red-legged frogs, performed protocol-level nighttime surveys of adjacent wetland areas and drainages, and captured and relocated numerous adult Calif. red-legged frogs to nearby suitable habitat areas. Contact: Katie Drexhage, Biologist / USFWS: (805) 644-1766.

- **Old Coast Highway Bridge Replacement Project, Santa Barbara County, California (May 2004).** Mr. Dugas conducted a worker orientation on the identification of Calif. red-legged frogs, performed protocol-level nighttime surveys of affected portions of Nojoqui Creek, and captured and relocated adult, juvenile, and larvae form Calif. red-legged frogs to suitable habitat areas during the course of the project. Contact: Katie Drexhage, Biologist / USFWS: (805) 644-1766.

- **River Road Bridge Replacement Project, San Miguel (April 2004):** Mr. Dugas led a series of pre-construction special-status species surveys which included protocol-level Calif. red-legged frog surveys of the proposed project area within the Salinas River drainage. Additional task will include conducting a worker orientation on the identification of Calif. red-legged frogs, and performance of construction monitoring of vegetation removal within the drainage. Contact: Kate Ballantyne, Environmental Specialist / San Luis Obispo County Public Works Department: (805) 788-2765.

- **Warmuth Residence Development Project - Parcel 52, Hollister Ranch (Nov. 2003 [Late survey period pre-approved by B. Fahey, USFWS]):** As part of this biological assessment, Mr. Dugas conducted focused, protocol-level Calif. red-legged frog surveys of Agujas Creek within the Hollister Ranch. One adult Calif. red-legged frog was identified during the surveys. Contact: Melissa Mooney, Biologist / Santa Barbara County: (805) 934-6587.

- **Noyes Road Culvert Installation Project, Arroyo Grande (August 2003):** Mr. Dugas performed protocol-level Calif. red-legged frog surveys of an unnamed drainage, conducted a worker orientation on the identification of Calif. red-legged frogs, and performed construction monitoring of vegetation removal within the drainage.

- **Tassajara Creek Bridge Installation Project, San Luis Obispo (July 2003):** As part of this project, Mr. Dugas performed protocol-level Calif. red-legged frog surveys of Tassajara Creek and periodic construction monitoring of the bridge installation project.

- **Santa Barbara County Flood Control District, West Canyon Drainage Improvement Project (June 2003):** Mr. Dugas conducted focused, protocol-level Calif. red-legged frog surveys of the West Main Street drainage in Santa Maria, CA. Numerous adult Calif. red-legged frogs were identified during the survey. Contact: Bridget Fahey, Biologist / USFWS: (805) 644-1766.

- **Chevron Pipe Line Company Estero Hill Plant Sag Line Removal Project (May 2003).** Mr. Dugas conducted wildlife surveys of project area with specific emphasis on the presence of California red-legged frogs and/or existing suitable habitat within an intersecting drainage. Several adult Calif. red-legged frogs were identified during the survey.

- **Santa Barbara County, Laguna County Sanitation District, Brine Concentrate Pipeline Project & Brine Concentrate Disposal Well Project, Orcutt (2002):** Mr. Dugas conducted a worker orientation on the identification of Calif. red-legged frogs, performed protocol-level nighttime surveys of adjacent creeks and waterways, and captured and relocated Calif. red-legged frogs to suitable habitat areas during the course of the project. Contact: Bridget Fahey, Biologist / USFWS: (805) 644-1766.

- **Unocal Cojo Marine Terminal and Point Conception Facilities Decommissioning Project (2001-2003).** As part of this biological assessment, Mr. Dugas conducted focused herpetological surveys of project area and identified Calif. red-legged frogs within Wood Canyon drainage, directly east of Government Point, CA. Worked with Corps and USFWS to develop appropriate avoidance and minimization measures for project. Contacts: Katie Drexhage, Biologist / USFWS: (805) 644-1766, Jack Malone / U.S. Army Corps: (805) 585-2154.

- **Ventura County Transportation Commission, Casitas Bypass Project (October, 2001).** Conducted focused red-legged frog surveys of segments of the Ventura River and San Antonio Creek located in Ventura County, CA. The surveys collectively covered an area in

excess of two miles along the two stream reaches and their convergence zone. One adult Calif. red-legged frog was identified during the surveys.

- **Natural Environment Studies (NES), Jalama Road Bridge (51C-017), Santa Barbara County Public Works Department (August, 2001).** Conducted focused red-legged frog surveys of Jalama Creek at the Jalama Road Bridge crossing, located in Santa Barbara County, CA. Surveys focused on the segment of Jalama Creek located 500 feet upstream and downstream of the bridge crossing. One sub adult Calif. red-legged frog was identified during the surveys.

- **Williams Residence Biological Resources Assessment (June, 2001).** As part of this biological assessment, Mr. Dugas conducted amphibian and reptile surveys of a segment of Alamo Pintado Creek located in Buellton, CA, with specific emphasis on the presence of California red-legged frogs and/or existing suitable habitat.

- **Shell Molino Nearshore Flowline Removal Project (Spring/Summer, 2001).** Assisted on-site biologists during pre-activity surveys for California red-legged frogs within the equipment staging areas at the creek mouth of Arroyo Hondo Creek, Gaviota, CA. In addition, prepared a Site Restoration Plan for the project, which emphasized reestablishment of habitat for California red-legged frogs and other sensitive wildlife species within the project area. Contacts: Dan Dugan, Fisheries Biologist / Tenera: (805) 772-4080, John Storrer / Santa Barbara County EQAP Monitor: (805) 682-2065.

- **City of Thousand Oaks/Unit W - Phase 2 Sewer Interceptor Reconstruction Project (May, 2000).** Assisted Padre biologists during focused pre-construction surveys for California red-legged frogs along a 2-mile segment of Arroyo Conejo Creek located within the City of Thousand Oaks, CA.

- **Unocal Guadalupe A2A Emergency Excavation Project, Guadalupe, CA (1998).** Mr. Dugas participated in the monitoring (day/night) of the access routes and excavation areas throughout the project. During this period, Mr. Dugas conducted surveys with SAIC biologists and observed as well as participated in numerous California red-legged frog relocations. Using established handling protocols, all frogs observed were captured and relocated to a predetermined suitable habitat located outside the construction zone. Mr. Dugas also accompanied SAIC biologists, USFWS, and CDFG during several nighttime California red-legged frog surveys of the wetland habitats within the project area. Contact: Steve Henry, Biologist / USFWS: (805) 644-1766.

- **Rocky Canyon Quarry EIR, San Luis Obispo, CA (Sept. 1997).** Assisted Morro Group, Inc. wildlife biologist during several focused California red-legged frog surveys of Rocky Canyon Creek, Atascadero, CA. Conducted during previous employment with Morro Group, Inc., San Luis Obispo, CA.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
PAS 3345.5075.7171

July 11, 2007

Jessica Peak, Biologist
Padre Associates, Inc.
811 El Capitan Way, Suite 130
San Luis Obispo, California 93401

Subject: Species List for the Installation of a Produced Water Reclamation Facility within the existing Plains Exploration and Production Oil Field, San Luis Obispo County, California.

Dear Ms. Peak:

We are responding to your request, dated April 10, 2007, and received in our office on April 12, 2007, for information on listed threatened or endangered species that may occur in the vicinity of the Pismo Beach and Arroyo Grande NE USGS quadrangles, San Luis Obispo County, California. We received additional information regarding the project during a telephone call on May 14, 2007. You requested the species list to help you prepare an Environmental Impact Report (EIR) to analyze the potential impacts associated with the installation of a produced water reclamation facility within the existing Plains Exploration and Production Oil Field, located on Price Canyon Road in San Luis Obispo County. We have enclosed a list of federally listed species that may occur in the vicinity of Pismo Beach and Arroyo Grande NE USGS quadrangles.

The U.S. Fish and Wildlife Service's (Service) responsibilities include administering the Endangered Species Act of 1973, as amended (Act), including sections 7, 9, and 10. Section 9 of the Act prohibits the taking of any federally listed endangered or threatened species. Section 3(18) of the Act defines take to mean to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Service regulations (50 CFR 17.3) define harm to include significant habitat modification or degradation which actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. Harassment is defined by the Service as an intentional or negligent action that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. The Act provides for civil and criminal penalties for the unlawful taking of listed species.

Exemptions to the prohibitions against take may be obtained through coordination with the Service through interagency consultation for projects with Federal involvement pursuant to section 7 or through the issuance of an incidental take permit under section 10(a)(1)(B) of the

Act. If the subject project is to be funded, authorized, or carried out by a Federal agency and may affect a listed species, the Federal agency must consult with the Service, pursuant to section 7(a)(2) of the Act. If a proposed project does not involve a Federal agency but may result in the take of a listed animal species, the project proponent should apply for an incidental take permit, pursuant to section 10(a)(1)(B) of the Act. Once you have determined if the proposed project will have a lead Federal agency, we can provide you with more detailed information regarding the section 7 or 10(a)(1)(B) permitting process.

Proposed and candidate species should be considered in the planning process because they may become listed or proposed for listing prior to project completion. Proposed and candidate species are those species presently under review by the Service for consideration for Federal listing and are included for the sole purpose of notifying proponents in advance of possible proposals and listings, which at some time in the future may have to be considered in planning activities. If early evaluation of the project indicates that it is likely to adversely affect a proposed or candidate species, you may wish to request technical assistance from this office.

Candidate species are those species presently under review by the Service for consideration for Federal listing. Candidate species should be considered in the planning process because they may become listed or proposed for listing prior to project completion. Preparation of a biological assessment, as described in section 7(c) of the Act, is not required for candidate species. If early evaluation of your project indicates that it is likely to affect a candidate species, you may wish to request technical assistance from this office.

Only listed species receive protection under the Act. However, sensitive species should be considered in the planning process in the event they become listed or proposed for listing prior to project completion. We recommend that you review information in the California Department of Fish and Game's (CDFG) Natural Diversity Data Base. You can contact the CDFG at (916) 324-3812 for information on other sensitive species that may occur in this area.

If you have any questions concerning this letter or the enclosed list, please contact Mark A. Elvin of my staff at (805) 644-1766, extension 258.

Sincerely,

Chris Dellith
Senior Biologist
South Coast Division

Enclosures

ENDANGERED, THREATENED, AND CANDIDATE SPECIES WHICH MAY OCCUR IN THE VENTURA FISH AND WILDLIFE OFFICE'S AREA OF PISMO BEACH AND ARROYO GRANDE NE USGS QUADRANGLES, SAN LUIS OBISPO COUNTY, CALIFORNIA

Birds		
California condor	*Gymnogyps californianus*	E, CH
Least Bell's vireo	*Vireo bellii pusillus*	E, CH
Yellow-billed cuckoo	*Coccyzus americanus*	C
Amphibians		
Arroyo toad	*Bufo californicus*	E, CH
California red-legged frog	*Rana aurora draytonii*	T, CH
California tiger salamander	*Ambystoma californiense*	T, CH
Fish		
Steelhead trout*	*Oncorhynchus mykiss*	*
Plants		
Morro manzanita	*Arctostaphylos morroensis*	T
Indian Knob mountainbalm	*Eriodictyon altissimum*	E
Chorro Creek bog thistle	*Cirsium fontinale* var. *obispoense*	E
Gambel's watercress	*Rorippa* [*Nasturtium*] *gambellii*	E
La Graciosa thistle	*Cirsium loncholepis*	E, CH
Marsh sandwort	*Arenaria paludicola*	E
Pismo clarkia	*Clarkia speciosa* ssp. *immaculata*	E

Key:

E	Endangered
T	Threatened
CH	Critical Habitat

C Candidate species for which the Fish and Wildlife Service has on file sufficient information on the biological vulnerability and threats to support proposals to list as endangered or threatened.

* Species for which the National Marine Fisheries Service has responsibility. For more information, call the Santa Rosa Field Office at (707) 575-6050 or go to http://swr.ucsd.edu/.

THIS PAGE LEFT BLANK INTENTIONALLY

APPENDIX F
WATER QUALITY

THIS PAGE LEFT BLANK INTENTIONALLY

Semi-Volatile Organics
Priority Toxic Pollutants Analytical Results
Plains Exploration and Production Co. - Arroyo Grande Oilfield

SEMI-VOLATILE ORGANICS	PRODUCED WATER SAMPLES					REGULATORY STANDARDS	
Chemical Constituent	Sample A 01/4/07 (µg/L)	Sample B 01/18/07 (µg/L)	Sample C 01/25/07 (µg/L)	Maximum Concentration Detection (µg/L)	Average Concentration of Detections (µg/L) [1]	Effluent Limit (µg/L or noted)	Basis
1,2 Benzanthracene	<20	<20	<20	<20	<20	0.0044	California Toxics Rule
1,2 Diphenylhydrazine	<5.0	<5.0	<5.0	<5.0	<5.0	0.04	California Toxics Rule
1,2,4 Trichlorobenzene	<10	<10	<10	<10	<10	5	Public Health Goal
2 Chlorophenol	<5.0	<5.0	<5.0	<5.0	<5.0	120	California Toxics Rule
2,4 Dichlorophenol	<5.0	<5.0	<5.0	<5.0	<5.0	93	California Toxics Rule
2,4 Dimethyphenol	<20	42	<20	**42**	**42**	100	CA Notification Level (DHS)
2,4 Dinitrophenol	<20	<20	<20	<20	<20	70	California Toxics Rule
2,4 Dinitrotoluene	<5.0	<5.0	<5.0	<5.0	<5.0	0.11	California Toxics Rule
2,4,6 Trichlorophenol	<10	<10	<10	<10	<10	2.1	California Toxics Rule
2,6 Dinitrotoluene	<5.0	<5.0	<5.0	<5.0	<5.0	230	National Ambient Water Quality Criteria
2-Nitrophenol	<10	<10	<10	<10	<10	150 [C2]	National Ambient Water Quality Criteria
2- Chloronaphthalene	<5.0	<5.0	<5.0	<5.0	<5.0	1600 [C3]	National Ambient Water Quality Criteria
3,3' Dichlorobenzidine	<20	<20	<20	<20	<20	0.04	California Toxics Rule
3,4 Benzofluoranthene	<5.0	<5.0	<5.0	<5.0	<5.0	0.0044	California Toxics Rule
4 Chloro-3-methylphenol	<10	<10	<10	<10	<10	30	National Ambient Water Quality Criteria
4,6 Dinitro-2-methylphenol	<20	<20	<20	<20	<20	13.4	National Ambient Water Quality Criteria
4-Nitrophenol	<10	<10	<10	<10	<10	150	National Ambient Water Quality Criteria
4-Bromophenyl phenyl ether	<5.0	<5.0	<5.0	<5.0	<5.0	122 [C1]	National Ambient Water Quality Criteria
4-Chlorophenyl phenyl ether	<5.0	<5.0	<5.0	<5.0	<5.0	122 [C1]	National Ambient Water Quality Criteria
Acenaphthene	<5.0	<5.0	<5.0	<5.0	<5.0	520	National Ambient Water Quality Criteria
Acenaphthylene	<5.0	<5.0	<5.0	<5.0	<5.0	300F	National Ambient Water Quality Criteria
Anthracene	<5.0	<5.0	<5.0	<5.0	<5.0	9600	California Toxics Rule
Benzidine	<20	<20	<20	<20	<20	0.00012	California Toxics Rule
Benzo(a)pyrene (3,4 Benzopyrene)	<5.0	<5.0	<5.0	<5.0	<5.0	0.0044	California Toxics Rule
Benzo(g,h,i)perylene	<5.0	<5.0	<5.0	<5.0	<5.0	300 [F]	National Ambient Water Quality Criteria
Benzo(k)fluoranthene	<5.0	<5.0	<5.0	<5.0	<5.0	0.0044	California Toxics Rule
Bis (2-Chloroethoxyl) methane	<5.0	<5.0	<5.0	<5.0	<5.0	—	No Criteria Available
Bis(2-chloroethyl) ether	<5.0	<5.0	<5.0	<5.0	<5.0	0.031	California Toxics Rule
Bis(2-chloroisopropyl) ether	<5.0	<5.0	<5.0	<5.0	<5.0	122 [C1]	National Ambient Water Quality Criteria
Bis(2-Ethylhexyl) phthalate	<50	<50	<50	<50	<50	1.8	California Toxics Rule
Butyl benzyl phthalate	<10	<10	<10	<10	<10	2 [C4]	Central Coast Water Board's (CCWB's) Basin Plan
Chrysene	<5.0	<5.0	<5.0	<5.0	<5.0	0.0044	California Toxics Rule
Di-n-butylphthalate	<100	<100	<100	<100	<100	2 [C4]	CCWB's Basin Plan
Di-n-octylphthalate	<10	<10	<10	<10	<10	2 [C4]	CCWB's Basin Plan
Dibenzo(a,h)-anthracene	<5.0	<5.0	<5.0	<5.0	<5.0	0.0044	California Toxics Rule
Diethyl phthalate	<40	<40	<40	<40	<40	2 [C4]	CCWB's Basin Plan
Dimethyl phthalate	<10	<10	<10	<10	<10	2 [C4]	CCWB's Basin Plan
Fluoranthene	<5.0	<5.0	<5.0	<5.0	<5.0	300	California Toxics Rule
Fluorene	<5.0	<5.0	<5.0	<5.0	<5.0	1300	California Toxics Rule
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	5.2	National Ambient Water Quality Criteria
Hexachlorobenzene	<10	<10	<10	<10	<10	0.00075	California Toxics Rule
Hexachlorobutadiene	<10	<10	<10	<10	<10	0.44	California Toxics Rule
Hexachloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	1.9	California Toxics Rule
Indeno(1,2,3-cd)pyrene	<20	<20	<20	<20	<20	0.0044	California Toxics Rule
Isophorone	<5.0	<5.0	<5.0	<5.0	<5.0	8.4	California Toxics Rule
N-Nitrosodiphenylamine	<5.0	<5.0	<5.0	<5.0	<5.0	5	California Toxics Rule
N-Nitrosodimethylamine	<5.0	<5.0	<5.0	<5.0	<5.0	0.00069	California Toxics Rule
N-Nitrosodi-n-propylamine	<10	<10	<10	<10	<10	0.005	California Toxics Rule
Naphthalene	<5.0	<5.0	16	**16**	**16**	21	Taste and Odor
Nitrobenzene	<5.0	<5.0	<5.0	<5.0	<5.0	17	California Toxics Rule
Pentachlorophenol	<20	<20	<20	<20	<20	0.28	California Toxics Rule
Phenanthrene	<5.0	<5.0	<5.0	<5.0	<5.0	300 [C5,F]	National Ambient Water Quality Criteria
Phenol	88	72	100	**100**	**86.67**	1	CCWB's Basin Plan
Pyrene	<5.0	<5.0	<5.0	<5.0	<5.0	960	California Toxics Rule

Notes:
[1] If the method detection limit exceeds the regulatory standard, then "not detected" means the regulatory standard is met.
< = indicates less than the indicated detection limit
C: Indicate a regulatory decision that the cited concentration is either necessary of sufficient for full protection of beneficial uses or indicate meaning of uncommon acronyms.
C1: - For haloethers
C2: - For nitrophenols
C3: - For chlorinated naphthalenes
C4: - For phthalate esters
C5: - For polynuclear aromatic hydrocarbons
C6: - Criteria for sum of alpha and beta forms
C7: - Criteria for sums of all PCBs

Volatile Organics
Priority Toxic Pollutants Analytical Results
Plains Exploration and Production Co. - Arroyo Grande Oilfield

VOLATILE ORGANICS	PRODUCED WATER SAMPLES					REGULATORY STANDARDS	
Chemical Constituent	**Sample A** 01/4/07 (µg/L)	**Sample B** 01/18/07 (µg/L)	**Sample C** 01/25/07 (µg/L)	Maximum Concentration Detection (µg/L)	Average Concentration of Detections (µg/L) [1]	Effluent Limit (µg/L or noted)	Basis
1,1 Dichloroethane	<5.0	<0.50	<5.0	<5.0	<5.0	5	Primary MCL
1,1 Dichloroethene	<5.0	<0.50	<5.0	<5.0	<5.0	0.057	California Toxics Rule
1,1,1 Trichloroethane	<5.0	<0.50	<5.0	<5.0	<5.0	200	Primary MCL
1,1,2 Trichloroethane	<5.0	<0.50	<5.0	<5.0	<5.0	0.6	California Toxics Rule
1,1,2,2 Tetrachloroethane	<5.0	<0.50	<5.0	<5.0	<5.0	0.17	California Toxics Rule
1,2 Dichlorobenzene	<5.0	<0.50	<5.0	<5.0	<5.0	10	Secondary MCL
1,2 Dichloroethane	<5.0	<0.50	<5.0	<5.0	<5.0	0.38	California Toxics Rule
1,2 Dichloropropane	<5.0	<0.50	<5.0	<5.0	<5.0	0.52	California Toxics Rule
1,3 Dichlorobenzene	<5.0	<0.50	<5.0	<5.0	<5.0	400	California Toxics Rule
1,3 Dichloropropene	<5.0	<0.50	<5.0	<5.0	<5.0	0.5	Primary MCL
1,4 Dichlorobenzene	<5.0	<0.50	<5.0	<5.0	<5.0	5	Primary MCL
Acrolein	<200	<20	<200	<200	<200	21	National Ambient Water Quality Criteria
Acrylonitrile	<200	<20	<200	<200	<200	0.059	California Toxics Rule
Benzene	23	1.2	<5.0	**23**	**12.1**	1	Primary MCL
Bromoform	<5.0	<0.50	<5.0	<5.0	<5.0	4.3	California Toxics Rule
Methyl Bromide (Bromomethane)	<0.50	<0.50	<5.0	<0.50	<0.50	48	California Toxics Rule
Carbon Tetrachloride	<5.0	<0.50	<5.0	<5.0	<5.0	0.25	California Toxics Rule
Chlorobenzene	<5.0	<0.50	<5.0	<5.0	<5.0	70	Primary MCL
Chlorodibromomethane (Dibromochloromethane)	<0.50	<0.50	<5.0	<0.50	<0.50	0.401	California Toxics Rule
Chloroethane	<5.0	<0.50	<5.0	<5.0	<5.0	300	Primary MCL
2-Chloroethyl vinyl ether	<100	<0.50	<100	<100	<100		No Criteria Available
Chloroform	<5.0	<0.50	<5.0	<5.0	<5.0	5.7	National Toxics Rule
Chloromethane	<5.0	<0.50	<5.0	<5.0	<5.0	3	USEPA Health Advisory
Dichlorobromo-methane (Bromodichloromethane)	<0.50	<0.50	<5.0	<0.50	<0.50	0.56	California Toxics Rule
Dichloromethane (Methylene Chloride)	<5.0	<0.50	<50	<5.0	<5.0	4.7	California Toxics Rule
Ethylbenzene	28	<0.50	<5.0	**28**	**28**	300	Primary MCL
Tetrachloroethene	<5.0	<0.50	<5.0	<5.0	<5.0	0.8	National Toxics Rule
Toluene	10	<0.50	<5.0	**10**	**10**	150	Primary MCL
Trans-1,2 Dichloroethylene	<5.0	<0.50	<5.0	<5.0	<5.0	10	Primary MCL
Trichloroethene	<5.0	<0.50	<5.0	<5.0	<5.0	2.7	National Toxics Rule
Vinyl Chloride	<5.0	<0.50	<5.0	<5.0	<5.0	0.5	Primary MCL

Notes:
< = indicates less than the indicated detection limit
[1] If the method detection limit exceeds the regulatory standard, then "not detected" means the regulatory standard is met

Pesticides
Priority Toxic Pollutants Analytical Results
Plains Exploration and Production Co. - Arroyo Grande Oilfield

PESTICIDES	PRODUCED WATER SAMPLES					REGULATORY STANDARDS	
Chemical Constituent	Sample A 01/4/07 (µg/L)	Sample B 01/18/07 (µg/L)	Sample C 01/25/07 (µg/L)	Maximum Concentration Detection (µg/L)	Average Concentration of Detections (µg/L) [1]	Effluent Limit (µg/L or noted)	Basis
4,4'-DDD	<0.050	<0.050	<0.050	<0.050	<0.050	0.00083	California Toxies Rule
4,4'-DDE	<0.050	<0.050	<0.050	<0.050	<0.050	0.00059	California Toxics Rule
4,4'-DDT	<0.050	<0.050	<0.050	<0.050	<0.050	0.00059	California Toxics Rule
alpha-Endosulfan	<0.050	<0.050	<0.050	<0.050	<0.050	0.056 [C6]	California Toxics Rule
alpha-BHC	<0.050	<0.050	<0.050	<0.050	<0.050	0.0039	California Toxics Rule
Aldrin	<0.050	<0.050	<0.050	<0.050	<0.050	0.00013	California Toxics Rule
beta-Endosulfan	<0.050	<0.050	<0.050	<0.050	<0.050	0.056 [C6]	California Toxics Rule
beta-BHC	<0.050	<0.050	<0.050	<0.050	<0.050	0.014	California Toxics Rule
Chlordane	<1.0	<1.0	<1.0	<1.0	<1.0	0.00057	California Toxics Rule
delta-BHC	<0.050	<0.050	<0.050	<0.050	<0.050	—	No Criteria Available
Dieldrin	<0.050	<0.050	<0.050	<0.050	<0.050	0.00014	California Toxics Rule
Endosulfan Sulfate	<0.050	<0.050	<0.050	<0.050	<0.050	0.056	National Ambient Water Quality Criteria
Endrin	<0.050	<0.050	<0.050	<0.050	<0.050	0.036	California Toxics Rule
Endrin Aldehyde	<0.050	<0.050	<0.050	<0.050	<0.050	0.76	California Toxics Rule
Heptachlor	<0.050	<0.050	<0.050	<0.050	<0.050	0.00021	California Toxics Rule
Heptachlor Epoxide	<0.050	<0.050	<0.050	<0.050	<0.050	0.0001	California Toxics Rule
Lindane (gamma-BHC)	<0.050	<0.050	<0.050	<0.050	<0.050	0.019	California Toxics Rule
PCB 1016	<1.0	<1.0	<1.0	<1.0	<1.0	0.0001 [C7]	California Toxics Rule
PCB 1221	<1.0	<1.0	<1.0	<1.0	<1.0	0.00017 [C7]	California Toxics Rule
PCB 1232	<1.0	<1.0	<1.0	<1.0	<1.0	0.00017 [C7]	California Toxics Rule
PCB 1242	<1.0	<1.0	<1.0	<1.0	<1.0	0.00017 [C7]	California Toxics Rule
PCB 1248	<1.0	<1.0	<1.0	<1.0	<1.0	0.00017 [C7]	California Toxics Rule
PCB 1254	<1.0	<1.0	<1.0	<1.0	<1.0	0.00017 [C7]	California Toxics Rule
PCB 1260	<1.0	<1.0	<1.0	<1.0	<1.0	0.00017 [C7]	California Toxics Rule
Toxaphene	<5.0	<5.0	<5.0	<5.0	<5.0	0.0002	California Toxics Rule
2,3,7,8-TCDD (Dioxin)	<0.1505	<0.0767	<0.2146	<0.2146	<0.1472	1.30E-08	California Toxics Rule

Notes:
[1] If the method detection limit exceeds the regulatory standard, then "not detected" means the regulatory standard is met.
< = indicates less than the indicated detection limit
C: Indicate a regulatory decision that the cited concentration is either necessary of sufficient for full protection of beneficial uses or indicate meaning of uncommon acronyms.
C1: - For haloethers
C2: - For nitrophenols
C3: - For chlorinated naphthalenes
C4: - For phthalate esters
C5: - For polynuclear aromatic hydrocarbons
C6: - Criteria for sum of alpha and beta forms

Inorganics
Priority Toxic Pollutants Analytical Results
Plains Exploration and Production Co. - Arroyo Grande Oilfield

INORGANICS	PRODUCED WATER SAMPLES					REGULATORY STANDARDS	
Chemical Constituent	**Sample A** 01/4/07 (µg/L)	**Sample B** 01/18/07 (µg/L)	**Sample C** 01/25/07 (µg/L)	Maximum Concentration Detection (µg/L)	Average Concentration of Detections (µg/L) [1]	Effluent Limit (µg/L or noted)	Basis
Antimony	<5.0	<5.0	<5.0	<5.0	<5.0	6	Primary MCL
Arsenic	<10	<10	<10	<10	<10	0.018	National Toxics Rule
Asbestos	<0.97	<0.48	<0.97	<0.97	<0.97	7 MFL[D]	California Toxics Rule
Beryllium	<2.0	<2.0	<2.0	<2.0	<2.0	4	Primary MCL
Cadmium	<0.50	<0.50	<0.50	<0.50	<0.50	1[G]	National Toxics Rule / CCWB's Basin Plan
Chromium III (chromium)	<10	<10	<10	<10	<10	50[H]	Primary MCL
Chromium VI (Chromium hexavalent)	<0.30	<0.30	5.5	**5.5**	**5.5**	10	National Toxics Rule
Copper	<5.0	<5.0	<5.0	<5.0	<5.0	9[G]	California Toxics Rule / National Toxics Rule
Cyanide	<0.05	<0.05	<0.05	<0.05	<0.05	5.2[G]	California Toxics Rule
Lead	<2.0	<2.0	<2.0	<2.0	<2.0	2.5[G]	California Toxics Rule
Mercury	<0.2	<0.2	<0.2	<2.0	<0.2	0.012	National Toxics Rule
Nickel	<20	<20	<20	<20	<20	52[G]	California Toxics Rule / CCWB's Basin Plan
Selenium	<5.0	<5.0	<5.0	<5.0	<5.0	5	California Toxics Rule
Silver	<1.0	<1.0	<1.0	<1.0	<1.0	3.4[G]	California Toxics Rule
Thallium	<1.0	<1.0	<1.0	<1.0	<1.0	1.7	California Toxics Rule
Zinc	<20	<20	<20	<20	<20	100[G]	National Toxics Rule / CCWB's Basin Plan

Notes:
[1] If the method detection limit exceeds the regulatory standard, then "not detected" means the regulatory standard is met.
< = indicates less than the indicated detection limit

D: MFL is defined as Millions Fibers per Liter in the measurement of asbestos in water (EPA method 600/R-93/116). Its detection limits are at 0.2 MFL of length greater than 10 mincrons.
G: Criteria values for metals are expressed as a function of total hardness of 100 mg/L
H: For total Chromium

TWO PASS REVERSE OSMOSIS SYSTEM WATER QUALITY SUMMARY
PRODUCED WATER FIELD PILOT TEST PHASE II
PLAINS EXPLORATION AND PRODUCTION
ARROYO GRANDE FIELD
SAN LUIS OBISPO, CALIFORNIA
February 13-14, 2006

[1] PARAMETER	RO FEED	RO FEED WITH CONCENTRATE RECYCLE	RO REJECT	RO PERMEATE	AIR STRIPPED PERMEATE	[2] % REJECTION FEED	[2] % REJECTION FEED WITH RECYCLE
CALCIUM, PPM AS Ca	0.02	0.15	0.11	0.01	0.01	50.0%	93.3%
MAGNESIUM, PPM AS Mg	0.14	0.13	0.35	0.04	0.13	0.0%	0.0%
SODIUM, PPM AS Na	112.5	405	844	2.77	1.828	98.4%	99.6%
ALKLINITY, PPM AS HCO_3	20.7	20.7	41.5	8.3	8.3	59.9%	59.9%
CHLORIDE, PPM AS Cl	273	787	1,640	2.3	2.5	99.1%	99.7%
SILICA, PPM AS SiO_2	0.13	0.36	0.97	0.03	0.12	7.7%	66.7%
TOC, PPM AS C	2.3	19.8	19.6	1.7	0.8	65.2%	96.0%
AMMONIA, PPM N-NH_3	11.2	47.0	106.7	0.09	0.63	94.4%	98.7%
BORON, PPM AS B	0.04	0.09	0.2	0.02	0.003	92.5%	96.7%
SULFIDE, PPM AS S	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A
TEMPERATURE, °F	69	69	70	70	63	N/A	N/A
pH	6.59	6.27	6.22	7.3	7.09	N/A	N/A
CONDUCTIVITY, µmhos/cm	818	2,490	6,050	14.28	15.50	98.1%	99.4%

GOING THRU THE PROCESS →

NOTES:

[1] Parameters measured in the field at the time of sampling at each location on February 13-14, 2006.

NOTE: RO Bank run at low pH to simulate the second stage RO and to determine if the salt would drop out.

TABLE A15 TEST G
REVERSE OSMOSIS SYSTEM WATER QUALITY SUMMARY
CALSCIENCE ENVIRONMENTAL LABORATORIES, INC. ANALYTICAL RESULTS
PRODUCED WATER FIELD PILOT TEST PHASE II
PLAINS EXPLORATION AND PRODUCTION
ARROYO GRANDE FIELD
SAN LUIS OBISPO, CALIFORNIA
February 21, 2006

[1] PARAMETER	RO FEED	RO FEED WITH CONCENTRATE RECYCLE	RO REJECT	RO PERMEATE	AIR STRIPPED PERMEATE	[2] % REJECTION FEED	[2] % REJECTION FEED WITH RECYCLE
CALCIUM, PPM AS Ca	0.415	0.808	1.05	< 0.100	< 0.100	75.9%	87.6%
MAGNESIUM, PPM AS Mg	< 0.100	< 0.100	0.148	< 0.100	< 0.100	N/A	N/A
SODIUM, PPM AS Na	1,440	2,940	3,880	122	103	92.9%	96.5%
POTASSIUM, PPM AS K	41.6	91.2	124	3.38	3.23	92.2%	96.5%
ALKALINITY, PPM AS CO_3	838	1,856	2,455	19.2	50.3	94.0%	97.3%
CHLORIDE, PPM AS Cl	500	1,000	1,500	6.4	6.9	98.6%	99.3%
SULFATE, PPM AS SO_4	13	25	34	1.7	1.8	86.2%	92.8%
SILICA, PPM AS SiO_2	152.0	347.0	484.0	0.184	0.164	99.9%	99.9%
TOC, PPM AS C	150	310	420	3.9	2.1	98.6%	99.3%
METHANE, PPM AS CH_3	0.022	0.025	0.024	0.016	< 0.001	95.5%	96.0%
ACETONE, PPM AS C_3H_6O	2.500	3.300	3.400	1.900	0.320	87.2%	90.3%
2-BUTANONE, PPM AS C_4H_8O	0.770	1.100	1.300	0.450	0.023	97.0%	97.9%
AMMONIA, PPM N-NH_3	9.6	9.7	9.9	9.3	3.0	68.8%	69.1%
→ BORON, PPM AS B	6.46	13.5	18.4	0.0611	0.0730	98.9%	99.5%
SULFIDE, PPM AS S	10	16	18	< 0.050	< 0.050	99.5%	99.7%
TEMPERATURE, °F	68	68	68	68	68	N/A	N/A
→ pH	12.16	12.27	12.33	11.92	11.73	N/A	N/A
CONDUCTIVITY, µmhos/cm	7,100	12,000	15,000	1,600	1,100	84.5%	90.8%

NOTES: GOING THRU THE PROCESS →

[1] Parameter analytical results reported by CalScience Environmental Laboratories based on sampling at each location on February 21, 2006.

[2] Reported rejection is based on the water quality stated in the air stripped permeate storage tank at the time of sampling.

Note: RO Bank run at high pH to verify Boron removal

TABLE A TEST H2
TWO PASS REVERSE OSMOSIS SYSTEM WATER QUALITY SUMMARY
CALSCIENCE ENVIRONMENTAL LABORATORIES, INC. ANALYTICAL RESULTS
PRODUCED WATER FIELD PILOT TEST PHASE II
PLAINS EXPLORATION AND PRODUCTION
ARROYO GRANDE FIELD
SAN LUIS OBISPO, CALIFORNIA
February 13, 2006

[1] PARAMETER	RO FEED	RO FEED WITH CONCENTRATE RECYCLE	RO REJECT	RO PERMEATE	AIR STRIPPED PERMEATE	[2] % REJECTION FEED	[2] % REJECTION FEED WITH RECYCLE
CALCIUM, PPM AS Ca	< 0.100	< 0.100	0.101	< 0.100	< 0.100	N/A	N/A
MAGNESIUM, PPM AS Mg	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	N/A	N/A
SODIUM, PPM AS Na	111	371	932	2.07	1.96	98.2%	99.5%
POTASSIUM, PPM AS K	5.04	18.1	47.8	< 0.500	< 0.500	90.1%	97.2%
ALKALINITY, PPM AS HCO_3	3.0	5.0	5.0	3.0	2.0	33.3%	60.0%
CHLORIDE, PPM AS Cl	240	700	1,900	3.5	3.2	98.7%	99.5%
SULFATE, PPM AS SO_4	2.7	3.6	5.9	2.2	2.3	14.8%	36.1%
SILICA, PPM AS SiO_2	1.13	0.336	0.898	< 0.100	< 0.100	91.1%	70.2%
TOC, PPM AS C	4.2	7.9	16	2.1	1.1	73.8%	86.1%
METHANE, PPM AS CH_3	0.0014	0.0017	0.0011	< 0.001	< 0.001	N/A	N/A
✓ ACETONE, PPM AS C_3H_6O	2.600	5.600	9.600	2.100	0.500	80.8%	91.1%
✓ 2-BUTANONE, PPM AS C_4H_8O	0.550	1.400	2.800	0.320	0.056	89.8%	96.0%
AMMONIA, PPM N-NH_3	13	44	97	0.28	0.28	97.9%	99.4%
BORON, PPM AS B	0.0426	0.153	0.325	0.0398	0.0369	13.4%	75.9%
SULFIDE, PPM AS S	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	N/A	N/A
TEMPERATURE, °F	68	68	68	68	68	N/A	N/A
pH	7.54	6.88	6.53	8.54	7.85	N/A	N/A
CONDUCTIVITY, µmhos/cm	820	2,200	5,100	18	16	98.1%	99.3%

NOTES:

[1] Parameter analytical results reported by CalScience Environmental Laboratories based on sampling at each location on February 13, 2006.

[2] Reported rejection is based on the water quality stated in the air stripped permeate storage tank at the time of sampling.

NOTE: RO Bank run to verify acetone and 2-Butanone (MEK) removal in air stripper.

THIS PAGE LEFT BLANK INTENTIONALLY

APPENDIX G
PUBLIC DRAFT COMMENTS AND RESPONSE TO COMMENTS MATRIX

THIS PAGE LEFT BLANK INTENTIONALLY

PXP DSEIR Comments
December 6, 2007

Let's build a world that is in true partnership with what surrounds us, not one where we can only minimize our damage.

Murray Wilson, Project Manager
County Planning and Building Department
976 Osos St., Room 300
San Luis Obispo, CA 93408-2040

Hello:

Thank you for providing an opportunity to comment on the Draft SEIR for the PXP Produced Water Reclamation Facility. Comments are organized by reference to pages in the document.

3-20: Pismo Creek Discharge Outfall
It is indicated that discharge rate would vary with operational scenarios and seasonal reuse demands similar to natural flow variations in the creek. While this is reasonable and understandable, particularly to maximize attraction flows for steelhead, is it also possible to time releases during low flow and not when raining to enhance low flow conditions? Releases during rains may contribute to downstream flooding. (1)

The concept proposed for the outfall could be reconfigured to enhance and perhaps even remediate previous impacts to the area. I envision a scenario where the outfall mimics the behavior of seeps (since the discharge according to Entrix hydrology studies is purported to be relatively small). In addition, this scenario would be possible if the bank was reconstituted with bank slopes being laid back and revegetated with native plants. Bioengineered solutions to improve habitat could be instituted so that when the produced water project is no longer occurring, creek habitat in this reach is better than when the project went in. In essence this concept recreates a confluence morphologically as though the outfall was a tributary.

4-16 and 4-17: SLO County Ag and Open Space Element

- AGP26 supports the above concept of restoring riprap outfall to more natural state.
- Question--Does grazing occur on PXP property? If so, is there a grazing plan? If so, does livestock use creek? If so, provide off-stream watering source. (2)
- Question--Have roads been assessed for sediment contribution? If not, do so or contract to assess and implement fish-friendly road system.
- Question--Is there any floodplain in the project area that could be reclaimed?

5.3-5: Setting
Document CDFG Stream Survey of Pismo Creek (CDFG, 2006) is considered draft, has yet to be vetted by the Pismo Creek/Edna Area Watershed group, and was not released by the group for use in the SEIR. It will be referred to in the upcoming Pismo Creek/Edna Area Watershed Management Plan. (3)

5.3-27: South Central Coast California Steelhead
The description on this page of downstream land use conditions depicts a potentially good reason to support even a small addition of reclaimed water to benefit low flow conditions. If the supply were in perpetuity (mimicking a natural drainage/tributary) and hydrologically natural (hydrograph similar to

other natural drainages), then I might agree. Since that is not the case, I would suggest that the project does not support benefits to steelhead.

(4) It seems that the edge being played out in this project is to portend that the small temporary addition of produced water is a benefit but data was also generated to suggest that the small temporary addition is a relatively insignificant contribution so why deem it a benefit? For CEQA purposes it may; for actual habitat purposes, I do not think benefits are accrued.

(5) 5.3-33 second paragraph, last sentence remove "is" where is and was appear in the same sentence.

(2) 5.3-55: second paragraph indicates that 1.3 cfs could be the only flow....during prolonged drought periods. However, it is also indicated that Pismo is a perennial stream on page 5.3-8. This may be contradictory.

(7) 5.3-55 If current conditions for total suspended solids, dissolved oxygen, pH, hardness, manganese, iron, phosphorous, and zinc are already above or below required levels to support a healthy steelhead population, it seems illogical to further exacerbate those conditions with additional produced water of low quality.

(8) 5.3-57 mid-page last word in line is 'expect' needs to be changed to 'except,'

(9) 5.3-57 Question--bottom of page 'water that fails to meet water quality standards,' what happens to this water?

5.3-60 Steelhead Stranding Plan

(10) In the past, NMFS has not been supportive of suggested fish rescue in the upper watershed on West Corral de Piedra. A stranding plan might be more palatable to NMFS if it were conducted in a coordinated watershed-wide effort whereby relocation could be demonstrably more successful if stranded fish could be relocated from upstream reaches to PXP or from PXP to downstream reaches depending on location of sufficient pool habitat.

5.3-61 expected beneficial effects—second bullet

(11) The dam on West Corral de Piedra may have on-going impacts to stream flow. To say that "stream flow at mile 0.87 U/S from the ocean after a significant winter which produced above average rainfall for the area was less than 1.0 cfs in early June and 0.12 cfs by September" is citing isolated stream flow data without consideration of other factors impacting stream flow in the system. These flows in isolation would suggest a benefit to be gained by adding produced water. While not germane to this EIR, I would prefer to see NMFS and CDFG work on increasing releases from the dam according to current regulations so that the produced water would be even less consequential than the SEIR is purporting.

5.3-62/63 local case study

(13) Note that the mitigation project on Coon Creek is in an adjacent watershed and not a direct tributary of SLO Creek. Therefore, I would suggest that a similar scenario be considered for a Pismo Creek Habitat Mitigation Plan to include projects in waters not necessarily contiguous with Pismo Creek, such as Arroyo Grande Creek. Further, I would recommend that any existing migration barriers on PXP property receive remediation treatment as project mitigation and not during a decommissioning timeframe. I am aware of at least one such barrier. It has not yet been evaluated as to its severity as a passage barrier.

(13) 5.5-2 Hydrology
The HEC-RAS modeling conducted utilized Toro Creek as the comparison location rather than, say, Arroyo Grande Creek and then scaled the Toro Creek results to fit (presumably) the Pismo Creek Watershed. This led to very high projected flows. Obviously, there is an advantage in preferring these computer model numbers as the proposed added flow then seems relatively insignificant. I would prefer to see modeling conducted in an adjacent watershed that has a long period of record for its gauges and has very similar rainfall patterns as Pismo Creek. That would give a truer estimation of recurrent interval flows and subsequently a truer idea of the potential impacts of adding the produced water to the system.

(14) 5.5-4 Flooding
I disagree that Toro Creek is an analogous coastal watershed.

6-7 reduced project impacts
(15) "However, this alternative has the potential to prolong operations at the oil field, since a reduced water reclamation facility would result in a lower oil production rate than the proposed project. This in turn, would *extend the duration of impacts* to biological resources caused by operations at the oil field."

I find this logic flawed as that once impacted, the duration of operations is immaterial unless and until remediation of impacts are conducted.

6-14 Environmentally Superior Alternative and Appendix C page 7
16 I am curious if a combination of alternatives was considered. Specifically, a reduced project, storing water in tanks to be used for displacement of existing groundwater may have eliminated the need to discharge into Pismo Creek.

Central Coast Salmon Enhancement appreciates PXP's participation in the process of building a watershed management plan that addresses current and anticipated future land uses in the watershed.

Sincerely,

Stephnie Wald

Stephnie Wald
Watershed Projects Manager

THIS PAGE LEFT BLANK INTENTIONALLY

PXP

December 7, 2007

VIA E-MAIL AND HARD COPY

Mr. Murry Wilson
Environmental Resource Specialist
Department of Planning and Building
County Government Center, Room 310
San Luis Obispo, California 93408
mwilson@co.slo.ca.us / joliveira@co.slo.ca.us

Re: DRC2005-00252 - Plains Exploration & Production Company
Comments to Draft SEIR
Produced Water Reclamation Facility
1821 Price Canyon Road, San Luis Obispo

Dear Mr. Wilson:

This letter provides PXP's comments on the Draft Supplemental Environmental Impact Report (SEIR) for the Arroyo Grande Produced Water Reclamation Facility, dated October 2007. General comments are provided below while specific comments are presented in the attached tables.

General Comments

(1) Several mitigation measures in the SEIR appear overly detailed and prescriptive where recommended compliance plans, which are ultimately subject to County (and/or other agency) review and approval, will include the necessary details once all agency permits are issued and detailed engineering is complete. For instance, the proposed biological mitigation measures intended to protect steelhead are very specifically worded in the SEIR, although permit actions or pre-construction compliance plans are required which may vary from the SEIR prescriptions based on the requirements of the responsible agency. We believe that the mitigation measures should be worded in a manner that offers deference to, and avoids potential conflicts with, National Marine Fisheries Service's (NMFS) pending review under Section 7 of the Endangered Species Act consultation process. NMFS has primary jurisdiction over and expertise in the protection of steelhead and steelhead habitat. Mitigation measures in the SEIR should identify the issues to be addressed and goals to be achieved. Compliance plan details identified in the SEIR (i.e., Steelhead Stranding Plan) should be worded so as not to introduce unnecessary regulatory inconsistencies with responsible agencies' requirements.

(1)

As a similar example, the proposed hydrology and water quality mitigation specifies the use of granular activated carbon as a polishing unit, presuming that this process step is required to comply with forthcoming discharge permit requirements. Detailed engineering by PXP will determine the appropriate treatment process required to

comply with the Regional Water Quality Control Board's (RWQCB) NPDES permit. Use of granular activated carbon may, or may not, be the most effective means for achieving the end goal.

Other examples are noted in the attached comments.

(2) The Reduced Project Alternative does not meet the project objectives, as defined in Section 3.3, and should be dropped from detailed analysis. A 10,000 bpd water treatment plant would not allow for the efficient recovery of oil reserves from the field in an economically feasible manner.

(3) PXP does not intend to dedicate an additional Open Space Easement for the purpose of oak replacement and Pismo clarkia plantings. Working with County staff, we propose to identify suitable areas on the property and designate them for such restoration efforts. There is ample space on the property to accommodate the required number of restorative plantings to mitigate for losses associated with the project.

(4) The timing of mitigation compliance varies throughout the document depending on the impact and goal of the measure (i.e., "prior to construction", "prior to start-up"). However, the phrase "prior to implementation", as used in several mitigation measures, is unclear and should be modified to address the specific activity in question.

We appreciate the time and effort put forth to review this Project and consider our comments. After the County has reviewed our comments, we would like to schedule a meeting with you to discuss and clarify our comments as needed.

Sincerely,

Candace L. Salway

EH&S Manager, CA Onshore
Plains Exploration & Production

Substantive Comments on Draft SEIR

Page/Location	Comment (Note – All comments on mitigation measures also apply to Table 2-1 Summary Table)
Summary of Environmental Effects	
Page 2-2, Section 2.4; Page 6-5, Section 6.2.2	Alternative 2 (Reduced Project Alternative) would not meet the project economic and schedule objectives. PXP could not implement this project as written. Therefore, this Alternative should be removed from detailed discussion.
Project Description	
Page 3-1, 10th bullet AND page 3-19 Section 3.4.2.3 AND MMBIO-2C AND page 5.3-50 MM BIO-6C and 6D	BIO-2C: The quality of the water that will be routed to the pond is the same quality that will be discharged to the creek. Therefore, if anything, the proposed use of the tempering pond would enhance the usefulness of the wetland habitat for wildlife purposes. The suggested mitigation for netting seems to remove the pond value as habitat. We believe the need for netting over the pond should be revisited. If the existing pond is found to be of sufficiently low permeability as is, then BIO-6C mitigation would not apply.
Noise	
Page 5.1-7, MM NOI-1	The SEIR identifies no impact for which MM NOI-1 is to mitigate. As written, the mitigation is unjustifiably restrictive. This mitigation measure should be deleted unless a legitimate impact is clearly identified. If there truly is a potentially significant impact, the measure should be modified as follows: "No use of heavy equipment ~~or vehicles shall~~ occur between the hours of 7 p.m. and 7 a.m., *to the extent feasible.*" PXP currently has a 24-hour operation – rigs run around the clock during drilling operations, oil is shipped out at night – all in compliance with relevant ordinances and the CUP. There have been no noise complaints at the facility over the last 10 years of operation.
Air Quality	
Page 5.2-9, last paragraph and Table 5.2-3	Please note that the worst-case construction equipment scenario described in the SEIR does not necessarily correspond to the way that PXP would stage the work and may overestimate emissions. The Nitrogen Oxide Emissions Reduction and Monitoring Plan, to be submitted prior to construction, will identify the precise construction schedule and calculate more precisely project emissions.
Pages 5.2-9 and 5.2-10 Note 1 to Table 5.2-3	There appears to be an inconsistency in use of a quarter (as in "tons per quarter"), and how many quarters the proposed project construction would take place. Please make the following changes: Change sentence on page 5.2-9, 2nd paragraph from the bottom: "The construction period is expected to last approximately **3 quarters, or** 180 **work** days, with 30 **work** days for site preparation and 150 **work** days of construction. Change Note 1 after Table 5.2-3: "Total number of construction days, including site preparation, will last approximately 180 **work** days (i.e., ~~2~~ **3** quarters)."
Page 5.2-15	Impact AQ-5 is not significant because the proposed water reclamation facility would not result in TACs emissions above the APCD CEQA thresholds of 10 in a million for cancer risk, and 1.0 for the non-cancer indices, as was demonstrated in the HRA included in Appendix D. Please change the Class of the impact to Class 3, and remove the requirement for "carbon canisters or toxics scrubbers". Also, Part B of Mitigation Measure AQ-5 should be changed as follows: "PXP shall conduct a formal facility-wide Health Risk Assessment (HRA) that would include air strippers as well as other facility emission sources. If the results of the HRA exceed the

Page/Location	Comment (Note – All comments on mitigation measures also apply to Table 2-1 Summary Table)
	cancer and non-cancer factors thresholds (10 in a million for cancer and 1.0 for non-cancer), then TBACT shall be applied to the air strippers to the satisfaction of the APCD."
Biological Resources	
Page 5.3-36, MM BIO-2	The impact statement for the tempering pond erroneously says "...waterfowl and other bird species...could be impacted due to contact with untreated water...", but no untreated water would be sent to the tempering ponds. At most, the pond would be used for minor temperature reduction and possible aeration prior to creek discharge. The water temperatures that could be released to the ponds would not have adverse affects on birds. As such, the impact attributed to the tempering pond in the SEIR could not occur. Therefore, MM BIO 2C is not warranted and should be deleted. Furthermore, the potential adverse affects of trapping birds in a net over water, and then handling them to release them, appear to be greater than any potential concern with birds coming into contact with highly-treated water that meets strict discharge standards. If, after further review, it is determined that netting of the pond is necessary, then the SEIR should clearly state the basis for this conclusion. Additionally, the effectiveness of Part C of this measure is questionable as written. Instead of monthly monitoring of the netted pond by a qualified biologist to ensure no birds are trapped or entangled, we recommend monitoring of the pond by operations personnel during routine rounds. If a bird or animal becomes trapped in the net, the operations personnel will promptly notify a qualified biologist so that the bird or animal can be rescued. The mitigation should also be reworded to read "...a Tempering Pond Maintenance and Monitoring Plan shall be prepared to ensure that the netted area is maintained ~~in perpetuity with the facility~~ *for the life of the Produced Water Reclamation Facility*".
Page 5.3-41, MM BIO-3.F, BIO-6	As noted in the General Comments, PXP does not intend to dedicate another Open Space Easement for planting oak replacements and Pismo clarkia. Rather, suitable areas on the property will be identified for vegetation restoration. The text should be revised accordingly.
Page 5.3-47, Impact BIO-5	As noted in the General Comments, the SEIR does not need to specify all details of the various compliance plans. The proposed oak tree mitigation measures appear overly specific for this stage of the project planning. A Tree Protection and Supplemental Habitat Enhancement Plan, to be prepared and submitted prior to construction, will detail the appropriate protection and enhancement strategies.
Page 5.3-50, Impact BIO-6	The last paragraph recognizes that impacts to these wetland features [and all other habitat types mentioned in BIO 6] could be avoided through project design". It is PXPs intent to optimize design and construction to minimize loss of these habitat types. As such, the preamble to MM BIO-6 should emphasize that the mitigation specified is for ACTUAL loss, not the worst-case loss estimated in the SEIR. The mitigation is feasible in the event that the worst case does occur, but PXP believes the actual losses will be much less than those estimated in the SEIR.
Page 5.3-54, MM BIO-7	Any Compensatory Mitigation, if required, would be up to the ACOE as part of their review. The SEIR wording should reflect this. Also, the last line of this mitigation should be reworded to state that the Plan "shall be submitted to the County *prior to construction of the outfall.*"

Page 5.3-58, MM BIO-8	As noted in the General Comments, NMFS has primary jurisdictional authority and expertise over steelhead issues, as does USFWS over California red-legged frog and tidewater goby. The mitigation measures should be reworded to ensure there will not be a conflict between overly prescriptive SEIR mitigation language and pending Section 7 Consultation determinations. (See detailed comments below).
Page 5.3-58, MMBIO 8A	Add "if required by NMFS" after "Fishery Conservation and Management Act". NMFS has not completed their review of the project, and this analysis may be inconsistent with their findings. If NMFS determines that the EFH is required, then it will be prepared. Also, the last sentence should be changed to read "prior to ~~implementation~~ start-up."
Page 5.3-58, MMBIO 8D	This mitigation measure should be simplified to state that PXP shall submit a Stream Monitoring Plan to the County and RWQCB for review and approval describing how they will meet the requirements of the RWQCB-issued NPDES Permit. The statement "discharge temperature not to exceed 20 °C (68°F)" can lead to inconsistency with RWQCB Basin Plan requirements not to **change** the temperature of **receiving waters** by more than 5°C, and would require PXP to **improve** the existing conditions. This is another example of a mitigation measure that poses high potential to conflict with more detailed and focused permit conditions issued by another agency. Specifically, when the natural stream temperature is greater than 74°F, then to maintain 68°F as required by this measure would violate RWQCB Basin Plan requirements because it would change creek temperature by 6°F or more. This permit condition should be restated to read "PXP shall be required to comply with RWQCB and NMFS water temperature requirements." This will alleviate conflicting requirements between the SEIR permit conditions and other agency requirements.
Page 5.3-58, MMBIO 8E	The Steelhead Stranding Plan will identify circumstances that could lead to potential stranding of steelhead and protocols for dealing with such circumstances, in accordance with NMFS requirements. The bullet items listed under Part E are overly specific and may not be in keeping with the needs and requirements of NMFS. As described in the impact discussion, stranding could occur if there is no natural flow in Pismo Creek. Pismo Creek has not been observed to go dry, based on operator's observations, although it could theoretically occur based on comparison to other streams in similar settings. Accordingly, this mitigation measure should state in its preamble, after "adjacent landowners", the following " in the event that the discharge from the reclamation facility is the only flow in Pismo Creek."
Page 5.3-58, MMBIO 8E second bullet	This bullet is unnecessary and not tied to the potential impact described. Stranding, the subject of this measure, is only an issue in the extremely unlikely event that the discharge is the only flow to the creek, and there is a reduction in discharge flow such that stranding could actually occur. Any monitoring associated with the stranding concern is covered in the 5th bullet, since only the fish actually stranded are of concern. "Real time" estimates of steelhead populations goes well beyond what is reasonable to mitigate the potential impact and should be deleted.
Page 5.3-60, MMBIO 8E sixth bullet	Similar to the comment above, the suggested identification of all factors affecting steelhead stranding potential need to include a trigger, such as: that stranding and/or mortality has actually occurred. As stated, the mitigation is for the potential to strand, something that will likely never occur. The project cannot be required to mitigate something that is not an adverse impact.
Page 5.3-60, MMBIO 8E	In general, we believe it will be rare that discharge from the Water Treatment Facility is the only flow in Pismo Creek (see comments above). However, in such drought conditions, PXP would like to have options for possible avoidance of steelhead stranding

	be encountered at the Arroyo Grande facility. The requirements of this order include: • Oil-impacted soil may be beneficially reused to pave dirt lease roads, construct secondary containment berms, pave well locations, backfill pipeline road crossings, or pave parking areas. • Representative sampling of the oil-impacted soil will be conducted to confirm that it is non-hazardous based on California and Federal regulations. • Beneficial reuse material shall not be used on sensitive habitats, historical / archaeological / paleontological sites, areas prone to landslides, or as foundation material for permanent buildings/structures. An annual report shall be submitted to the RWQCB that documents volumes & source locations for each occurrence of oil-impacted soil, results of periodic visual monitoring of oily dirt stockpiles, best management practices implemented to minimize oil runoff during storm events, and other preparedness measures.

Clarification Comments on Draft SEIR

Page/Location	Comment (Note – All comments on mitigation measures also apply to Table 2-1 Summary Table)
Introduction	
(33) Page 1-1, Section1.1	Project should be consistently referred to as "Produced Water Reclamation Facility"
Air Quality	
(34) Table 5.2-3 and Appendix D, second unnumbered Table under "Construction Emissions"	There appears to be an inconsistency in the average speed of an on-road vehicle: Assumptions to the last table in Appendix D state 35 mph, and Note to Table 5.2-3 states 40 mph. Please make the speeds consistent, and review the estimated emissions, if applicable.
(35) Page 5.2-11, Mitigation Measure AQ-1, Part A	Please clarify that Rule 204 BACT requirement applies to operations emissions and not construction emissions.
(36) Page 5.2-12, MM AQ-1, Part B	Bullet 3: Please modify to read "Stockpiled earth material shall be sprayed or covered as needed to minimize dust generation."
(37) Page 5.2-12, MM AQ-1, Part B	Bullet 5: In the spirit of conserving water resources and minimizing construction traffic on the disturbed footprint, please revise text "reworked at dates more than one month after initial grading" to be "six months".
(38) Page 5.2-15, MM AQ-5 Part A	As a point of clarification, the statement contained in Part A of MM AQ-5 is not a mitigation measure under CEQA, because it does not require any actions on the part of PXP; it is merely a statement that the APCD will have a requirement for the project to be in compliance with the APCD rules. The project will have to be in compliance with the APCD rules regardless of the CEQA process. Thus, Part A of MM AQ-5 should be deleted as a statement that does not qualify as a CEQA mitigation measure.

Minor Corrections/Changes on Draft SEIR

Page/Location	Comment (Note – All comments on mitigation measures also apply to Table 2-1 Summary Table)
Introduction	
Summary of Environmental Effects	
(39) Page 2-5 to 2-34, Table 2-1	Please note that the Impact Category After Mitigation and Cumulative Impact numbers for several of the mitigation measures are missing.
Project Description	
(40) Page 3-1; 6th bullet	The height of each proposed air stripper will be 30 feet. Please correct on this page and throughout the document.
Paleontology	
(41) Page 5.1-5, MM PAL-1	The first line should be modified to "Prior to ~~approval of the project~~ *construction*…" to be consistent with the rest of the measure.
Air Quality	
(42) Page 5.2-3	Last sentence in the last paragraph right before the Table: It appears that the reference should be to Table 5.2-1, not 5.4-1. Please correct.
(43) Page 5.2-4; 1st paragraph in Section 5.2.1.5; AND page 5.2-6, last paragraph	The 8-hr State ozone standard is 0.070 ppm, not 0.007 ppm. Please correct throughout the document.
(44) Page 5.2-5, first paragraph	Last sentence: It appears that the reference should be to Table 5.2-2, not to 5.1-2. Please correct.
(45) Page 5.2-8, Section 5.3.1.1	Operational Impacts Thresholds for CO are 550 lbs/day in the San Luis Obispo County APCD CEQA Air Quality Handbook, 2003 edition. Please correct 50 to 550 lbs/day throughout the section.
(46) Page 5.2-11, note 2 to Table 5.2-3	Reference to Appendix 12.2 appears to be erroneous. Please refer to a correct data source.
Biological Resources	
(47) Page 5.3-36. MM BIO-2	The introductory sentence should remain broad and state the goal of the mitigation measure since there are options presented for feasibility. Recommend rewording the opening statement to read as follows: "Construction operations shall be conducted prior ~~to the initiation of nesting, or after the completion of nesting~~ to avoid any potential impact to migratory birds…"
(48) Page 5.3-41, MM BIO-3.D	For the sake of worker safety, Part D should be modified to read: "If nighttime construction activities are warranted, all equipment lighting shall be shielded away from adjacent wildlife habitat areas and sky, to the extent possible while still providing safe working conditions for construction personnel, to minimize lighting/glare impacts on of wildlife."
(49) Page 5.3-42, MM BIO-3.G	It is PXPs intent to avoid all Well's Manzanita. However, if it cannot be avoided, we propose to follow MM BIO-6B (bullet 2 for Well's Manzanita) of the Phase IV EIR (to which this document is a Supplement).

Page/Location	Comment (Note – All comments on mitigation measures also apply to Table 2-1 Summary Table)
Page 5.3-45, Impact BIO-4.E	The first sentence of Part E should be modified to read, "All construction activities within a 100-foot buffer of Pismo Creek shall be monitored by a qualified biologist ~~on a full-time~~ basis on a frequency deemed appropriate by the biologist based on the nature of the activities." In some instances, spot-checking may be sufficient.
Page 5.3-58, MMBIO 8B and C	See comments to HYD 4A and 4B.
Page 5.3-64 MM BIO 9	The SEIR should note that steelhead may be delisted by the time the facility is ready to be decommissioned, and therefore these mitigation measures would no longer be necessary.
~~Hydrology and Water Quality~~	
Page 5.5-9 MM HYD 1A, 3rd bullet	Please change this vegetative final erosion control measures from 30 days to *60* days after completion of grading, ***weather permitting***. Thirty (30) days is too short a period of time and may unnecessarily require reseeding of the same area in the event of unforeseen delays in the construction schedule.

THIS PAGE LEFT BLANK INTENTIONALLY

HOLLISTER & BRACE

A PROFESSIONAL CORPORATION

ATTORNEYS AT LAW

JOHN S. POUCHER
RICHARD C. MONK
STEVEN EVANS KIRBY
BRADFORD P. GINDER
PAUL A. ROBERTS
JOHN G. BUSBY
SUSAN H. McCOLLUM
ROBERT L. BRACE
MARCUS S. BIRD
PETER L. CANDY
MICHAEL P. DENVER

JOHN B. GALVIN
Of Counsel

SANTA BARBARA OFFICE
1126 SANTA BARBARA STREET
P.O. BOX 630
SANTA BARBARA, CA 93102

805.963.6711
FAX: 805.965.0329

SANTA YNEZ VALLEY OFFICE
2933 SAN MARCOS AVENUE
SUITE 201
P.O. BOX 206
LOS OLIVOS, CA 93441

805.688.6711
FAX: 805.688.3587

www.hbsb.com

December 7, 2007

Mr. Murry Wilson
Environmental Resource Specialist
Department of Planning and Building
County Government Center, Room 310
San Luis Obispo, California 93408

Re: Comments on Draft SEIR (DRC2005-00252)
Plains Exploration & Production Company (PXP)
Produced Water Reclamation Facility

Prepared by Peter L. Candy of Hollister & Brace, Attorneys to Plains Exploration & Production Company

Dear Mr. Wilson:

Thank you for the opportunity to provide comments on the Draft Subsequent Environmental Impact Report (Draft SEIR) prepared for Plains Exploration & Production Company's Produced Water Treatment Facility. As legal counsel to PXP, the comments below are intended to assist the County and SEIR preparer identify areas where the Draft SEIR could be improved. Incorporation of the following suggestions into the SEIR should help clarify areas of possible confusion and strengthen the overall legal adequacy of the environmental document.

1. Mitigation of Potentially Significant Impacts to Steelhead in Pismo Creek

The primary thrust of these comments and recommendations focus on the SEIR's overly restrictive handling of certain proposed mitigation measures intended to protect steelhead populations occurring in Pismo Creek. Mitigation Measures BIO-8 D and E set forth specific and detailed requirements mandating that PXP develop and implement a Stream Monitoring Plan and a Steelhead Stranding Plan. The Stream Monitoring Plan is intended to mitigate impacts due to increased water temperatures in Pismo Creek, and the Steelhead Stranding Plan is intended to mitigate impacts to steelhead due to stranding during periodic maintenance events at the treatment plant.

The County and SEIR preparer developed these mitigation requirements independently from the detailed environmental analysis and mitigation measures that will be developed by NMFS, USFWS and the RWQCB, pursuant to the permitting authority vested in these agencies under the Federal Endangered Species Act (FESA), Clean Water Act (CWA), and Porter-Cologne Act. The result is the imposition of potentially conflicting, overly restrictive and perhaps even unnecessary regulatory requirements. A better approach, one that is fully supported by the CEQA authorities, would be for the SEIR to back away from the imposition of mandatory requirements, and instead identify the County's proposed Stream Monitoring and Steelhead Stranding Plans as alternatives for consideration, analysis, and possible incorporation into the agencies' steelhead and water quality permitting requirements. (1)

As framed, the Stream Monitoring and Steelhead Stranding Plans impose mandatory requirements on PXP regardless of whether a more efficacious approach to accomplishing the same objectives can be developed and implemented through the agencies' permitting process. Questions arise regarding the County's intended approach to the mitigation, specifically whether the measures mandate permitting requirements PXP must pursue as part of the approvals from NMFS, USFWS and RWQCB, or alternatively, whether the County intends for its proposed mitigation plans to supplement responsible agency permit requirements. To the extent the County seeks to impose its own requirements on the agencies' permitting process, the County's mitigation measures improperly exceed the scope of the County's authority as the lead agency. (2)

CEQA does not confer on local agencies any special powers they do not otherwise have by statute. The CEQA authorities are clear that when "mitigating or avoiding a significant effect of a project on the environment, a public agency may exercise only those express or implied powers provided by law other than this division [CEQA]." (Public Resources Code section 21004.) The County clearly has the authority, pursuant its police powers and general planning laws, to protect biological resources within its jurisdiction. Importantly, however, the County lacks the authority to specify permit requirements under the FESA, CWA and the Porter-Cologne Act. None of these statutes confer any express or implied powers on the County enabling it to dictate specific measures that must be included in the permits issued pursuant to these statutes. Determinations regarding permit requirements under these statutes are within the exclusive purview of NMFS, USFWS and the RWQCB. (3)

To the extent the County intends the Stream Monitoring Plan and a Steelhead Stranding Plan to supplement the detailed mitigation to be developed by NMFS, USFWS and RWQCB, the SEIR should adopt a more deferential approach, one that promotes flexibility, regulatory efficiency and avoidance of regulatory inconsistencies in determining mitigation requirements. In this regard, the SEIR should identify the issues to be addressed and the goals to be achieved, without mandating specific requirements to be imposed on PXP in advance of permitting requirements. (4)

Over the last several years, the courts have developed legal principles regarding the extent to which an agency, in concluding that a significant impact will be fully mitigated, can rely on a mitigation measure that defers some amount of environmental problem solving until after project approval. The evolving consensus seems to be that such deferral is permissible where the adopted mitigation measure both: (5)

- Commits the agency to a realistic performance standard or criterion that will ensure the mitigation of the significant effect; and

- Disallows the occurrence of physical changes to the environment unless the performance standard is or will be satisfied. (*See* CEQA Guidelines, § 15126.4, subd.(a)(1)(B).)

In *Riverwatch v. County of San Diego* (4th Dist. 1999) 76 Cal App 4th 1428, for example, petitioners challenged the adequacy of the EIR prepared for development of a rock quarry and widening of a state route to accommodate increased traffic from the quarry. Petitioners argued, and the trial court agreed, that the EIR "was defective because it deferred preparation of some environmental analyses until Caltrans ha[d] [conducted a study as part of the required] permit to encroach on the San Luis Rey River floodplain." *Id.* at p. 1445. The Court of appeal reversed.

The EIR concluded that the widening of State Route 76 would impact the San Luis Rey River floodplain, but that impact could be mitigated by measures and design elements incorporated into the project. *Id.* at p. 1446. The specific mitigation required, however, was largely dependent on the study to be conducted by Caltrans as part of an encroachment permit necessary for the multistate project to proceed. *Id.* at p. 1447. Petitioners asserted that the county violated CEQA because the final EIR deferred a more detailed analysis of the realignment of State Route 76 until after Caltrans had completed its study. *Id.* at p. 1448. The court disagreed, reasoning that "the fact the entire extent and precise detail of the mitigation that may be required is not known does not undermine the final EIR's conclusion that the impact can in fact be successfully mitigated." *Id.* at p. 1447.

Endangered Habitats League v. County of Orange (2005) 131 Cal App 4th 777, 793-795 addressed similar arguments that an EIR improperly deferred mitigation of project impacts arising in the context of a housing development project. There the court found that, even in the absence of performance criteria per se, "[d]eferral of the specifics of mitigation is permissible where the local entity commits itself to mitigation and lists the alternatives to be considered, analyzed and possibly incorporated in the mitigation plan." Id. at p. 793.

Consistent with the holding in *Endangered Habitats League*, Mitigation Measures BIO-8 A and B commit the County to mitigation. They require PXP to obtain permits from NMFS, USFWS

and the RWQCB prior to any discharge of treated produced water to Pismo Creek. As such, the detailed provisions set forth in the County's Stream Monitoring and Steelhead Stranding Plans need not be mandatory. CEQA allows them to be identified as mitigation alternatives, to be considered, analyzed and possibly incorporated into the responsible agencies' permitting requirements. PXP recommends the Final SEIR adopt such an approach. (6)

2. The Reduced Project Alternative

CEQA requires the consideration of alternatives in an EIR to assist the public and decision-makers in considering the environmental consequences of a proposed project. The range of alternatives to be considered is governed by a rule of reason that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. CEQA Guidelines, Section 15126.6(a) states: "An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives."

The SEIR discusses three possible alternatives to PXP's Produced Water Reclamation Facility, the No Project Alternative (Alternative 1), the Reduced Project Alternative (Alternative 2), and the Fully Mitigated Alternative (Alternative 3). The focus of these comments is on the Reduced Project Alternative, which describes a 10,000 barrel per day facility, as opposed to the 20,000 barrel per day facility PXP proposes. In essence, the Reduced Project Alternative is the proposed project as intended for implementation, but reduced in overall size and scope with the intention of reducing project related impacts. In concept, the Reduced Project Alternative would minimize the footprint of disturbance and overall daily output of treated water to Pismo Creek by 50%.

A careful reading of the SEIR shows that the Reduced Project Alternative fails to meet the criteria for adequacy set forth in CEQA Guidelines, Section 15126.6(a). Specifically, the Reduced Project Alternative (1) fails to attain the basic objectives of the project by failing to attain the primary objective of the project; (2) fails to avoid or substantially lessen any of the significant effects of the project; and (3) fails to meet the standard for economic feasibility established by case law. For these reasons, the Reduced Project Alternative is not a viable alternative to the proposed project for CEQA purposes, and must be removed from consideration by the County for possible adoption. (7)

(a) The Reduced Project Alternative Fails to Attain the Primary Project Objective. The primary purpose of PXP's Water Reclamation Facility, as articulated in the Project Description, is to enhance the recovery of oil reserves via treatment and reuse of excess produced water. Inherent to this enhanced recovery is dewatering the oil-bearing formation by reducing return water flows from the existing oil-water separation process. Implementation of the proposed

water reclamation facility is intended to increase the ratio of oil to water produced at individual wells, thereby allowing for the increased rates of production permitted under the Phase IV expansion.

CEQA Guidelines, Section 15126.6(c) states that "The range of potential alternatives to the project shall include those that could feasibly accomplish most of the basic objectives of the proposed project . . . ." The Reduced Project Alternative cannot meet this standard if it cannot accomplish, at the very least, the primary objective of the project. PXP cannot effectively enhance the recovery of its oil reserves with the implementation of a 10,000 barrel per day water (8) treatment plant. Reduction of the overall daily output of treated water to Pismo Creek by 50% means an equivalent or greater reduction in PXP's ability to dewater the oil-bearing formation. The SEIR acknowledges a 50% reduction in treatment plant capacity would lower oil production rates and prolong operations at the oil field. The reduction would effectively impede PXP's ability to increase production to the level permitted under the Phase IV expansion. A project alternative that cannot accomplish the project's primary objective fails the viability test for project alternatives set forth in CEQA Guidelines, Section 15126.6.

(b) The Reduced Project Alternative Fails to Avoid or Substantially Lessen Any of the Significant Effects of the Project. The Reduced Project Alternative represents only a marginal improvement over the proposed project in terms of minimizing impacts. The Reduced Project (9) Alternative purportedly lessens but does not avoid any of the significant effects of the project. CEQA Guideline, Section 15126.6(c) requires project alternatives that do not avoid significant effects, to at least "substantially" lessen the effects, as compared to the proposed project. In all but one impact category described in the SEIR, the reduction in impacts associated with the Reduced Project Alternative were not considered "substantial."

The SEIR characterizes the reduction in impacts to steelhead due to "stranding" as "substantial." However, the SEIR also notes that the Reduced Project Alternative has the potential to prolong operations in the oil field, since a reduced water reclamation facility would result in a lower oil production rate than the proposed project. This in turn, would extend the (10) duration of impacts to biological resources caused by operations in the field, thereby negating any reduction in impacts associated with a smaller water reclamation project. The end result is that the Reduced Project Alternative would neither avoid nor substantially lessen any of the significant effects of the project. As such, the alternative fails to meet the standard for viability set forth in CEQA Guidelines, Section 15126.6.

(c) The Reduced Project Alternative is not Economically Viable and Cannot be Considered Feasible. A 10,000 barrel per day water treatment plant would provide only marginal benefits in terms of enhanced recovery of oil reserves from the field. Most of the capital and operational costs of the project would remain, despite a 50% reduction in reclamation

(11) facility output, and an even greater reduction in PXP's ability to increase oil production via the project. In this regard, the Reduced Project Alternative renders the project more expensive and less profitable. It also raises questions concerning the financial practicality of the project and whether it makes sense to proceed.

The economic viability of a project alternative is one of several factors that may be taken into account when addressing the feasibility of alternatives. (CEQA Guidelines, Section 15126.6(f)(1).) Where substantial evidence in the record supports a conclusion that the additional costs or lost profitability associated with a project alternative are sufficiently severe to render it impractical to proceed with the project, the alternative is considered infeasible. (12) *Citizens of Goleta Valley v. Board of Supervisors* (1988) 197 Cal App 3d 1167, 1181. From PXP's vantage point, the costs of the Reduced Project Alternative cannot be justified in light of the marginal oil recovery benefits it would provide. As such, the alternative fails to meet the standard for viability set forth in CEQA Guidelines, Section 15126.6.

In summary, the SEIR should clarify that the Reduced Project Alternative, while it might be useful for purposes of public participation and informed government decision-making, does not accomplish the most basic project objective, it does not avoid or substantially lessen any (13) significant environmental effects, and it cannot be considered economically feasible. For these reasons, the Reduced Project Alternative is not a viable project alternative under the CEQA Guidelines, and therefore cannot be considered by the lead agency for adoption.

On behalf of PXP, Hollister & Brace appreciates the opportunity to provide these comments. If you have questions or would like to discuss any of the suggestions set forth herein, please do not hesitate to contact me directly.

Very truly yours,

HOLLISTER & BRACE
A Professional Corporation

By _____
Peter L. Candy

California Regional Water Quality Control Board
Central Coast Region

895 Aerovista Place, Suite 101, San Luis Obispo, California 93401-7906
(805) 549-3147 • Fax (805) 543-0397
http://www.waterboards.ca.gov/centralcoast

Linda S. Adams,
Secretary for
Environmental Protection

Arnold Schwarzenegger
Governor

November 30, 2007

Ms. Candice Salway
Plains Exploration and Production
5640 South Fairfax Avenue
Los Angeles, CA 90056

Dear Ms. Salway:

DRAFT PROPOSED NPDES PERMIT FOR PXP'S ARROYO GRANDE PRODUCED WATER RECLAMATION FACILITY IN SAN LUIS OBISPO COUNTY

This letter is to notify you of the availability of draft Order No. R3-2008-0004, which staff intends to present to the Central Coast Water Board for consideration at its meeting scheduled for February 8, 2008, in San Luis Obispo. Enclosed for your review and comment are:

1. Draft Waste Discharge Requirements Order No. R3-2008-0004 (NPDES Permit No. CA0050628) for Plains Exploration and Production, Arroyo Grande Produced Water Reclamation Facility, including Standard Provisions, Monitoring and Reporting Program, and Fact Sheet.

2. Notice of Public Hearing. Please post and publish the public notice by December 5, 2007, according to the instructions provided.

Hard copies of the draft Order and associated attachments may be downloaded from our website at: http://www.waterboards.ca.gov/centralcoast/Permits/Index.htm. The Central Coast Water Board will consider adoption of Order No. R3-2008-0004 at its regularly scheduled public meeting in San Luis Obispo on February 8, 2008. Please submit your written comments and recommendations regarding the proposed requirements no later than January 4, 2008. Comments received by this date will be considered in preparation of staff recommendation to the Central Coast Water Board.

If you have any questions, please call Sorrel Marks at 805/549-3695 or Harvey Packard at 805/542-4639.

Sincerely,

Roger W. Briggs
Executive Officer

Attachments: Draft WDR (with Standard Provisions, MRP & Fact Sheet)
Notice of Public Hearing with Instructions

S:/npdes/npdes facilities/san luis obispo co/PXP Price Cyn/08-0004 draft.ltr
File: PXP Price Canyon
Task: 102-01

cs: (without attachments)

Daniel Tormey
Entrix, Inc.
2140 Eastman Ave., Suite 200
Ventura, CA 93003

Terry Flemming
U. S. EPA Region IX
75 Hawthorne St
San Francisco, CA 94105

SWRCB – DWQ
P. O. Box 100
Sacramento, CA 95812-0100

Vicki Finn
U. S. Fish & Wildlife Service
2493 Portola Road, Suite B
Ventura, CA 93003

Murry Wilson, Planning
County of San Luis Obispo
976 Osos Street
San Luis Obispo, CA 93408

Dept. of Fish & Game
20 Lower Ragsdale Dr. Suite 100
Monterey, CA 93940-5729

Victor Holanda
SLO Co. Planning
County Government Center
San Luis Obispo, CA 93401

Dr. Greg Thomas
SLO Co. Environmental Health
P.O. Box 1489
San Luis Obispo, CA 93401

Melissa Guise
Air Pollution Control District
3433 Roberto Court
San Luis Obispo, CA 93401

Dennis Delzeit
City of Pismo Beach
760 Mattie Road
Pismo Beach, CA 93449

Stephanie Wald
Central Coast Salmon Enhancement
P. O. Box 277
Avila Beach, CA 93424

Scott Keen, Tetra Tech (via email)

California Regional Water Quality Control Board
Central Coast Region

895 Aerovista Place, Suite 101, San Luis Obispo, California 93401-7906
(805) 549-3147 • Fax (805) 543-0397
http://www.waterboards.ca.gov/centralcoast

Linda S. Adams
Secretary for
Environmental Protection

Arnold Schwarzenegger
Governor

RECEIVED
DEC - 3 2007
SLO CO PLAN & BLDG DEPT

November 29, 2007

Mr. Murry Wilson, Environmental Resource Specialist
County of San Luis Obispo
976 Osos Street
San Luis Obispo, CA 93408

Dear Mr. Wilson:

DRAFT SUBSEQUENT EIR FOR PXP ARROYO GRANDE PRODUCED WATER RECLAMATION FACILITY, SAN LUIS OBISPO COUNTY

Thank you for the opportunity to comment on the draft Subsequent Environmental Impact Report (SEIR) for the Plains Exploration and Production (PXP) water reclamation facility, proposed to be located in Price Canyon. We have the following comments regarding the SEIR.

1. PXP submitted a report of waste discharge (application) to the Water Board in September 2006, with additional information submitted in March 2007, for authorization to discharge treated produced water to Pismo Creek. We are proceeding with the process of drafting a National Pollutant Discharge Elimination System (NPDES) permit and associated fact sheet to be circulated for public comment and presented to the Central Coast Water Board for its consideration. We will send you a copy of the proposed permit and associated fact sheet as soon as it is available. We anticipate the discharge permit will be considered by the Central Coast Water Board at its February 8, 2008 meeting.

2. PXP proposes to discharge treated produced water (water produced from extraction wells) to Pismo Creek. The discharge will be created by expanding the existing oil production facility in Price Canyon. Federal regulations (Title 40 Code of Federal Regulations, Part 435) prohibit the discharge of produced water to surface waters unless such discharge is used for agriculture or wildlife propagation. In this case, PXP has submitted information demonstrating that the discharge will be used for such purposes. The Central Coast Water Board will consider the adequacy of PXP's proposal for meeting the conditions for exception to the discharge prohibition at its February meeting in conjunction with NPDES permit issuance.

3. The draft SEIR describes potential reuse options (page 3-20) stating that the water will not be treated to drinking water standards and therefore would not be available for residential reuse. Please note that for some constituents, water quality requirements for discharge to Pismo Creek are more stringent than those required

for landscape irrigation (residential or otherwise). Also, the draft SEIR states there is currently no demand for reclaimed water. However, the lack of demand is (as discussed in this document and several others provided by PXP) qualified by a statement indicating the lack of demand is linked to unwillingness of users to treat the water to usable quality and pay for conveyance piping. Reclaimed water treatment and distribution expenses are typically paid by the producer (PXP in this case) and we believe it is unreasonable to expect the user to cover such expenses. However, we concur with statements indicating irrigation or dust control reuse options would be limited to dry weather periods.

(1)

4. The draft SEIR describes pilot testing of the treatment processes. We are not aware of actual test data from the treatment processes proposed for use at the Price Canyon facility. Our records include water quality data provided by PXP for produced water (influent to the treatment processes) and some data for Pismo Creek water. If you have treatment process pilot testing data, please provide us a copy or identify its location.

(2)

5. The SEIR contains no detailed plans for the outfall structure. We suggest that when those plans are developed further, that you consider requiring a naturally stabilized structure such as a vegetated filter strip downslope from the outfall pipes, rather than gunite, to provide sheet flow of discharge water to Pismo Creek. Please address the need to achieve sheet flow and discuss alternatively, the potential value of achieving aeration of outfall water through a roughened surface. The discussion of the "splash pad" effect of the gunite surface (p. 5.3-57) indicates your intent to aerate the outfall water, yet the goal of achieving sheet flow seems counter to this.

(3)

6. Impact BIO-7 indicates that impacts to four unnamed tributaries to Pismo Creek would be avoided during project implementation through project design and avoidance. However, Figure 5.3-2 indicates the proposed pipeline would cross these four tributaries. Please reconcile this inconsistency and provide detailed discussion of any impacts associated with construction of the pipeline (Neither Impact BIO-7, nor BIO-4, address these potential impacts adequately). Please evaluate horizontal directional drilling as an avoidance measure for impacts to these tributaries.

(4)

7. Please include the Water Board among agencies to which you will submit for review and approval the Compensatory Mitigation Plan for Pismo Creek (Mitigation Measures BIO-6E, BIO-7).

(5)

8. The Water Board seeks compensation of permanent impacts to all waters of the state, including those designated by the California Department of Fish and Game. The proposed loss of 0.62 acres of state wetlands should be compensated for through creation of wetlands, comparable in function and value, at a ratio of 3:1. In-lieu fees for impacts to wetlands are not consistent with the State of California's "no net loss" policy and the Water Board does not accept in-lieu fees as mitigation (Mitigation Measure BIO-6 B).

(6)

If you have questions regarding the issues above or would like to discuss the status of PXP's application for an NPDES permit, please contact **Sorrel Marks at 805/549-3695** or Harvey Packard at 805/542-4639.

Sincerely,

for Roger W. Briggs
Executive Officer

S:\NPDES\NPDES Facilities\San Luis Obispo Co\PXP Price Cyn\DEIR comments [2].ltr.doc
File: PXP Price Canyon

cc:
Ms. Candice Salway,
PXP
5640 So. Fairfax Ave.
Los Angeles, CA 90056

THIS PAGE LEFT BLANK INTENTIONALLY

AIR POLLUTION CONT
COUNT

Post-it® Fax Note 7671 | Date 12-7-07 | pages 7
To Murry Wilson | From M Gusie
Co./Dept. SLO Dpg Plan/Bldg | Co. APCD
Phone # | Phone #
Fax # | Fax #

December 7, 2007

Murry Wilson, EIR Manager
San Luis Obispo County Department of Planning and Building
County Government Center, Room 310
San Luis Obispo, CA 93408

SUBJECT: APCD Comments Regarding the Plains Exploration Produced Water Treatment Facility

Dear Wilson,

Thank you for including the San Luis Obispo County Air Pollution Control District (APCD) in the environmental review process. We have completed our review of the proposed project located on Price Canyon Road in San Luis Obispo. The project as proposed is to enhance the recovery of oil reserves via treatment of excess produced waters. The proposed project includes the following components: construction of a 20,000 barrel per day reclamation facility utilizing primarily reverse osmosis treatment technology, two 210,000 gallon filtered water tanks, a 420,000 gallon Recovery Water Tank and two 420,000 gallon day tanks would be designed to contain 12 hours of treated water, three air stripping towers, two heat exchangers and various other tanks and silos. The treated water would be reused at the oil field, discharged to Pismo Creek. The reject water from the reverse osmosis treatment will be processed via existing injection wells We have the following comments regarding this project.

GENERAL COMMENTS

As a commenting agency in the California Environmental Quality Act (CEQA) review process for a project, the APCD assesses air pollution impacts from both the construction and operational phases of a project, with separate significant thresholds for each.

SPECIFIC COMMENTS

(1) 1. ***Page 5.2-3 Table 5.2-1*** - Please note the following changes should be made to the Ambient Air Quality Standard listed in table 5.2-1.

- In February 2007, the Air Resources Board established a new annual average NO2 standard of 0.030 ppm and lowered the one-hour NO2 standard to 0.18 ppm.

(2) 2. ***Page 5.2-7*** - A discussion of climate change is included on page 5.2-7. This summary basically recaps the regulatory environment at the present states, that due to the lack of regulatory guidance, "*further analysis of this project's impacts is considered speculative, given there is no empirical evidence available at the present to evaluate this issue further under CEQA for individual or cumulative impacts*". While the District acknowledges

3433 Roberto Court • San Luis Obispo, CA 93401 • 805-781-5912 • FAX: 805-781-1002
info@slocleanair.org ☆ www.slocleanair.org

there is currently no guidance document available for quantifying greenhouse gases, this does not relieve the applicant from thoroughly evaluating the potential impact from the project on air quality including greenhouse gas emissions. Despite the lack of a GHG threshold, **the District recommends that this SEIR be modified to include a full discussion of anticipated GHG emissions during both the construction and operation phases of the project.** This recommendation is consistent with comments made by the previous and current California Attorney Generals on Land Use projects undergoing CEQA review. Models are already available to estimate GHG emissions from projects. In addition to the evaluation of the greenhouse gas impacts from this project, **specific mitigation for GHG emissions need to be identified.**

Page 3.7 The statement is made that the gas plant processes about 1.5 million standard cubic feet per day of gas that contains in excess of 50% CO2 and 40,000 ppm of H2S. The SEIR should detail if any of this CO2 could end up in the process water being treated and if there are other sources of greenhouse gas emissions through out the process **An analysis of any greenhouse gases emitted as part of this project should be conducted and specific measures to mitigate these impacts included.**

(3) 3. ***Page 5.2-11 and page 2-9 – AQ-1*** addresses the short term air quality impacts associated with construction activities related to the project. However on page 5.2-11, under this section, there is a discussion of District Rule 204. District Rule 204 only applies to stationary sources, not construction equipment. **This reference is incorrect and should be removed. It should also be noted that under Rule 402 the BACT threshold hold is 25 lbs/day not 25 ton/year as cited.**

The emissions that are generated from this construction activity should be included as a separate line item in the Emission Reduction Monitoring Plan that Plains currently submits to the APCD.

Mitigation Measure AQ-1 states that all portable equipment shall be registered under the Statewide Portable Equipment Registration Program. **It should be noted that if a piece of equipment, 50 horsepower (hp) or greater is not registered under the ARB state program, it will need an APCD permit.**

(4) 4. ***Page 5.2-11, AQ-1.B*** addresses dust control measures. The following measures or modification should be made to the list included on page 5.2-11 and 5.2-12.

- **Bullet #2, this measure should be modified to state that watering frequency may need to be increased whenever wind speeds exceed 15 mph.**
- The last bullet item states all roadways associated with construction activities should be paved as efficiently as possible. It is unclear what this means. **All roadways associated with construction activities should be paved or some other technique utilized to control dust (i.e. water or APCD approved soil stabilizer).**

- **The following measure should be added to this list of dust control measures. The contractor or builder should designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the APCD prior to land use clearance for map recordation and finished grading of the area.**

(5) 5. ***Page 5.2-12, AQ-1C*** - The title of this section is misleading. Instead of Emission Offset, it should be entitled **CEQA Off-site Mitigation**. Offsets generally relate only to stationary sources whereas off-site mitigation includes mobile sources like construction equipment. **As previously stated the emissions from this project should be included in Plains Emission Reduction Monitoring Plan.**

(6) 6. ***Page 5.2-13*** - AQ-3 states fugitive dust generated by construction activity may contain asbestos and result in exposure of the public to this toxic air contaminant. The SEIR indicates that no mitigation is required. This statement is incorrect.

The project site is located in a candidate area for Naturally Occurring Asbestos (NOA) which has been identified as a toxic air contaminant by the California Air Resources Board (ARB). Under the ARB Air Toxics Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations, **prior to any grading activities at the site, the project proponent shall ensure that a geologic evaluation is conducted to determine if NOA is present within the area that will be disturbed. If NOA is not present, an exemption request must be filed with the District (see Attachment 1). If NOA is found at the site the applicant must comply with all requirements outlined in the Asbestos ATCM.** This may include development of an Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program for approval by the APCD. Please refer to the APCD web page at *http://www.slocleanair.org/business/asbestos.asp* for more information or contact Tim Fuhs of our Enforcement Division at 781-5912.

(7) 7. ***Page 5.2-14, Health Risk Assessment (HRA)*** – The project description on page 3-18, indicates there will be three air strippers, 14 feet in diameter and 70 feet in height However, the HRA modeled two scenarios, the first used six (6) stacks, 12 feet in diameter and 30 feet high and the second scenario used one (1) stack, 15 feet in diameter and 30 feet high. **The modeled scenarios are inconsistent with the project description and thus are not considered complete or accurate for this proposed project. A revised HRA should be conducted that models the project as described.**

The data presented in Appendix D for the HRA shows two very different exhaust gas flow rates with the two different scenarios, however the hourly and annual emissions are the exact same for both scenarios. **There appears to be an error in the HRA results and re-evaluated; or if the annual emissions are identical for either scenarios,**

further explanation should be provided to explain how this can occur. In addition all modeling data including assumption should be included with the HRA.

The modeling results as presented show that ammonia will be approximately 139.2 lbs/day. Ammonia is a toxic air contaminate and an affected pollution as defined in District Rule 105.A. **Therefore the air strippers will be subject District Rule 204 and Best Available Control Technology (BACT) will be required to control ammonia.**

Plains Exploration is currently in the process of conducting a HRA for the entire oil field site. This proposed water treatment facility should be included in that analysis along with the HRA modifications stated in the above referenced comments.

(8) 8. ***Page 5.2-15*** – On page 5.2-15 a reference is made to District Rule 429, it should be noted that this rule only applies to power plants. **This reference should be removed.**

(9) 9. ***Page 5.2-16*** - The discussion of cumulative impacts is confusing and hard to follow

The statement is made "*All other ROGs includes those estimated in Table 5.4-4 of the Phase IV EIR, plus the constituents listed in Table 5.4-4 of this SEIR which are not listed below*" (referencing Table 5.2-5) It is not clear what is included in Table 5.2-5. **Please clarify.**

(10) 10. ***Page 5.6-7 HAZ-2.B*** - The following text should be added to mitigation measures HAZ-2.B

The notification and permitting determination requirements shall be directed to Karen Brooks of the APCD Enforcement Division at 781-5912.

(11) 11. ***Page 3-28*** – In the project description on Page 3-28 indicates that some pipeline will be relocated and/or removed. The following text should be included as a mitigation measures.

- The Relocation of existing pipelines (page 3-2) and/or demolition activities can have potential negative air quality impacts, including issues surrounding proper handling, demolition, and disposal of asbestos containing material (ACM). Asbestos containing materials could be encountered during demolition or remodeling of existing buildings. Asbestos can also be found in utility pipes/pipelines (transite pipes or insulation on pipes). **If utility pipelines are scheduled for removal or relocation; or building(s) are removed or renovated this project may be subject to various regulatory jurisdictions, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M - asbestos NESHAP).** These requirements include but are not limited to: 1) notification requirements to the District, 2) asbestos survey conducted by a Certified Asbestos Inspector, and, 3) applicable removal and disposal requirements of identified ACM. **Please contact Tim Fuhs of the Enforcement Division at 781-5912 for further information.**

12. ***Demolition Activity*** - The following measures should be included to address lead during demolition activities. Demolition of structures coated with lead based paint is a concern for the APCD. Improper demolition can result in the release of lead containing particles from the site. Sandblasting or removal of paint by heating with a heat gun can result in significant emissions of lead. Therefore, proper abatement of lead before demolition of these structures must be performed in order to prevent the release of lead from the site. Depending on removal method, an APCD permit may be required Contact Gary Willey from the APCD's Engineering Division at 781-5912 for more information. Approval of a lead work plan by the District is required and must be submitted ten days prior to the start of the demolition. Contact Tim Fuhs from the District's Enforcement Division at 781-5912 for more information. For additional information regarding lead removal, please contact Cal-OSHA at 654-4581.

Again, thank you for the opportunity to comment on this proposal. If you have any questions or comments, feel free to contact me at 781-5912.

Sincerely,

for

Melissa Guise
Air Quality Specialist

MAG/sll

cc: Karen Brooks, Enforcement Division, APCD
Tim Fuhs, Enforcement Division, APCD
Gary Willey, Engineering Division, APCD

Attachments: 1. Naturally Occurring Asbestos – Construction & Grading Project Exemption Request Form, Construction & Grading Project Form

- [illegible]

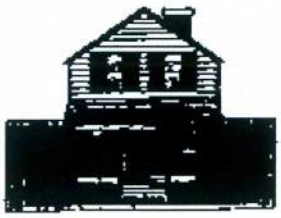
THIS PAGE LEFT BLANK INTENTIONALLY

Naturally Occurring Asbestos – Construction & Grading Project Exemption Request Form

Send To:

San Luis Obispo County
Air Pollution Control District
3433 Roberto Court
San Luis Obispo, CA 93401

Phone: (805) 781-5912
Fax: (805) 781-1002



Applicant Information/ Property Owner		**Project Name**	
Address		**Project Address and /or Assessors Parcel Number**	
City, State, Zip		**City, State, Zip**	
Email Address		**Email Address**	
Phone Number	**Date Submitted**	**Agent**	**Phone Number**

The District may provide an exemption from Section 93105 of the California Code of Regulations - Asbestos Airborne Toxic Control Measure For Construction, Grading, Quarrying, And Surface Mining Operations for any property that has any portion of the area to be disturbed located in a geographic ultramafic rock unit; if a registered geologist has conducted a geologic evaluation of the property and determined that no serpentine or ultramafic rock is likely to be found in the area to be disturbed. Before an exemption can be granted, the owner/operator must provide a copy of a report detailing the geologic evaluation to the District for consideration. The District will approve or deny the exemption within 90 days. An outline of the required geological evaluation is provided in the District handout "**ASBESTOS AIRBORNE TOXIC CONTROL MEASURES FOR CONSTRUCTION, GRADING, QUARRYING, AND SURFACE MINING OPERATIONS – Geological Evaluation Requirements.**"

NOTE: A basic exemption evaluation fee of $100.00 will be charged.

APPLICANT REQUEST SIGNATURE
I request the San Luis Obispo County Air Pollution Control District grant this project exemption from the requirements of the ATCM based on the attached geological evaluation.
Legal Declaration/Authorized Signature:
Date:

APCD USE ONLY – APCD Required Elements – Geological Evaluation			
Intake Date:	APCD Staff:	OIS Site #:	OIS Project #
Date Reviewed:	APCD Staff:	Approved	Not Approved
Comments:			

Naturally Occurring Asbestos - Construction & Grading Project Form





Send To:
San Luis Obispo County Air Pollution Control District
3433 Roberto Court
San Luis Obispo, CA 93401
805-781-5912



Applicant Information / Property Owner		Project Name	
Address		Project Address and/or Assessors Parcel Number	
City, State, Zip		City, State, Zip	
Email:		Email:	
Phone Number	Date Submitted	Agent	Phone Number

Check Where Applicable	ITEM	APCD REQUIRED ELEMENT	APCD REQUIRED ELEMENT:
	Project IS NOT Subject to NOA Requirements	Mapped Location Attached	
	Project IS Subject to NOA Requirements but NOA Disturbing NOA	Geological Evaluation Attached	Exemption Request Form Attached
	Project IS Subject to NOA Requirements and Project is Disturbing NOA - One Acre or More	Geological Evaluation Attached	Dust Control Measure Plan Attached
	Project IS Subject to NOA Requirements and Project is Disturbing NOA - One Acre or Less	Geological Evaluation Attached	Mini-Dust Control Measure Plan Attached

APPLICANT MUST SIGN BELOW

Legal Declaration/Authorized Signature: Date:

OFFICE USE ONLY - APCD Required Elements

Geological Evaluation		Exemption Request Form		Dust Control Maasure Plan		Monitoring, Heal Safety Plan
Approved		Approved		Approved		Approvec
Not Approved		Not Approved		Not Approved		Not Approved
Comments		Comments.		Comments:		

APCD Staff:	Intake Date:	Date Reviewed:	OIS Site #	OIS Proj #
INVOICE No.	Basic Fee:	Additional Fees:	Billable Hrs:	Total Fees

Comment #/Page	Responses
	Central Coast Salmon Enhancement
1) p. 3-20	The releases from the proposed Pismo Creek Discharge Outfall would occur during both high stream flow and low stream flow periods. Based upon the hydrologic analysis provided as part of the application package, the estimated releases would only be a small percentage of wet season stream flow, and as such would not be considered a significant source of potential downstream flooding. A revised outfall structure detail has been completed as part of the current U.S. Army Corps of Engineers (Corps) review and permitting process with PXP. This revised detail has been provided as Figure 3.7 (see Section 3.0, page 3-21) and indicates that the outfall structure has been designed to promote aeration during discharge, followed by sheet flow along the creek bank to minimize the potential for erosion. A naturally stabilized bank structure was considered by PXP during the original design process, but not selected because the existing bank was previously armored with rip-rap protection and was well suited as a discharge location without significant modification to existing site conditions. The removal of the existing riprap to accommodate a more natural design feature could potentially lead to long-term bank instability issues and potential undermining of the outfall structure. Further, Mitigation Measure 6E provides for enhancement of the riparian zone of Pismo Creek as a result of the proposed outfall installation by replacing willow habitat impacted at a 3:1 ratio (see Section 5.3, page 5.3-52).
2) p. 4-16, 17	The current outfall structure design and location would be consistent with AGP26b) 1-5 by locating the structure within a previously disturbed area and minimizing impacts to existing riparian habitat features to the extent feasible. Any impacts to existing willow woodland habitat will be mitigated at a 3:1 ratio within adjacent areas of the riparian buffer. Additionally, an Erosion Control Plan and Spill Contingency Plan will be prepared and implemented as part of the project. The other bulleted comments are not specific to the Project under review in this SEIR and as such have not been addressed.
3) p. 5.3-5	Comment noted.
4) p. 5.3-27	Except for potential adjacent landowner reuse options, the project is anticipated to provide dry season flow to Pismo Creek. This dry-season flow would enhance the riparian corridor, and provide greater habitat for aquatic biota. Additional water in the system, even if limited in overall rates/volumes and temporal design would have the potential to benefit aquatic resources, including providing steelhead additional instream habitat. Consequently, Mitigation Measure BIO 9B provides that, if the Project does provide for aquatic resources benefit and steelhead population enhancement that is subsequently removed at project cessation; then compensatory mitigation will be required.
5) 5.3-33	SEIR text has been revised as suggested.
6) 5.3-55	Pismo Creek is a perennial stream. Although it has not been known to go dry in the Project area, comparison to other perennial coastal streams, such as Toro Creek, indicate that under conditions of prolonged drought the creek could go dry temporarily.
7) 5.3-55	Water quality data referenced in the SEIR indicates that water quality in Pismo Creek is of moderate quality. The produced

	water, after treatment, is expected to be of high quality and would not lead to water quality degradation of Pismo Creek.
8) 5.3-57	SEIR text has been revised as suggested.
9) 5.3-57	SEIR text has been revised as suggested. The treatment facility will include controls that prevent the discharge of untreated water to Pismo Creek. Per Mitigation Measure HYD-5 (page 5.5-14) the facility will be constructed with a holding capacity for unprocessed water which will be sent through the treatment system again until it meets appropriate standards.
10) 5.3-60	The required Stranding Plan will emphasize the implementation of appropriate measures to avoid steelhead stranding to the extent feasible. This would include identification of ramping rates which would allow steelhead sufficient time to relocate to deeper perennial areas of Pismo Creek instead of physical capture and relocation efforts to prevent mortality. As such, any relocation efforts would only be in the unlikely event of prolonged equipment failure coinciding with a prolonged drought after which the discharge has operated for sufficient duration to attract steelhead. Based on the above, the need for steelhead relocation through the life of the project would be considered unlikely and/or an infrequent event which would not justify a coordinated, watershed-wide relocation plan.
11) p. 5.3-61	The comment regarding increased releases from the dam on West Corral de Piedra is not specific to the Project under review, and as such has not been addressed.
12) p. 5.3-62/63	Mitigation Measure BIO-9 has been modified to prefer on-site, in-kind restoration but also allow for in-kind restoration activity in similar adjacent watersheds (i.e., Arroyo Grande Creek).
13) p. 5.5-2	The SEIR impact analysis considered the potential for impacts at base flow periods, which were directly measured and provided in the Application material from PXP. The use of Toro Creek as a comparison indicated that the natural base flow could lower to zero after multiple drought years, and the impacts of this potential were analyzed and mitigation provided. For impacts of the discharge during the wet season, the comparison to Toro Creek indicated bank-full flows (2-year recurrence interval flows primarily responsible for channel form) expected in Pismo Creek were in the range directly measured by the applicant's representative (ENTRIX) during 2006 storm events. The impact analysis indicated that the discharge during these flows would be an insignificant percentage of total flow and therefore not lead to adverse impacts. Consideration of stream flows greater than the 2-year recurrence interval flow would lead to lesser impacts than those analyzed. Although the comparison to Toro Creek did yield very high flows for the long recurrence interval storms (i.e., 100-year storm event), these extreme flows were not necessary for impact analysis because use of the 2-year recurrence interval flow already indicated a less than significant impact during wet-season flows.
14) p. 5.5-4	Although not considered ideal, the Toro Creek comparative analysis provided adequate information to determine an approximate baseline condition to complete the subject impact analysis in SEIR. Also see comment to page 5.5-2 comment, above.
15) p. 6-7	Impact analysis requires consideration of the potential impact location, intensity, and duration. All of these parameters can influence the significance of an impact and required mitigation to reduce the impact to a less than significant level. In this SEIR, the actual duration of discharge was considered a long-term effect to Pismo Creek, not just a one-time impact. Appropriate mitigation has been provided for all significant impacts identified during the environmental impact analysis.
16) p. 6-14	Onsite storage was originally considered by PXP and subsequently eliminated due to the large volume of tankage, and

	associated area of disturbance (i.e., tank installation) required in order to eliminate the need for discharge to Pismo Creek. The alternative would not feasibly reduce or eliminate a significant impact of the Project, and as such was not considered viable alternative for further analysis in the SEIR. The alternatives analyzed meet the requirements of CEQA, including a consideration of a reasonable range of alternatives to inform decision-makers for discretionary permits.
Plains Exploration and Production Company (PXP)	
General Comments	
1)	To be considered adequate, mitigation measures should be specific, feasible actions that will actually improve potentially adverse environmental conditions. Additionally, mitigation measures must contain sufficient detail to determine overall effectiveness in reducing the identified impact. Measures consisting of further studies, or consultation with regulatory agencies that are not tied to a specific action plan, may not be adequate and should therefore be avoided (CEQA Guidelines sec. 15126.4). The purpose of this SEIR is to provide an independent analysis of the potential impacts associated with the proposed Project. Potential long-term impacts to steelhead identified as part of the operational phase of the facility represent the potential worst-case impact scenario as required under CEQA. Mitigation measures developed and incorporated into the SEIR (i.e., provisions of the Steelhead Stranding Plan) are consistent with similar case study requirements and preliminary discussions with the National Marine Fisheries Service (NMFS). Some revisions have been made to BIO-8E to provide more flexibility in the final content of the Steelhead Stranding Plan. However, the mitigation requirement cannot be modified in a manner that offers deference to the NMFS as suggested by the commentor.
2)	No specific information has been provided by PXP demonstrating that the Reduced Project Alternative is truly economically infeasible. As such, the alternative cannot be eliminated from the SEIR as requested by the commentor.
3)	If there is not adequate space within the existing dedicated Open Space Easement for required mitigation plantings, then PXP shall be required to provide assurances to the County that the additionally selected restoration areas within the PXP Arroyo Grande Oilfield will be protected in perpetuity and not subject to future expansion activities and/or periodic disturbance from oilfield operations.
4)	Comment noted. As necessary, consistency of timing phrasing within mitigation measures have been revised in SEIR.
Substantive Comments/ Page #	
5) p. 2-2, 6-5	Comment noted. See response 2 above.
6) p. 3-1, 3-19, MM BIO-2C,	Water quality comment noted; see edit to text above BIO-2C. Please also note the need for protective netting was also eliminated from BIO-2C due to a lack of hazard from untreated water. However, please also note modifications to BIO-2C which

p. 5.3-50, MM BIO-6C and 6D: BIO-2C	would require implementation of a periodic maintenance and monitoring program to ensure that the tempering pond is free of vegetation and debris that could provide nesting bird habitat to avoid potential conflicts with the Migratory Bird Treaty Act.
7) p. 5.1-7, MM NOI-1	The mitigation measure has been revised to reflect that the use of construction equipment and vehicles solely related to construction would be limited to the hours of 7 a.m. to 7 p.m. to the extent feasible.
8) P. 5.2-9 last paragraph and Table 5.2-3.	Comment noted.
9) p. 5.2-9, 10 and Note 1 to table 5.2-3	SEIR text has been revised.
10) p. 5.2-15	Mitigation Measure AQ-5 has been removed from the Final SEIR. The HRA does not identify ammonia as being a significant issue requiring mitigation; therefore, no applicable CEQA threshold can be identified. However, the Odor Monitoring and Complaint Response Plan implemented as part of the Phase IV EIR (see Impact AQ-6 and Mitigation Measure AQ-6), as approved by the APCD, may require carbon canisters or scrubbers to be implemented if ammonia odor complaints become an issue. PXP would have the operational flexibility to implement these measures only when the APCD requires them as part of the Authority to Construct/Permit to Operate.
11) p. 5.3-36. MM BIO-2	Comments noted. See discussion under PXP Substantive Comments item 6 above. Also see revised Mitigation Measure BIO-2C.
12) p. 5.3-41, MM BIO-3F, BIO-6	See response under PXP General Comment 3 above. If the existing Open Space Easement is determined to be inadequate in size, then an additional Open Space Easement shall be dedicated by PXP for the purposes of site restoration. Mitigation Measure BIO-3F has been revised accordingly to reflect this requirement.
13) p. 5.3-47, Impact BIO-5	The oak tree mitigation measures outlined as part of BIO-5 are currently being implemented as part of the Phase IV operations and have been incorporated into the SEIR to ensure consistency with site restoration plans and ensure long-term survival of the all oak tree plantings on-site.
14) p. 5.3-50, Impact BIO-6	SEIR text has been revised as suggested.
15) p. 5.3-54. MM BIO-7	Compensatory mitigation for impacts to the riparian resources of Pismo Creek is being required per the County Agriculture and Open Space Element policies. If the Army Corps of Engineers (Corps) and/or California Department of Fish and Game (CDFG) deem a higher mitigation ratio is necessary as part of the permitting process, then the higher ratio shall be adhered to within the final Compensatory Mitigation Plan. Lastly, the final Compensatory Mitigation Plan as well as all other project-specific plans

	required as mitigation within the SEIR shall be provided to the County for review and approval prior to permit issuance, not prior to construction of the outfall as suggested by commentor.
16) p. 5.3-58, MM BIO-8	Comment noted. See response under PXP General Comment 1 above.
17) p. 5.3-58, MM BIO-8A	SEIR text has been revised; see revised Mitigation Measure BIO-8A. Also, see PXP Substantive Comments, response 15 above (last sentence) for information regarding timing of submittals relative to permit issuance.
18) p. 5.3-58, MM BIO 8-D	SEIR text has been revised; see revised Mitigation Measure BIO-8D.
19) p. 5-3-58, MM BI- 8E	Mitigation measures developed and incorporated into the SEIR including provisions of the Steelhead Stranding Plan are consistent with similar case study requirements and preliminary discussions with the NMFS. Please note that the Steelhead Stranding Plan is not intended to solely looking at a de-watered creek condition, but shall identify appropriate ramping rates to prevent fish from being stranded in off channel areas where they could become trapped and killed, which would constitute a take of a listed species (i.e., avoidance measures). As such, the suggested change to the preamble of BIO-8E cannot be modified as suggested by commentor.
20) p. 5.3-58, MM BIO 8E, 2nd bullet	There are no current population estimates for steelhead trout in the Pismo Creek watershed to act as baseline, as such baseline surveys should be completed to document the impact to steelhead resources (including beneficial impacts). Final provisions and/or requirements of steelhead monitoring in the Steelhead Stranding Plan would be determined by NMFS through the permitting process (i.e., type, frequency, location, etc). Steelhead population data would also be utilized to properly assess the impacts to steelhead once the produced water project is to be decommissioned and appropriate mitigation can be assigned for those impacts from the respective agencies. SEIR text has been revised. See edits to BIO-8E (2nd bullet).
21) p. 5.3-60, MM BIO-8E, 6th bullet	The Steelhead Stranding Plan should have provisions in place to address potential worst case steelhead impact scenarios as required under CEQA, which would include the need to relocate stranded fish during an extended emergency shut-down, etc.
22) P. 5.3-60, MM BIO-8E	SEIR text has been revised. See edits to BIO-8E regarding avoidance measures. Further, the avoidance measures outlined in this comment should be incorporated into the draft Steelhead Stranding Plan for consideration by NMFS and County staff. Additionally, as outlined above, the Steelhead Stranding Plan should contain back-up provisions to account for potential steelhead stranding and/or relocations in the event they should occur.
23) p. 5.3-60, MM BIO-8E, last bullet	SEIR text has been revised. See edits to BIO-8E (6th bullet).
24) p. 5.3-60,	SEIR text has been revised as suggested. See edit to BIO-8E (5th bullet).

MM BIO-8: Part E, 5th bullet item	
25) p. 5.3-63. MM BIO-9A	SEIR text has been revised as suggested. See edit to BIO-9A.
26) p. 5.3-64, MM BIO 9A	See response under PXP Substantive Comment 20 above.
27) p. 5.3-64, MM BIO 9B	First comment noted; see revised BIO-9B to reflect steelhead surveys for baseline determination and periodically thereafter as determined by NMFS. Habitat restoration projects and/or barrier removal projects to open more useable habitat for the expected increased steelhead population numbers downstream of the facility are deemed appropriate and widely-accepted measures the respective regulatory agencies would be seeking as mitigation for such an impact. As such, this requirement cannot be removed as suggested by the commentor. However, the measure has been modified to allow flexibility in the timing that such mitigation can be implemented. See edits to BIO-9B.
28) p. 5.5-10, MM HYD-1A, 4th bullet	This measure is intended to protect sensitive resources, including steelhead and other aquatic organisms, from impact from grading activities associated with the proposed project. Therefore, the mitigation measure cannot be modified as suggested by the commentor.
29) P. 5.5-13, MM HYD-4B	Mitigation measure HYD-4B has been revised to reflect the current status of laboratory analytical method limitations and require reporting of phenol concentrations indicated above the method detection limit but less than quantitation limits.
30) p. 5.5-13, MM HYD-4B	The RWQCB's regulatory limit is currently 1 ug/l per the Basin Plan, but analytical methods cannot quantity phenol concentrations less than 5 ug/l. A revised mitigation measure HYD-4B has been included in the EIR to reflect this situation.
31) p. 5.6-6, MM HAZ-2A	Mitigation measure HAZ-2A has been modified to specify that corrective actions shall not be required for naturally-occurring petroleum hydrocarbon-containing soil other than crude oil containing soil excavated during the course of project construction activities.
32) p. 5.6-7, MM HAZ-2B	Mitigation measure HAZ-2B has been modified to reflect the permissibility of use of crude oil containing soil for on-site beneficial uses in accordance with the RWQCB's Order No. R3-2005-005.
Clarification Comments	
33) p. 1-1, Section 1.1	The SEIR has been revised as suggested.

34) Table 5.2-3 and Appendix D, second unnumbered Table under "Construction Emissions"	The SEIR has been revised as suggested to be consistent.
35) p. 5.2-11. MM AQ-1A	The reference to Rule 204 has been deleted as it was incorrectly applied to stationary equipment.
36) p. 5-2-12, MM AQ-1B, 3rd bullet	The SEIR has been revised as suggested.
37) p. 5.2-12, MM AQ-1B, 5th bullet	This measure is taken from the APCD's CEQA Air Quality Handbook and is considered a standard measure.
38) p. 5.2-15, MM AQ-5A	Mitigation Measure AQ-5A has been moved to the discussion section, with AQ-5B remaining as the sole mitigation associated with this impact.
Minor Corrections and Changes	
39) p. 2-5 to 2-34, Table 2-1	The suggested changes have been made to the SEIR.
40) p. 3-1, 6th bullet	Based on recent correspondence, the air stripper stack height would be 70 feet total.
41) p. 5.1-5, MM PAL-1	The SEIR has been revised as suggested.
42) p. 5.2-3	The SEIR has been revised as suggested.
43) p. 5.2-4. 1st paragraph	The SEIR has been revised as suggested.

in Section 5.2.1.5; AND p. 5.2-6, last paragraph	
44) p. 5.2-5, 1st paragraph	The SEIR has been revised as suggested.
45) p. 5.2-8, Section 5.2.1.1	The SEIR has been revised as suggested.
46) p. 5.2-11, note 2 to Table 5.2-3	The SEIR has been revised as suggested.
47) p. 5.3-36. MM BIO-2	The text suggested for deletion is needed to describe the intent of the mitigation measure. No changes have been made to the SEIR to address this comment.
48) p. 5.3-41, MM BIO-3D	The SEIR has been revised as suggested.
49) p. 5.3-42, MM BIO-3G	The SEIR has been revised as suggested.
50) p. 5.3-45, Impact BIO-4E	Due to the nature of proposed activities, including placement of gunite along the creek banks and potential for spill hazards, etc., BIO-4E as currently written is deemed necessary and cannot be modified as suggested by commentor.
51) p. 5.3-58, MM BIO-8B and C	See response under PXP Substantive Comments 28-30 above.
52) p. 5.3-64 MM BIO-9	The potential delisting of steelhead is speculative and irrelevant. The SEIR must address the current regulatory situation.
53) p. 5.5-9 MM HYD-1A, 3rd bullet	This measure is taken from the APCD's CEQA Air Quality Handbook and is considered a standard measure.

Hollister & Brace Law Corporation	
1)	Please note that mitigation measures developed and incorporated into the SEIR, including the provisions of the Steelhead Stranding Plan are consistent with similar local case study requirements (i.e., City of San Luis Obispo Wastewater Treatment Facility) and preliminary discussions with the NMFS. Some revisions have been made to BIO-8E to provide more flexibility in the final content of the Steelhead Stranding Plan as a result of the permitting process. However, the mitigation requirement cannot be modified in a manner that offers deference to the NMFS as suggested by the commentor. Also, see response under PXP General Comment 1 above
2)	The purpose of this SEIR is to provide an independent analysis of the potential impacts associated with the proposed Project. Potential long-term impacts to steelhead identified as part of the operational phase of the facility represent the potential worst-case impact scenario as required under CEQA. As stated above, mitigation measures developed and incorporated into the SEIR including the provisions of the Steelhead Stranding Plan are consistent with the preliminary discussions and planned permitting requirements of NMFS. Therefore, the intent of the mitigation is to specify the necessary measures to mitigate potential long-term impacts to steelhead to a less than significant level, without deference to the Section 7 permitting process. In this context, the County is not exceeding their authority as the CEQA lead agency.
3)	The measures contained in the SEIR are not intended to and will not dictate the result of the permitting process between the applicant and any of the regulatory permitting agencies with permit authority over the Project. Conversely, the mitigation measures are intended to mitigate identified impacts to less than significant levels without deference. Any additional permit conditions required by the respective regulatory agencies would be implemented in conjunction with County conditions of approval. Also, see response 2 above.
4)	See response Hollister & Brace 1 above.
5)	See response Hollister & Brace 1 above.
6)	Again, mitigation measures developed and incorporated into the SEIR, including the provisions of the Steelhead Stranding Plan are consistent with the requirements imposed on the City of San Luis Obispo Wastewater Treatment Facility and preliminary discussions with the NMFS regarding the proposed Project. As such, there is no specific need to modify the existing measures as mitigation alternatives to be considered at a later date. Thus, this measure(s) cannot be revised/modified as suggested by commentor.
7)	Comment noted. Alternative 2 - Reduced Project Alternative was developed and included for analysis in this SEIR because of its potential to reduce the overall area of disturbance and total output of treated water into Pismo Creek and *"still feasibly accomplish most of the basic objectives of the project"* only over an extended period because of reduction in overall capacity. This approach is considered consistent with CEQA Guidelines 151269(a); therefore, Alternative 2 cannot be removed from consideration in the SEIR as suggested by the commentor. Further, no specific information has been provided by PXP

	demonstrating that the Reduced Project Alternative is truly economically infeasible; therefore, the alternative cannot be eliminated from the SEIR as requested by the commentor. However, as concluded in Section 6.3, Alternative 2 was not selected as the Environmentally Superior Alternative, because of its inability to meet all of the project objectives, including most importantly consistency with the Arroyo Grande Oil Field (see Section 6.3 of the SEIR).
8)	See response Hollister & Brace 7 above.
9)	The Reduced Project Alternative has the potential to avoid significant impacts to various terrestrial biological resources including the federally endangered Pismo clarkia and wetland habitat areas through a reduced disturbance area. Further, the expected reduced flows to Pismo Creek would be deemed insignificant and would thus substantially reduce the long-term dependence of steelhead on discharge flows during drought years and potentially avoid steelhead stranding issues during emergency shut-downs. Based upon this premise, the Reduced Project Alternative is considered consistent with CEQA Guidelines. Also, see response under 7 above.
10)	Substantially reducing and/or avoiding direct impacts to a federally-threatened species such as steelhead (considered a Class 1 Impact under CEQA and "take" under the Endangered Species Act) while extending periodic impacts to general wildlife and botanical resources from dust, lighting and periodic maintenance activities of oilfield operations is not considered a negation of impacts. Therefore, Alternative 2 would meet the standard for viability set forth in CEQA Guidelines Section 15126.6.
11)	Comment noted. See response Hollister & Brace 7 above.
12)	Comment noted. See response Hollister & Brace 7 above.
13)	Based on the discussions above, the Reduced Project Alternative is currently deemed useful for public participation and informed government decision-making, would meet the most basis objectives of the project, has the potential to substantially lessen environmental effects, and is deemed economically feasible because no information has been provided by PXP to indicate otherwise. For these reasons, the Reduced Project Alternative will remain in the SEIR alternatives analysis for adoption by the County.
Regional Water Quality Control Board	
1) p. 3-20	Comment noted.
2)	Summary tables presenting the chemical analytical results for pilot tests completed by PXP are included as Appendix F of the EIR. The County can provide a copy of the original data to the RWQCB under a separate cover at request.
3) p. 5.3-57	A revised outfall structure detail has been completed as part of the current U.S. Army Corps of Engineers (Corps) review and permitting process with PXP. This revised detail has been provided as Figure 3.7 (see Section 3.0, page 3-21) and indicates that the outfall structure has been designed to promote aeration during discharge, followed by sheet flow along the creek bank to minimize the potential for erosion. A naturally stabilized bank structure was considered by PXP during the original design process, but not selected because the existing bank was previously armored with rip-rap protection and was well suited as a

	discharge location without significant modification to existing site conditions. The removal of the existing riprap to accommodate a more natural design feature could potentially lead to long-term bank instability issues and potential undermining of the outfall structure. Further, Mitigation Measure BIO-6E provides for enhancement of the riparian zone of Pismo Creek as a result of the proposed outfall installation by replacing willow habitat impacted at a 3:1 ratio.
4) Impact BIO-4, BIO-7, Figure 5.3-2	The proposed pipeline crossings of the unnamed tributaries would be located along existing roads and associated pipe racks intersecting the subject tributaries. However, to ensure that no impacts occur to the subject tributaries during subsurface pipeline installation that would require removal and/or modification of existing culverts, a jack-and-bore technique would be required (see revised Mitigation Measure BIO-7). Therefore, no impacts would occur to the tributaries due to project implementation, and as such no mitigation or alternative crossing techniques are required as mitigation.
5) MM BIO-6E, BIO-7	The RWQCB has been added to the list of agencies to receive the Compensatory Mitigation Plan for Pismo Creek (see Mitigation Measure BIO-6E and BIO-7).
6) MM BIO-6B	Mitigation Measure BIO 6C requires either on-site mitigation for loss of wetland habitat (in-kind replacement) or payment into a designated wetland restoration fund. At the direction of the County, the wetland restoration fund will be for creation or enhancement of wetlands, and as such will support the states "no net loss" policy.
Air Pollution Control District	
1) P. 5.2-3, Table 5.2-1	The SEIR has been revised as suggested.
2) p. 5.2-7	However, the significance of GHG emissions cannot be determined without further regional guidance, and mitigation of construction-related GHG is not feasible. Note that lime softening of the produced water would prevent operational CO2 emissions. A GHG emissions inventory has been provided and incorporated into the text. Please see Appendix D for data tables.
3) P. 5.2-11, p. 5.2-9, AQ-1	The SEIR has been revised as suggested.
4) p. 5.2-11, AQ-1B	The SEIR has been revised as suggested.
5) p. 5.2-12, AQ-1C	The SEIR has been revised as suggested.
6) p. 5.2-13, AQ-3	Based on geological findings for the Phase IV EIR, the site is located in the Pismo Formation, which is a sedimentary unit and is not expected to contain NOA. This remains a less than significant impact, and the text cannot be modified as suggested.
7) p. 5.2-14, Health Risk	The revised HRA was prepared to address the baseline and proposed operations of the current facility and the proposed addition of 95 new producing wells and steam generators, as well as the produced water reclamation facility. The HRA assessed the gas

Assessment	plant emissions (i.e. fugitive ROGs and other Hazardous Air Pollutants). The treatment plant component is designed to remove residual organic compounds and ammonia from the treated water. Cancer and non-cancer (acute and chronic) health impacts were estimated using risk assessment guidelines developed by the Office of Environmental Health Hazard Assessment. Results show that the health risk factors are below respective significance thresholds for cancer risk and chronic and acute hazard indices. Based on Rule 219 and the findings of the HRA, BACT would not be required. See the revised Impact AQ-5 for details.
8) p. 5.2-15	The SEIR has been revised as suggested.
9) p. 5.2-16	"All other ROGs" refers to compounds listed in the Phase IV EIR which were not included in the updated HRA.
10) p. 5.6-7, HAZ-2B	The SEIR has been revised as suggested. Text added.
11) p. 3-28	The SEIR has been revised as suggested. Text added to Impact AQ-3 and Mitigation Measure AQ-3.
12) demolition activities (e.g. Table 3.2)	The SEIR has been revised as suggested. Text added to Impact AQ-3 and Mitigation Measure AQ-3.

APPENDIX H

MITIGATION MONITORING AND REPORTING PROGRAM

THIS PAGE LEFT BLANK INTENTIONALLY

APPENDIX H
MITIGATION MONITORING AND REPORTING PROGRAM
PXP PRODUCED WATER RECLAMATION FACILITY

This Mitigation Monitoring and Reporting Program (MMRP) was developed to ensure that mitigation measures included in the Final SEIR for the PXP Produced Water Reclamation Facility are fully implemented to reduce environmental impacts to a less than significant level. In addition, this MMRP complies with the requirements of Public Resources Code 21081.6, which requires the lead agency to adopt a reporting or monitoring program.

This MMRP is a comprehensive monitoring program capable of being implemented immediately upon approval of the project which is comprised of mitigation measures from the project's SEIR, implementation timing, and the agencies responsible for monitoring and verification. The MMRP will serve a dual purpose of verifying completion of the mitigation measures for the proposed project and generating information on the effectiveness of the mitigation measure to guide future decisions. However, the MMRP is dynamic in that changes may be made to the MMRP as specific information with regards to the monitoring efforts is provided.

The County will coordinate construction activities through direct contact with the construction superintendent (CS) and the supporting contractors. County staff will be responsible for oversight of construction activities to ensure compliance with mitigation measures and will also utilize environmental consultants to assist in supervising project construction.

OVERSIGHT OF CONSTRUCTION AND OPERATIONAL ACTIVITIES

The mitigation measures adopted as conditions of approval by the County will be monitored prior to and during construction and/or operation to ensure implementation. The oversight of construction activities to ensure implementation and compliance with mitigation measures will be accomplished by County personnel, or by a third party specialist to serve as a environmental monitor (EM) for specific task (i.e., wildlife monitoring).

Prior to any project implementation, a pre-construction meeting will take place between the County, the construction contractor, and other individuals retained to assist in implementation of the MMRP. The goal of the meeting will be to establish the responsibility and authority of the participants and overall project procedures and schedules. Mitigation measures, which need to be defined in greater detail, will be addressed during the meeting.

The core of the MMRP is described in the following Implementation Table listing measures from the Final SEIR, its implementation, and the party responsible for verification.

THIS PAGE LEFT INTENTIONALLY BLANK

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
5.1.3 Cultural Resources				
CUL-1 Standard cultural resources mitigation	In the event that unknown cultural remains are encountered anywhere within the project area during construction, activities shall be terminated or redirected to another area until a qualified archaeologist can be retained to evaluate the potential significance of the finds in a Phase 2 archaeological significance investigation or PXP shall have the option to relocate work permanently without need to conduct further studies at that location. Relocation of work and any subsequent archaeological investigation would be done in consultation with the County of San Luis Obispo. If they are significant and cannot be feasibly avoided, then a Phase 3 data recovery mitigation program shall be performed by a qualified archaeologist, and all construction activity within the site and 150-foot buffer area shall be monitored by a qualified archaeologist and Native American monitor. All Phase 3 significance assessments and Phase 3 mitigation activities shall be funded by the applicant.	PXP shall implement during construction.	EM and/or County	Less than significant
5.1.4 Paleontological Resources				
PAL-1 Mitigation for paleontological resources mitigation carried over from Phase IV EIR	Prior to construction, the applicant shall retain a qualified paleontologist to implement the paleontological mitigation monitoring plan developed for the Phase IV EIR that includes the following: A. Prior to construction, the applicant would retain a qualified paleontologist to implement the mitigation plan and maintain professional standards of work; B. A qualified monitor would perform full-time monitoring of all grading, enlargement of pads and all other open excavation work in native sediments. Monitoring would include inspection of exposed surfaces and microscopic examination of matrix. The monitor would have authority to divert grading away from exposed resources temporarily in order to recover the specimens and contextual data. PXP shall have the option to relocate work permanently without need to conduct further studies at that location. Relocation of work and any subsequent paleontological investigation would be done in consultation with the County of San Luis Obispo. Cooperation and assistance from on-site personnel would greatly assist timely resumption of work in the area of the discovery; C. If the discovery meets the criteria for a fossil locality, formal locality	PXP shall implement prior to and during construction.	EM and/or County	Less than significant

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	documentation activities would be performed; D. If microfossil localities are discovered, locality documentation activities shall include the collection of matrix material for processing. These activities may include use of equipment to excavate fossil-containing soils, and establishment of stockpiles away from the construction area. Testing of stockpiles shall consist of screen washing small samples (200 pounds) to determine if fossils are present. Productive tests shall result in screen washing of additional matrix from the stockpiles to a maximum of 6000 pounds per locality; E. Fossils recovered shall be prepared, identified and cataloged, and donated to an accredited repository approved by the County of San Luis Obispo. Any resources determined not to meet significance criteria shall be offered to local schools for use in educational programs; and, F. The principal investigator shall prepare monthly progress reports to be filed with the applicant and the County of San Luis Obispo. The principal investigator shall prepare a final report to be filed with the applicant and the County of San Luis Obispo. The report shall include a list of resources recovered; documentation of each site/locality, interpretation of resources recovered and shall include all specialists' reports as appendices.			
5.1.5 Noise				
NOI-1 Standard noise mitigation measure	No use of heavy equipment or vehicles for the purpose of construction activities shall occur between the hours of 7 p.m. and 7 a.m., to the extent feasible.	PXP shall implement during construction.	EM and County	Less than significant
5.1.6 Traffic and Circulation				
TRA-1 Mitigation for traffic impacts carried over from Phase IV EIR	• Trucks (delivery, hauling and transportation trucks) should be scheduled outside the a.m. and p.m. peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.) to the extent feasible (no increase in trucks trips will occur during the a.m. and p.m. peak periods) ; • Construction related traffic shall use on-site roads wherever	PXP shall implement during construction.	EM and County	Less than significant

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	possible; and, • Warning signs should be placed on Price Canyon Road prior to construction to notify through traffic of trucks entering and exiting the site.			
5.3 Air Quality				
AQ-1 Construction activity would generate air emissions that may adversely impact local and regional air quality.	A. Equipment Emission Control Measures. According to Rule 402 of the APCD Handbook of Rules and Regulations, an Authority to Construct permit shall require the use of BACT where emissions of subject air contaminants would be 25 pounds per day or more (which is applicable to NOx). Prior to construction, a Nitrogen Oxide Emissions Reduction and Monitoring Plan shall be developed using the previously implemented Monitoring Plan for the Phase IV EIR, approved by the County and fully implemented. The Plan shall specify the emissions control measures to be implemented on each emission source, the expected reduction for each criteria pollutant, the period the emissions control measures are to be in place, and a quarterly summary of the emissions reductions. The summary shall include sufficient information for the APCD to verify the emissions reductions have occurred. Potential emission reduction measures shall include a combination of the following: • All mobile construction equipment shall use engines certified by the EPA and ARB to meet Tier 2 emission standards as listed in Title 40 Part 89 of the Code of Federal Regulations and employ Currently Verified Technologies per the ARB; • All portable equipment shall be registered under the Statewide Portable Equipment Registration Program and implement all emissions and reporting requirements (if a piece of equipment is 50 horsepower or greater, and is not registered under the ARB state program, it will need an APCD permit); • Installation of diesel reduction catalyst/catalyzed diesel particulate filter system (25 to 40 percent NOx reduction); and, • Use of PuriNOx fuel by Lubrizol (15 percent NOx reduction). B. Dust Control Measures. Dust generated by construction activities shall be kept to a minimum by full implementation of the following	PXP shall prepare a Nitrogen Oxide Emissions Reduction and Monitoring Plan prior to permit issuance. PXP shall follow all other measures during construction.	EM and APCD	Less than significant

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	measures. • During clearing, grading, earth moving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems shall be used to prevent dust from leaving the site and to create a crust after each day's activities cease; • During construction, water trucks or sprinkler systems shall be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this would include wetting down such areas in the morning and after work is completed for the day. Watering frequency may need to be increased whenever wind exceeds 15 miles per hour; • Stockpiled earth material shall be sprayed or covered as needed to minimize dust generation; • During construction, the amount of disturbed area shall be minimized, and onsite vehicle speeds should be reduced to 15 mph or less; • Consistent to the County Land Use Ordinance and SWPPP, all exposed ground areas that are planned to be reworked at dates more than one month after initial grading during the rainy season (i.e., Oct. 15 to April 15) shall be sown with a fast-germinating native grass seed and watered until vegetation is established; • After clearing, grading, earth moving, or excavation is completed, the entire area of disturbed soil shall be treated immediately by watering or revegetating or spreading soil binders to minimize dust generation until the area is paved or otherwise compacted so that dust generation is minimized; • Grading and scraping operations shall be suspended when wind speeds exceed 20 mph (one hour average); • Rumble pads (minor road obstructions designed to dislodge accumulated earth material from trucks) with spray washers shall be installed and maintained at all construction entrances; • All roadways associated with construction activities shall be paved or utilize some other technique to control dust (i.e. water			

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	or APCD-approved soil stabilizer); and, • The contractor or builder shall designate a person or person to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the APCD prior to land use clearance for map recordation and finished grading of the area. C. CEQA Off-site Mitigation. Project emissions remaining following implementation of the above mitigation measures shall be offset through contribution to an off-site mitigation fund. The fund is managed by the APCD and used to finance regional emission reduction projects such as bikeways, vehicle scrapping programs, diesel bus conversions, agricultural engine replacements and similar activities. Therefore, project emissions would be offset on a regional basis through PXP-funded off-site projects that would result in emissions reductions. Based on past experience, the APCD has determined that $8,500 is required per ton NOx reduced. These funds would be used by the APCD to purchase clean-burning engines and other equipment/facilities that would result in a decrease in emissions in the County. The financial contribution shall be based on offsetting excess emissions (greater than 2.5 tons NOx per quarter) at $8,500 per ton.			
AQ-3 Fugitive dust generated by construction or relocation/demolition activity may contain asbestos and/or lead and result in exposure of the public to these TACs.	A. In the event utility pipelines are scheduled for removal or relocation, or building(s) are removed or renovated, the project shall be subject to various regulatory jurisdictions, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M – asbestos NESHAP). These requirements include, but are not limited to: 1) notification requirements to the District, 2) asbestos survey conducted by a Certified Asbestos Inspector, and, 3) applicable removal and disposal requirements of identified ACM. B. In the event demolition activities are required as part of project construction, a lead work plan shall be prepared and submitted to	PXP shall implement prior to and during construction.	APCD	Less than significant

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	the APCD for review and approval ten days prior to the start of demolition. Depending on the lead-removal method, an APCD permit may be required. Proof of APCD approval and/or authorization shall be submitted to the County prior to start of demolition.			
AQ-6 Due to the high levels of ammonia emissions from the air strippers, the impact of related odors is considered an air quality issue.	PXP shall incorporate the issue of ammonia odors into the existing Odor Monitoring and Complaint Response Plan.	PXP shall prepare an Odor Monitoring and Complaint Response Plan prior to permit issuance.	APCD and County	Less than significant
5.4 Biological Resources				
BIO-2 Construction activities could adversely affect nesting activities of protected migratory birds.	Construction operations shall be conducted prior to the initiation of nesting, or after the completion of nesting to avoid any potential impact to migratory birds. Specifically, the following measures should be implemented: A. Construction operations shall be conducted prior to the initiation of nesting, or after the completion of nesting to avoid any potential impact to migratory birds. Therefore, all clearing, grading, and general construction operations should be conducted between the months of August and March. B. If Measure A is infeasible, pre-construction surveys shall be conducted between February 15 and August 15 to identify potential bird and raptor nesting sites: • If active nest sites of common bird species protected under the Migratory Bird Treaty Act (e.g., northern mockingbird, house finch, etc.) are observed within the vicinity of the project site, then the project shall be modified and/or delayed as necessary to avoid direct take of the identified nests, eggs, and/or young; and, • If active nest sites of raptors and/or species of special concern (e.g., golden eagle, northern harrier, horned lark, etc.) are	PXP shall prepare a Tempering Pond Maintenance and Monitoring Plan prior to permit issuance. PXP shall follow all other measures prior to and during construction.	EM and County	Less than significant

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	observed within the vicinity of proposed construction operations, then CDFG shall be contacted to establish the appropriate buffer around the nest site. Construction activities in the buffer zone shall be prohibited until the young have fledged the nest. C. The proposed tempering pond shall be designed and constructed with a low permeability material to prevent the growth of vegetation and discourage the use and potential nesting by waterfowl and other bird species protected under the MBTA. This shall include construction of permanent fencing (i.e., chain-link) around the pond perimeter to prevent debris accumulation and general wildlife use of the structure. In addition, a Tempering Pond Maintenance and Monitoring Plan shall be prepared to ensure that the pond is inspected and maintained for the life of the Produced Water Reclamation Facility. This shall include provisions for periodic maintenance and monitoring of the structure by facility staff to ensure that the pond is free of vegetation and miscellaneous debris that may attract birds and wildlife as necessary through the life of the project.			
BIO-3 Construction activities could adversely affect special-status plant and terrestrial animal species potentially occurring in the project area.	The following mitigation measures are recommended to avoid and/or minimize impacts to special-status species known to occur or with the potential to occur within the proposed building envelope for the water reclamation facility, tempering pond, and associated pipeline routes during construction. This includes protective measures to avoid and/or minimize impacts to Pismo clarkia and Well's manzanita during the construction phase of the project: **General Measures:** A. All equipment staging areas, construction-crew parking areas, and construction access routes shall be established in previously disturbed or developed areas; B. Exclusionary fencing will be erected at the boundaries of construction areas to avoid equipment and human intrusion into adjacent habitats with emphasis on protection of areas containing special-status species. The exact location of exclusionary fencing for each construction area shall be determined by a County-approved biological monitor. The fencing shall remain in place throughout the construction phase for each individual project	All areas containing special-status plants shall be depicted on final project plans. If necessary, PXP shall provide proposed locations of additional Open Space Easement Areas. PXP shall follow all other measures prior to and during construction.	EM and County	Less than significant

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	component; C. A County-approved biological monitor shall conduct a worker orientation for all construction contractors (site supervisors, equipment operators and laborers) which emphasizes the presence of special-status species within the project site, identification, their habitat requirements, and applicable regulatory policies and provisions regarding their protection, and measures being implemented to avoid and/or minimize impacts; D. If nighttime construction activities are warranted, all equipment lighting shall be shielded away from adjacent wildlife habitat areas and sky, to the extent feasible while still providing safe working conditions for construction personnel, to minimize lighting/glare impacts of wildlife; and, E. Mitigation Measure AQ-1 (a dust control program during the construction phase of the project shall be implemented to minimize dust impacts to adjacent vegetation communities and special-status plant species). **Protective Measures for Special-Status Plants:** F. Due to the fluctuation in annual plant populations (i.e., Pismo clarkia), spring botanical surveys shall be conducted annually by a County-approved biologist to update the location of special-status plant species populations on project plans until project construction is complete (as illustrated on Figure 5.3-2 and 5.3-3). Annual botanical survey results and documented fluctuations in populations shall be added cumulatively to the project plans (i.e., all newly discovered populations shall be added to existing populations documented in previous years). All mapped populations shall be clearly fenced off with exclusionary fencing prior to construction in those areas. If areas supporting Pismo clarkia and/or other sensitive plant species are determined by the County to be unavoidable then seed shall be collected from selected plants in impact areas and utilized to restore habitat within the pre-designated PXP Open Space Easement located directly south of the proposed RO facility within the PXP oil field (see Figure 5.3-4). The designated Open Space Easement was required as Mitigation Measure BIO-6 in the original Phase IV EIR and is currently being utilized as a receiver site for			

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	mitigation plantings from Phase IV expansion operations (i.e., oak tree, Well's manzanita, and Pismo clarkia restoration efforts). The Open Space Easement includes approximately 4.5 acres of oak woodland and grassland habitat areas and should be sufficiently sized to handle the additional Pismo clarkia restoration efforts outlined above. However, in the event the existing easement is determined to be insufficiently sized to handle the additional restoration plantings, then an additional Open Space Easement shall be dedicated by PXP for these purposes; and, G. The final project plans shall clearly illustrate the location of Well's manzanita to remain within 25 feet of construction activities. Prior to any construction, grubbing or tree removal, each manzanita within the vicinity of the work areas shall be clearly marked for protection. To further avoid impacts to Well's manzanita located adjacent to proposed pipeline routes and the proposed construction staging area(s), boundaries of all work areas shall be clearly defined and marked with visible flagging and/or orange protective fencing. All construction activities shall remain in existing roadways and pipeline routes. If Well's manzanita is deemed unavoidable during project implementation, then the same measures outlined in BIO-6B of the Phase IV EIR (incorporated here by reference), would be implemented within the designated Open Space Easement to offset manzanita impacts. **Protective Measures for Special-Status Wildlife:** H. A County-approved biologist shall conduct pre-construction surveys to determine presence/absence of California horned lizard within and adjacent to project components containing suitable chaparral and/or scrub habitat (i.e., proposed equipment staging area and pipeline routes). Surveys shall only be required during the active period of California horned lizards (generally April through September). If California horned lizards are identified adjacent to and/or within work areas, then hand rakes or an equivalent shall be utilized by biological monitors to scarify the ground surface and encourage the horned lizards (and other wildlife) to vacate the immediate area prior to construction. Alternatively, sampling composed of drift fences shall be used to capture horned lizards. As necessary, the County-approved biological monitor shall physically relocate California			

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	horned lizards to suitable habitat located outside the construction zone. Exact procedures and protocols for relocation shall be based upon pre-project consultation with CDFG; I. A County-approved biological monitor shall be on-site during all vegetation clearing and shall periodically monitor the project site during construction activities to inspect protective fencing, equipment staging areas, and physically relocate/ remove any special-status wildlife species entering the construction zone (i.e., California horned lizard, etc.). All special-status species shall be relocated to suitable habitat located outside the construction zone by a qualified biologist. Exact procedures and protocols for relocation shall be based upon pre-project consultation with CDFG; and, J. Mitigation Measure BIO-2 (nesting bird surveys shall be conducted between February 15 and August 15 to identify nest sites of special-status bird species including golden eagle, American peregrine falcon, horned lark, northern harrier, and Cooper's hawk).			
BIO-4 Construction activities could result in direct and indirect impacts to special-status species potentially occurring within the proposed tempering pond and Pismo Creek and associated tributaries.	The following mitigation measures are recommended to avoid and/or minimize impacts to special-status species known to occur or with the potential to occur within the Pismo Creek watershed: A. Construction of the proposed tempering pong and outfall at Pismo Creek including clearing and grubbing of vegetation shall be limited to the dry season (i.e., April 15 to Oct. 15); B. The proposed outfall structure shall be designed to minimize impacts to the existing willow scrub habitat of Pismo Creek to the greatest extent feasible. Specifically, this shall include placement of the structure within a pre-disturbed area (i.e., existing rip-rap bank) located downstream of the "Hyla Crossing" near an existing pipe bridge. Additionally, the final design of the outfall shall include a series of 20- to 30-foot long discharge pipes positioned at appropriate intervals along the creek bank to further minimize the footprint of impact to habitat along the creek bank; C. All existing downed woody debris and willow cuttings removed during construction of the outfall shall be placed and/or stockpiled in natural clumps on nearby creek banks to ensure no net loss of habitat for wildlife including special-status species;	PXP shall prepare a Spill Contingency Plan prior to permit issuance. PXP shall follow all other measures prior to and during construction.	EM, County, and CDFG	Less than significant

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	D. PXP shall prepare and implement a Spill Contingency Plan that includes provisions for avoiding and/or minimizing impacts to Pismo Creek due to spills during construction of the proposed outfall. Specifically, the plan shall include an overview of the secondary containment structures to be installed along the toe of the creek bank to prevent discharge of concrete and gunite into the stream channel during construction operations. Further, the plan shall outline the response equipment that will be on-site during construction and procedures for responding to any inadvertent spills within the creek or surrounding areas including miscellaneous fuel and/or lubricant spills from construction equipment and vehicles during operations. Final specifications of the Spill Contingency Plan shall be reviewed and approved by the County and CDFG prior to project implementation; E. All construction activities within a 100-foot buffer of Pismo Creek shall be monitored by a qualified biologist on a full-time basis or at a frequency deemed necessary by a qualified biologist in consultation with the appropriate regulatory agencies. The biological monitor shall conducted pre-construction surveys for special-status wildlife species (e.g., southwestern pond turtle, two-striped garter snake, Calif. red-legged frog, etc.), maintain protective fencing, inspect equipment staging areas, and, as necessary, physically relocate/remove any special-status wildlife species entering the construction zone; and, F. Mitigation Measures BIO-3A-E (General Protective Measures for Biological Resources); and, G. Mitigation Measure BIO-2 (nesting bird surveys shall be conducted between February 15 and August 15 to identify nest sites of special-status bird species including yellow warbler, southern willow flycatcher, and Cooper's hawk).			

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
BIO-5 Development of the produced water reclamation facility will result in the removal of up to 26 coast live oak trees and an additional six oak trees could be impacted by proposed activities.	The following mitigation measures are recommended to mitigate impacts to oak trees due to project implementation. This includes protective measures to avoid and/or minimize impacts to oak trees designated for long-term preservation: A. Mitigation Measures BIO-3A-E (General Protective Measures for Biological Resources); B. Prior to construction, a Supplemental Habitat Enhancement Plan containing site-specific oak tree protection and replacement procedures shall be prepared for the project. The Supplemental Habitat Enhancement Plan shall clearly outline the procedures for protecting oak trees to remain in place during construction and provide details for replacing oak trees that are removed at a 4:1 ratio and those impacted at a 2:1 ratio. Final specifications of the Supplemental Habitat Enhancement Plan shall be approved by the County and CDFG prior to construction. At a minimum, the plan shall contain the following provisions: • Utilizing the oak tree survey data collected in 2007, final project plans shall clearly illustrate the size and location of all oak trees to be removed as part of the project and all oak trees to remain within 25 feet of construction activities. Prior to any construction, grubbing or tree removal, each mature coast live oak tree within the vicinity of the proposed impact area shall be clearly marked for removal or protection; • Protective fencing shall be installed around each oak tree to remain in place. The fencing shall be installed prior to grubbing/construction and provide protection of the root zone of oak trees (the outer edge of the tree root zone is 1-1/2 times the distance from the trunk to the drip line of the tree); • To further protect oak trees to remain in place, a certified arborist shall be retained by the applicant to perform any necessary trimming of oak tree limbs overhanging equipment access routes. This shall be conducted prior to allowing construction equipment to enter the proposed impact area to avoid and/or minimize the potential for inadvertent damage to oak trees limbs (i.e.,	PXP shall prepare a Supplemental Habitat Enhancement Plan prior to permit issuance. PXP shall implement all other measures prior to and during construction.	EM and County	Less than significant

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	equipment, vehicles, etc.); • Replacement oak trees shall be from vertical tubes or deep, one-gallon container stock. The 1-gallon stock shall be evenly placed within the designated restoration area; • Replanting shall be completed in the fall season upon completion of grading within a given area and by a qualified individual familiar with native vegetation; • Location of newly planted oak trees shall adhere to the following whenever possible: on the north side of and at the canopy/dripline edge of existing mature native trees; north-facing slopes; within drainages swales; where topsoil is present; and if clustered, at least 10' "on-center" separation between each tree. Tree spacing will average approximately 15 feet on-center. Some clustering is acceptable to maintain a more natural appearance; and, • Newly planted trees shall be maintained until successfully established. This shall include protection (e.g., caging, tree shelters) from burrowing and browsing animals (e.g., deer, rodents), regular weeding (minimum of once early fall and once early spring) of at least a 3-foot radius around the plant base and adequate watering (i.e., drip irrigation system). Heavy mulching consisting of local oak leaf litter/mulch so seedlings are exposed to local mycorrhizal fungi to enhance survivability and growth is also recommended. Irrigation shall be slowly terminated over a 3-year period. If possible, planting during the warmest, driest months (June through September) shall be avoided. Replacement oak trees identified as dead and/or diseased during the monitoring period shall be replaced accordingly. C. Mitigation Measure BIO-2 (the tree removals shall be conducted as to avoid a take of raptors or migratory birds).			

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
BIO-6 The proposed Produced Water Reclamation Facility will result in the permanent loss and/or long-term degradation and fragmentation of natural habitats, which provide forage, cover, and breeding elements for a wide variety of wildlife species, including several special-status species.	The following measures shall be implemented to compensate for the actual permanent loss of vegetation resulting from project implementation and potential long-term degradation of adjacent habitat areas from projected long-term utilization of the site: A. Prior to construction, an area within the previously dedicated PXP Open Space Easement shall be set aside to accommodate the required oak replacement (estimated at 104 total) and Pismo clarkia plantings (BIO-3 and BIO-5). If the available area within the existing open space easement is not sufficient to accommodate all of the required oak tree and Pismo clarkia plantings additional mitigation areas containing suitable habitat shall be identified by the applicant and dedicated as supplemental open space easement areas. These areas should contain a representative mixture of oak woodland and annual grassland with known populations of Pismo clarkia. Final specifications of any additional dedicated easement areas (size and location) shall be reviewed and approved by the County and CDFG prior to construction. In addition, future equipment staging areas, access routes, and additional well pads shall be prohibited in the dedicated easement areas; B. Provision B of Mitigation Measure BIO-5 (Supplemental Habitat Enhancement Plan) shall also contain measures to offset additional impacts to Pismo clarkia and oak woodland within the dedicated easement area. Specifically, the Supplemental Habitat Enhancement Plan shall include species lists, installation and maintenance methods, performance criteria, and monitoring protocols for enhancing existing habitats within the dedicated easement area. At a minimum, the plan shall contain the following additional provisions: • Procedures to further mitigate permanent loss of California live oak woodland by augmenting existing oak woodland habitat within the dedicated easement with a portion of the required 4:1 ratio oak tree plantings; • Planting of Pismo clarkia as required by Mitigation Measure BIO-3 shall occur within selected areas (if loss is deemed unavoidable by the County) of the dedicated easement to augment existing	PXP shall prepare a Supplemental Habitat Enhancement Plan and a Compensatory Wetland Mitigation Plan or pay an in-lieu fee into a designated wetland restoration fund prior to permit issuance. If necessary, PXP shall provide proposed locations of additional Open Space Easement Areas. PXP shall follow all other measures prior to and during construction.	EM, County, CDFG, Corps, and RWQCB	Less than significant

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	populations, concentrating the majority of seed dispersal along the northeastern perimeter of the existing oak woodland habitat; • Installation of all replacement planting and/or seed dispersal shall be conducted within the appropriate season to promote survivability (i.e., fall/winter). If possible, planting during the warmest, driest months (June through September) shall be avoided; • Shall provide procedures to ensure eradication of exotic plant species (i.e., pampus grass, tree tobacco, etc.) within the dedicated easement. This shall include provisions for controlling the spread of exotic species throughout the project area; and, • Shall provide an implementation schedule which emphasizes initiation of the Habitat Enhancement Plan within the 1st year of improvements authorized under this approval. The schedule shall outline the sequencing of all mitigation planting and timing for long-term monitoring and maintenance of the dedicated open space easement through the life of the project. C. To offset approximately 0.62-acre of state wetland impacts due to construction of the proposed tempering pond, PXP shall either develop a compensatory wetland mitigation plan which outlines procedures for restoring wetland habitat on-site in-kind (i.e., bulrush-cattail series) or pay an in-lieu fee as directed by the County into a designated wetland restoration fund. D. To avoid further impacts to state-designated wetland habitat areas, the proposed water reclamation facility and tempering pond shall be modified to avoid impacts to the wetland features mapped on Figure 5.3.-3 and discussed in Appendix E - Wetland Assessment. This shall include the following provisions: • 10-foot buffer measured outward from the edge of the seasonal wetland swale and riparian woodland (i.e., willows) should be preserved in a natural vegetation state. This includes the seasonal freshwater wetland, riparian woodland, and roadside drainage located along the southeastern corner of the currently proposed water reclamation facility site plan as well as the riparian woodland habitat located along the southeastern corner of the proposed tempering pond. This measure shall not apply to			

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	the three man-made storm water conveyance structures/ ponds (0.07-acre) located along the southeastern corner of the proposed reclamation facility, and; • Wetlands and setback areas shall be temporarily fenced with silt fencing and other appropriate measures, and orange protective fencing during construction to minimize and/or avoid inadvertent impacts due to temporary construction related erosion and sedimentation. E. To offset approximately 0.01-acre of riparian woodland impacts due to installation of the proposed outfall structure, PXP shall prepare a Compensatory Mitigation Plan which outlines the procedures for restoring willow habitat removed due to project implementation at a 3:1 ratio with emphasis on habitat enhancement. The plan shall clearly identify planting areas within and adjacent to the proposed impact area in addition to the performance criteria for re-establishing willow habitat within Pismo Creek. The plan shall be approved by the County, CDFG, RWQCB, and Corps prior to project implementation. F. Mitigation Measure AQ-1 (a dust control program during the construction phase of the project shall be implemented to minimize dust impacts to adjacent wetland communities); G. Mitigation Measure HYD-1 (in compliance with the Land Use Ordinance, the applicant will prepare and implement a Sediment and Erosion Control Plan (SECP) which will outline procedures for stabilizing the site and minimizing sedimentation and erosion impacts to adjacent wetland habitat areas);			
BIO-7 Development of the proposed the Produced Water Reclamation Facility could result in the permanent loss of wetlands regulated by the Corps under Section 404 of the Clean Water Act.	The following measures shall be implemented to avoid impacts to Pismo Creek tributaries, compensate for the permanent loss of waters of the U.S. resulting from installation of the proposed outfall structure and potential long-term degradation of adjacent federal wetland habitat areas from projected long-term utilization of the site: A. In the event that no pipe racks exist along the existing roadways at tributary crossings and excavation of the roadway base material would require removal and/or replacement of existing road culvert(s),	PXP shall prepare a Compensatory Mitigation Plan for Pismo Creek prior to permit issuance. PXP shall submit all agency permits prior to issuance of a grading permit.	County, CDFG, RWQCB, and Corps	Less than significant

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	then a jack-and-bore technique would implemented for pipeline installation to ensure that no impacts occur to the subject drainages; B. Mitigation Measure BIO-6 (avoidance and minimization measures for protection of wetland habitat features and development of Compensatory Mitigation Plan for Pismo Creek [BIO-6E]); and, C. The applicant shall obtain a permit from the U.S. Army Corps of Engineers pursuant to 404 of the Clean Water Act, Water Quality Certification from the Regional Water Quality Control Board pursuant to 401 of Clean Water Act and a Streambed Alteration Agreement or waiver from the California Department of Fish and Game pursuant to Section 1600 et seq. of the California Fish and Game Code for placement of permanent structures along Pismo Creek (i.e., fill activities) including trimming/removal of riparian vegetation. As part of the permitting process, PXP shall be required to provide the Compensatory Mitigation Plan (Mitigation Measure BIO-6E) to the Corps and the RWQCB for review and approval prior to permit issuance. As part of this process, the agencies may require a higher mitigation ratio and/or include additional performance criteria in the form of special permit conditions. All agency permits and the Final Compensatory Mitigation Plan shall be submitted to the County prior to issuance of grading permit.			
BIO-8 Operation of the proposed Produced Water Reclamation Facility could result in long-term direct and indirect impacts to special-status species potentially occurring within Pismo Creek and the Pismo Creek Estuary.	The following measures shall be implemented to offset potential impacts to special-status species potentially occurring within Pismo Creek and the Pismo Creek Estuary associated due to operation of the proposed Produced Water Reclamation Facility: A. PXP shall obtain appropriate approvals and/or authorizations from the NMFS and USFWS to discharge treated water into Pismo Creek per Section 7 of the ESA. If deemed necessary by NMFS, this shall include preparation of an Essential Fish Habitat Analysis per the Magnuson-Stevens Fishery Conservation and Management Act. All conditions and/or specified recommendations from these agencies to afford maximum protection of special-status species known to occur in Pismo Creek including temperature requirements (e.g., steelhead,	PXP shall prepare a Stream Monitoring Plan and a Steelhead Stranding Plan prior to permit issuance. If necessary, PXP shall prepare an Essential Fish Habitat Analysis prior to	County, NMFS USFWS, and RWQCB	Less than significant and beneficial

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	tidewater goby, California red-legged frog) shall be adhered to and implemented as part of the project. Approvals and/or authorizations from these agencies shall be provided to the County for review prior to issuance of grading permit; B. Mitigation Measure HYD 4A and 4B (PXP shall obtain an NPDES permit from the RWQCB the requirements of which shall be fully implemented including waste discharge limitations, and monitoring and reporting requirements. During plant operations, the applicant shall report phenol concentrations in effluent samples indicated above the method detection limits but less than quantitation limits. At such a time that laboratory analytical methods allow for lower quantitation limits, the applicant shall report phenol concentrations to the RWQCB to ensure compliance with the RWQCB's water quality standards); C. Mitigation Measure HYD 5 (water treatment system shall be constructed with sufficient holding capacity to contain water that fails to meet water quality per the NPDES permit or other agency permit conditions so that water not meeting specifications is not released to Pismo Creek); D. To mitigate potentially significant impacts to steelhead and other special-status species due to increased water temperatures within Pismo Creek, PXP shall prepare a Stream Monitoring Plan for the proposed water reclamation facility. The Plan shall be prepared for County and NMFS review and approval prior to project implementation and shall contain at a minimum the following provisions: • Identification of permanent temperature monitoring stations within Pismo Creek both upstream and immediately downstream of the proposed discharge location. The upstream location shall be utilized to determine baseline stream temperature conditions of Pismo Creek; • The monitoring stations shall consist of HOBO continuous temperature recorders or an equivalent to allow automatic stream	authorization to discharge treated water into Pismo Creek. PXP shall follow all other measures prior to and during construction and operation.		

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	temperature measurements at approximate 2-hour intervals; • DO levels shall also be monitored at the designated stations on a periodic basis (to be defined in the Plan) utilizing appropriate water quality sampling equipment. If deemed necessary, additional features shall be installed to the treatment system and/or along the splash pad to increase oxygenation of the discharge water; • The Plan shall identify the procedures and schedule for stream temperature data collection and reporting requirements which will be utilized to determine the maximum discharge water temperature from the water reclamation facility to ensure compliance with the RWQCB Basin Plan and NMFS requirements throughout the life of the project (i.e., at no time shall the temperature of receiving waters be increased by more than 5°F). This shall include modifying water temperatures accordingly throughout the year to coincide with seasonal fluctuations of Pismo Creek; • The Plan shall include maintenance and inspection procedures to ensure that the temperature monitoring stations are periodically serviced and/or replaced, as necessary throughout the life of the project. This shall include inspections after significant storm events to ensure that the stations are not dislodged and/or damaged by storm flows and debris; and, • The Plan shall include a reporting schedule that provides quarterly monitoring reports to the County and the RWQCB. The Plan shall also contain provisions for the immediate reporting of upset conditions to the County and RWQCB. E. To mitigate potentially significant impacts to steelhead due to stranding during periodic maintenance events, emergency shut-downs, and transfer of water to adjacent landowners, PXP shall prepare a Steelhead Stranding Plan for the proposed water reclamation facility. Per NMFS requirements, the Plan shall clearly outline a series of steelhead stranding avoidance measures that shall be adhered to for the life of the facility. The Plan shall be prepared for County and NMFS review and approval prior to project			

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	implementation and shall contain at a minimum the following provisions: • An analysis of the expected flow fluctuations of Pismo Creek in conjunction with the Water Reclamation Facility; • Development and implementation of a steelhead monitoring program with emphasis on habitat areas downstream of the facility to provide baseline estimates of steelhead populations within the vicinity of the facility and periodically thereafter as deemed necessary by the NMFS; • Identification of all factors affecting steelhead stranding potential including but not limited to changes in wetted width with modifications in stream flows and stranding potential in side channels; • Recommendations for appropriate ramping rates to ensure that the water discharge rate is decreased slowly over a long-duration to prevent to the extent feasible steelhead stranding with emphasis on fry and juveniles; • Monitoring program during extended temporary shut-downs and emergencies which outlines procedures for qualified biologists to monitor pools and stream channels downstream of the facility and relocate stranded steelhead to suitable habitat areas. Information on relocation sites and estimated steelhead mortalities shall be provided to NMFS and the County in comprehensive monitoring reports; and, • To mitigate potential impacts to steelhead due to stranding and/or relocation through the life of the project (i.e., worst case scenario), the Plan shall include several mitigation options such as implementation of creek habitat restoration projects within the PXP facility and/or provisions for monetary compensation to fund high priority projects identified within the Pismo Creek Watershed Plan and adjacent watersheds. Mitigation options, if required, would be commensurate to the level of impact (i.e., installation of a series of root wads to enhance steelhead production). Maximum monetary compensation amounts shall be provided in			

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	the Plan and agreed upon by all parties prior to Plan approval.			
BIO-9 Termination of the PXP Arroyo Grande oil field and eventual decommissioning of the proposed Produced Water Reclamation Facility could result in significant impacts to steelhead populations potentially occurring within Pismo Creek.	The following measures shall be implemented to offset potential impacts to steelhead populations established within Pismo Creek due to decommissioning of the Produced Water Reclamation Facility: A. At the time PXP determines to decommission the Produced Water Reclamation Facility, PXP shall be required to obtain formal approval and/or authorization from the County and NMFS. As part of the decommissioning request, PXP shall conduct a complete assessment of all baseline parameters for the existing steelhead population and their associated habitat within Pismo Creek. This shall include a detailed summary of the steelhead monitoring data required as part of BIO-8E and development of a Habitat Suitability Index (HIS) for the lower 4 miles of Pismo Creek which would be potentially impacted by removal of the artificial water supply from the creek system; B. In the event it is determined by NMFS and the County after review of the data that removal of the facility would result in a significant impact to the existing Pismo Creek steelhead population, then PXP shall submit a Steelhead Habitat Mitigation Plan (Plan) to the County and NMFS for review and approval prior to approval of facility decommissioning. The Plan shall be prepared in accordance with the most current California salmonid habitat restoration techniques and identify a series of creek habitat restoration projects that will be completed by PXP over a specified time period to enhance the existing breeding and over-summering habitat within Pismo Creek (i.e., creation of pools, etc.) and/or an adjacent watershed, such as Arroyo Grande Creek. The Plan shall focus on restoration of the portion of Pismo Creek located within the PXP Arroyo Grande oil field or within a comparable section of Arroyo Grande Creek and include, as necessary, replacement of any dilapidated road crossings and associated culverts that may be acting as fish barriers. Again, mitigation options, if required, would be commensurate to the level of impact. Alternatively, the Plan can	PXP shall prepare a Habitat Suitability Index, a detailed summary of steelhead monitoring data, and if necessary, a Steelhead Habitat Mitigation Plan prior to approval of facility decommissioning.	County and NMFS	Less than significant

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	include provisions for monetary compensation to fund high priority projects identified within other portions of the Pismo Creek and/or Arroyo Grande Watersheds. Maximum monetary compensation amounts shall be provided in the Plan and agreed upon by all parties prior to Plan approval. Monetary compensation can be provided as mitigation anytime prior to decommissioning of the facility at the discretion of PXP.			
5.4 Geology and Soils				
GEO-2 Construction of new graded pads and proposed detention pond modifications could result in unstable slopes prone to failure during a seismic event.	The applicant shall provide the County with a geotechnical engineering report prepared and certified by a State of California licensed geotechnical engineer which addresses slope stability, landslides, liquefaction, settlement, seismic hazards, and expansive soils at the area of proposed facilities. The applicant shall implement the recommendations contained in the geotechnical engineer's report in preparation of grading plans and during construction.	PXP shall implement prior to and during construction.	County	Less than significant
5.5 Hydrology and Water Quality				
HYD-1 Construction of the proposed project could result in short-term increases in erosion and sedimentation resulting from earth-moving operations and exposed soils.	A. In compliance with the Land Use Ordinance, the applicant will prepare and implement a Sediment and Erosion Control Plan (SECP) for the proposed project. The SECP will include: • Slope surface stabilization measures, such as temporary mulching, seeding, and other suitable stabilization measures to protect exposed erodible areas during construction, and installation of earthen or paved interceptors and diversion at the top of cut of fill slopes where there is a potential for erosive surface runoff; • Erosion and sedimentation control devices, such as energy absorbing structures or devices, will be used, as necessary, to reduce the velocity of runoff water to prevent polluting sedimentation discharges; • Installation of mechanical and/or vegetative final erosion control measures within 30 days after completion of grading; • Confining land clearing and grading operations to the period between April 15 and October 15 to avoid the rainy season	PXP shall prepare a Sediment and Erosion Control Plan, a Grading Plan, and a Storm Water Pollution Prevention Plan prior to permit issuance. Measures shall be implemented during construction activities.	County	Less than significant

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	consistent with the County Land Use Ordinance and SWPPP requirements; • Minimizing the land area disturbed and the period of exposure to the shortest feasible time; • The SECP will be prepared in accordance with the Land Use Ordinance; and, • Install long-term drainage devices at new/ modified pads, including headwalls, basins, culverts with down-drains and energy dissipating devices (riprap or diffusers). B. In compliance with Section 23.05.020 - Grading, the applicant will prepare a grading plan for the project. C. PXP will comply with the requirements under a general stormwater construction permit. Such requirements will include preparation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP shall include provisions for the installation and maintenance of Best Management Practices to reduce the potential for erosion of disturbed soils at the Project site.			
HYD-4 The proposed project could result in water discharges that may result in exceedences of the water quality objectives of the Central Coast Water Quality Control Plan or the California Toxics Rule.	A. Prior to operation, the applicant shall obtain a NPDES permit from the RWQCB. The requirements of the Permit shall be fully implemented including waste discharge limitations, and monitoring and reporting requirements. B. During plant operations, the applicant shall report phenol concentrations in effluent samples indicated above the method detection limits but less than quantitation limits. At such a time that laboratory analytical methods allow for lower quantitation limits, the applicant shall report phenol concentrations to the RWQCB to ensure compliance with the RWQCB's water quality standards.	PXP shall obtain NPDES permit prior to project implementation. PXP shall follow all other measures during construction.	RWQCB	Less than significant

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
HYD-5 An upset condition at the water treatment facility could result in the release of water not meeting water quality standards into Pismo Creek.	The proposed water treatment system shall be constructed with sufficient holding capacity to contain water that fails to meet water quality per the NPDES permit or other agency permit conditions so that water not meeting specifications is not released to Pismo Creek.	PXP shall implement during construction and during facility operations.	County and RWQCB	Less than significant
5.6 Hazards				
HAZ-1 The construction of the proposed water treatment facilities would include the use of containing hazardous chemicals which could potentially impact the project site, Price Canyon Road, and potentially Pismo Creek if ruptured during an upset condition.	Prior to system start-up, the applicant shall submit an amended Hazardous Materials Business Plan to the San Luis Obispo Division of Environmental Health for review and approval.	PXP shall submit an amended Hazardous Materials Business Plan prior to operation of the facility.	County Environmental Health	Less than significant
HAZ-2 Petroleum hydrocarbon-containing soil may be encountered during project construction activities.	A. PXP shall complete an environmental site assessment of areas to be utilized for the proposed project to determine whether the project site has been impacted with petroleum or hazardous substances. The site assessment work plan shall be prepared by a registered professional and submitted to the County of San Luis Obispo Division of Environmental Health (SLODEH) for review and approval prior to implementation. The site assessment activities shall include the advancement of drill holes and collection of soil and, if contamination is present, groundwater samples for chemical analyses. A site assessment report shall be submitted to SLODEH for review and approval. If necessary, a corrective action plan shall be submitted to SLODEH for the proper management of contaminated soil and groundwater that may be disturbed as part of the proposed project grading activities. Corrective actions shall be completed at the project site to the satisfaction of SLODEH prior to implementation of the proposed grading activities. Corrective actions, other than compliance with the RWQCB's beneficial reuse provisions for crude oil-containing soil excavated during the course of project construction activities, shall not be required for naturally-	PXP shall prepare and implement a Site Assessment Work Plan prior to project implementation with submittal to County Environmental Health. PXP shall follow all other measures prior to and during construction.	APCD, County Environmental Health, and RWQCB	Less than significant

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
	occurring petroleum hydrocarbon containing soils present at the project site. B. Should hydrocarbon contaminated soil be encountered during construction activities, the APCD must be notified as soon as possible and no later than 48 hours after affected material is discovered to determine if an APCD Permit will be required. In addition, the following measures shall be implemented immediately after contaminated soil is discovered: • Covers on storage piles shall be maintained in place at all times in areas not actively involved in soil addition or removal; • Contaminated soil shall be covered with at least six inches of packed uncontaminated soil or other TPH -non-permeable barrier such as plastic tarp. No headspace shall be allowed where vapors could accumulate; • Covered piles shall be designed in such a way to eliminate erosion due to wind or water. No openings in the covers are permitted; • During soil excavation, odors shall not be evident to such a degree as to cause a public nuisance; and, • Clean soil must be segregated from contaminated soil. Crude oil-containing soil excavated during the course of project construction activities shall be handled and reused on-site in accordance with the RWQCB's Beneficial Reuse Order #R3-2005-005. The notification and permitting determination requirements shall be directed to Karen Brooks of the APCD Enforcement Division at (805) 781-5912.			

Impact	Mitigation Measures	How to Implement	Responsibility to Review/Approve	Residual Impacts
HAZ-3 Location of the project within a high fire hazard could result in additional fire risk for the project area.	A. The applicant shall produce CALFIRE/County Fire a Fire Hydrant System plan for approval prior to construction. This plan shall be implemented before construction commences. B. PXP shall submit a vegetation management plan to CALFIRE/County Fire for approval prior to issuance of construction permits. This will identify measures to minimize the risk of wildfires due to operation of existing and proposed new pipelines and power lines. It will also make recommendations for protection of such facilities from a wildfire.	PXP shall prepare a CALFIRE/County Fire a Fire Hydrant System Plan and a Vegetation Management Plan prior to permit issuance.	CALFIRE/County Fire	Less than significant

Notes:
APCD –Air Pollution Control District
CALFIRE – California Department of Fire
CDFG – California Department of Fish and Game
Corps – U.S. Army Corps of Engineers
County – County of San Luis Obispo
EM – Environmental Monitor
NMFS – National Marine Fisheries Service
RWQCB – Regional Water Quality Control Board
USFWS – U.S. Fish and Wildlife Service

Planning
W. Wilson

IN THE BOARD OF SUPERVISORS
COUNTY OF SAN LUIS OBISPO, STATE OF CALIFORNIA

Tues day September 23 ,20 08

PRESENT: Supervisors Bruce S. Gibson, Jerry Lenthall, K.H. 'Katcho' Achadjian, and Chairperson James R. Patterson

ABSENT: Supervisor Harry L. Ovitt

RESOLUTION NO. 2008-311

RESOLUTION AFFIRMING AND MODIFYING THE DECISION OF THE PLANNING COMMISSION AND CONDITIONALLY APPROVING THE APPLICATION OF PLAINS EXPLORATION AND PRODUCTION FOR CONDITION USE PERMIT DRC2005-00252

The following resolution is now offered and read:

WHEREAS, on May 8, 2008, the Planning Commission of the County of San Luis Obispo (hereinafter referred to as the "Planning Commission") duly considered and conditionally approved the application of Plains Exploration and Production for Conditional Use Permit DRC2005-00252; and

WHEREAS, Oak Park Community Group has appealed the Planning Commission's decision to the Board of Supervisors of the County of San Luis Obispo (hereinafter referred to as the "Board of Supervisors") pursuant to the applicable provisions of Title 22 of the San Luis Obispo County Code; and

WHEREAS, a public hearing was duly noticed and conducted by the Board of Supervisors on September 23, 2008, and a determination and decision was made on September 23, 2008; and

WHEREAS, at said hearing, the Board of Supervisors heard and received all oral and written protests, objections, and evidence, which were made, presented, or filed, and all persons present were given the opportunity to hear and be heard in respect to any matter relating to said appeal; and

WHEREAS, the Board of Supervisors has duly considered the appeal and finds that the appeal should be denied and the decision of the Planning Commission should be affirmed and modified and that the application should be approved subject to the findings and conditions set forth below.

NOW, THEREFORE, BE IT RESOLVED AND ORDERED by the Board of Supervisors of the County of San Luis Obispo, State of California, as follows:

1. That the recitals set forth hereinabove are true, correct and valid.

2. That the Board of Supervisors makes all of the findings of fact and determinations set forth in Exhibit A and C attached hereto and incorporated by reference herein as though set forth in full.

3. That the Final Subsequent Environmental Impact Report prepared for this project is hereby certified and approved as having been prepared and completed in compliance with the provisions of the California Environmental Quality Act and the State CEQA Guidelines.

4. That the Final Subsequent Environmental Impact Report was presented to the Board of Supervisors and that the Board of Supervisors reviewed and considered the information contained in the Final Subsequent Environmental Impact Report prior to approving the project.

5. That the Final Subsequent Environmental Impact Report reflects the Board of Supervisors independent judgment and analysis.

6. That the appeal filed by Oak Park Community Group is hereby denied and the decision of the Planning Commission is affirmed and modified that the application of Plains Exploration and Production for Conditional Use Permit DRC2005-00252 is hereby approved subject to the conditions of approval set forth in Exhibit B attached hereto and incorporated by reference herein as though set forth in full.

Upon motion of Supervisor Lenthall, seconded by Supervisor Achadjian, and on the following roll call vote, to wit:

AYES: Supervisors Lenthall, Achadjian, Gibson, Chairperson Patterson

NOES: None

ABSENT: Supervisor Ovitt

ABSTAINING: None

the foregoing resolution is hereby adopted.

JAMES R. PATTERSON

Chairperson of the Board of Supervisors

ATTEST:

JULIE L. RODEWALD
Clerk of the Board of Supervisors

By: C.M. CHRISTENSEN Deputy Clerk

[SEAL]

APPROVED AS TO FORM AND LEGAL EFFECT:

R. WYATT CASH
County Counsel

By: _____
Deputy County Counsel

Dated: September 12, 2008

STATE OF CALIFORNIA,)
) ss
County of San Luis Obispo)

I, JULIE L. RODEWALD, County Clerk and ex-officio Clerk of the Board of Supervisors, in and for the County of San Luis Obispo, State of California, do hereby certify the foregoing to be a full, true and correct copy of an order made by the Board of Supervisors, as the same appears spread upon their minute book.

WITNESS my hand and the seal of said Board of Supervisors, affixed this 7th day of October, 20 08.

JULIE L. RODEWALD
County Clerk and Ex-Officio Clerk of the
Board of Supervisors

(SEAL)

By: C M Christensen
Deputy Clerk

BOARD OF SUPERVISORS
COUNTY OF SAN LUIS OBISPO, STATE OF CALIFORNIA

Tuesday, September 23, 2008

PRESENT: Supervisors Bruce S. Gibson, Jerry Lenthall, K.H. 'Katcho' Achadjian, and Chairperson James R. Patterson

ABSENT: Supervisor Harry L. Ovitt

In the matter of an appeal by Oak Park Community Group and **RESOLUTION NO. 2008-311:**

This is the time set for hearing to consider an appeal by the Oak Park Community Group of the Planning Commission's approval of Plains Exploration and Production (DRC2005-00252) Subsequent EIR and Conditional Use Permit for a water reclamation facility; 3rd District. (This item was amended at the beginning of the meeting by adding the Environmental Impact Report (Clerk's File) that was inadvertently left out of the packet.)

Mr. John Nall: Planning, introduces the item and presents revised Condition 28.

Mr. Chris Vartus: Rincon Consultants, describes the project; outlines how the reclamation facility would work; highlights the issues of appeal, alternatives, and regulatory approvals.

Mr. Murry Wilson: Planning, states the Appellant is satisfied with the revised Condition 28 and urges the Board to support the staff recommendation.

Mr. Stewart Robinson: Oak Park Community Group representative, outlines the background of this matter; states they agree with the staff recommendation.

Ms. Candace Salway: Plains Exploration and Production representative, thanks all those involved with the matter and urges the Board to support.

Chairperson Patterson: opens the floor to public comment without response.

Thereafter, on motion of Supervisor Jerry Lenthall, seconded by Supervisor K.H. 'Katcho' Achadjian, and on the following roll call vote:

AYES: Supervisors: Jerry Lenthall, K.H. 'Katcho' Achadjian, Bruce S. Gibson, Chairperson James R. Patterson
NOES: None
ABSENT:Supervisor: Harry L. Ovitt

the Board amends Condition 28 to read as follows: "Future connection to a water treatment facility or construction of water transmission lines for off-site use requires either an amendment of this conditional use permit or the approval of a new conditional use permit. Approval of a new conditional use permit shall be in addition to this conditional use permit, and shall address the use of treated produced water off-site. Approval of a new conditional use permit shall not affect the applicant's (PXP) ability to operate consistent with the terms of this conditional use permit and the required NPDES permit, including discharge of treated produced water into Pismo Creek. Additional noticing shall be provided to the parcels shown on Attachment 6."; and RESOLUTION NO. 2008-311, resolution affirming and modifying the decision of the Planning Commission and conditionally approving the application of Plains Exploration and Production for Conditional Use Permit DRC2005-00252, based on the findings in Exhibit A and C, and the conditions in Exhibit B, adopted as amended.

STATE OF CALIFORNIA)
) **ss.**
County of San Luis Obispo)

cc: Planning (2); 10/07/08 cmc

I, **JULIE L. RODEWALD**, County Clerk and Ex-Officio Clerk of the Board of Supervisors, in and for the County of San Luis Obispo, State of California, do hereby certify the foregoing to be a full, true and correct copy of an order made by the Board of Supervisors, as the same appears spread upon their minute book.

WITNESS my hand and the seal of the said Board of Supervisors, affixed this 7th day of October, 2008.

(SEAL)

JULIE L. RODEWALD
County Clerk and Ex-Officio Clerk of the Board of Supervisors

By C M Christensen
Deputy Clerk

FINDINGS - EXHIBIT A

Environmental Determination

A. The Planning Commission finds that changes or alterations have been incorporated into the project to mitigate or avoid significant impacts to the greatest degree practicable. These changes or alterations include mitigation measures and project modifications outlined herein and set forth in more detail in the PXP Produced Water Treatment Facility FSEIR and Exhibit C (CEQA Required Findings).

Conditional Use Permit

B. The proposed project or use is consistent with the San Luis Obispo County General Plan because the use is an allowed use and as conditioned is consistent with all of the General Plan policies.

C. As conditioned, the proposed project or use satisfies all applicable provisions of Title 22 of the County Code.

D. The establishment and subsequent operation or conduct of the use will not, because of the circumstances and conditions applied in the particular case, be detrimental to the health, safety or welfare of the general public or persons residing or working in the neighborhood of the use, or be detrimental or injurious to property or improvements in the vicinity of the use because the proposed development, as condition, does not generate activity that presents a potential threat to the surrounding property and buildings. This project is subject to Ordinance and Building Code requirements designed to address health, safety and welfare concerns.

E. The proposed project or use will not be inconsistent with the character of the immediate neighborhood or contrary to its orderly development because it has been in operation at this location for over 100 years and the exterior boundary will not increase due to this project.

F. The proposed project or use will not generate a volume of traffic beyond the safe capacity of all roads providing access to the project, either existing or to be improved with the project because the project is located on Price Canyon Road, a collector road constructed to a level able to handle any additional traffic associated with the project.

Adjustments

G. The modified height of 70 feet will not exceed the lifesaving equipment capabilities of the San Luis Obispo County Fire Department, because the air stripping towers will not contain personnel above the height limits in the County of San Luis Obispo Land Use Ordinance Section 22.10.090. This height is necessary for the air stripping towers to remove organics and heat from the water.

EX - Combining Designation

H. The proposed use will not adversely affect the continuing operating or expansion of the energy or extraction use because it represents an expansion of the extraction use.

EXHIBIT B - CONDITIONS OF APPROVAL

Approved Development

1. This approval authorizes:

a. the construction of a produced water reclamation facility at their Arroyo Grande Oil Field including the following components: construction of a 20,000 barrel per day (2.5 acre feet per day or 840,000 gallon per day) water treatment / reclamation facility including five water tanks, three air stripping towers, two heat exchangers, construction of water transmission pipelines, creation of tempering ponds within an existing dry pond, relocation of existing pipelines within the proposed footprint of the water treatment / reclamation facility including a new flare location, placement of a reclaimed water outfall structure on an existing rip-rap bank along Pismo Creek, an approximately 100 foot by 150 foot construction staging area and associated grading activities. The project will also include reuse of treated water in the oil field, introduction of treated water into Pismo Creek via the proposed water outfall structure and disposal of rejected water from the reverse osmosis treatment via existing onsite injection wells.

b. A maximum height is 70 feet from average natural grade for the three air striper towers.

Conditions of Approval carried over from the Phase IV EIR

Cultural Resources

2. In the event that unknown cultural remains are encountered anywhere within the project area during construction, activities shall be terminated or redirected to another area until a qualified archaeologist can be retained to evaluate the potential significance of the finds in a Phase 2 archaeological significance investigation or PXP shall have the option to relocate work permanently without need to conduct further studies at that location. Relocation of work and any subsequent archaeological investigation would be done in consultation with the County of San Luis Obispo. If they are significant and cannot be feasibly avoided, then a Phase 3 data recovery mitigation program shall be performed by a qualified archaeologist, and all construction activity within the site and 150-foot buffer area shall be monitored by a qualified archaeologist and Native American monitor. All Phase 3 significance assessments and Phase 3 mitigation measures shall be funded by the applicant.

Paleontological Resources

3. **Prior to construction**, the applicant shall retain a qualified paleontologist to implement the paleontological mitigation monitoring plan developed for the Phase IV EIR that includes the following:

   A. Prior to construction, the applicant will retain a qualified paleontologist to implement the mitigation plan and maintain professional standards of work;

   B. A qualified monitor will perform full-time monitoring of all grading, enlargement of pads and all other open excavation work in native sediments. Monitoring will include inspection of exposed surfaces and microscopic examination of matrix. The monitor will have authority to divert grading away from exposed resources temporarily in order to recover the specimens and contextual data. PXP shall have the option to relocate work permanently without need to conduct further studies at that location. Relocation of work and any subsequent paleontological investigation would be done in consultation with the

County of San Luis Obispo. Cooperation and assistance from on-site personnel will greatly assist timely resumption of work in the area of the discovery;

C. If the discovery meets the criteria for a fossil locality, formal locality documentation activities will be performed;

D. If microfossil localities are discovered, locality documentation activities shall include the collection of matrix material for processing. These activities may include use of equipment to excavate fossil-containing soils, and establishment of stockpiles away from the construction area. Testing of stockpiles shall consist of screen washing small samples (200 pounds) to determine if fossils are present. Productive tests shall result in screen washing of additional matrix from the stockpiles to a maximum of 6000 pounds per locality;

E. Fossils recovered shall be prepared, identified and cataloged, and donated to an accredited repository approved by the County of San Luis Obispo. Any resources determined not to meet significance criteria shall be offered to local schools for use in educational programs; and

F. The principal investigator shall prepare monthly progress reports to be filed with the applicant and the County of San Luis Obispo. The principal investigator shall prepare a final report to be filed with the applicant and the County of San Luis Obispo. The report shall include a list of resources recovered; documentation of each site/locality, interpretation of resources recovered and shall include all specialists' reports as appendices.

Noise

4. No use of heavy equipment or vehicles for the purpose of construction activities shall occur between the hours of 7 p.m. and 7 a.m., only during emergencies.

Traffic and Circulation

5.

A. Trucks (delivery, hauling and transportation trucks) should be scheduled outside the a.m. and p.m. peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.) to the extent feasible (no increase in trucks trips will occur during the a.m. and p.m. peak periods);

B. Construction related traffic shall use on-site roads wherever possible; and

C. Warning signs should be placed on Price Canyon Road prior to construction to notify through traffic of trucks entering and exiting the site.

Conditions of Approval from this FSEIR

Air Quality

6.

A. According to Rule 402 of the APCD Handbook of Rules and Regulations, an Authority to Construct permit shall require the use of BACT where emissions of subject air contaminants would be 25 pounds per day or more (which is applicable to NOx). **Prior to construction**, a Nitrogen Oxide Emissions Reduction and Monitoring Plan shall be developed using the previously implemented Monitoring Plan for the Phase IV EIR, approved by the County and fully implemented. The Plan shall specify the emissions control measures to be implemented on each emission source, the expected reduction

for each criteria pollutant, the period the emissions control measures are to be in place, and a quarterly summary of the emissions reductions. The summary shall include sufficient information for the APCD to verify the emissions reductions have occurred. Potential emission reduction measures shall include a combination of the following:

- All mobile construction equipment shall use engines certified by the EPA and ARB to meet Tier 2 emission standards as listed in Title 40 Part 89 of the Code of Federal Regulations and employ Currently Verified Technologies per the ARB;

- All portable equipment shall be registered under the Statewide Portable Equipment Registration Program and implement all emissions and reporting requirements. If a piece of equipment is 50 horsepower or greater, and is not registered under the ARB state program, it will need an APCD permit;

- Installation of diesel reduction catalyst/catalyzed diesel particulate filter system (25 to 40 percent NOx reduction); and

- Use of PuriNOx fuel by Lubrizol (15 percent NOx reduction).

B. Dust generated by construction activities shall be kept to a minimum by full implementation of the following measures:

- During clearing, grading, earth moving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems shall be used to prevent dust from leaving the site and to create a crust after each day's activities cease;

- During construction, water trucks or sprinkler systems shall be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this would include wetting down such areas in the morning and after work is completed for the day. Watering frequency may need to be increased whenever wind exceeds 15 miles per hour;

- Stockpiled earth material shall be sprayed or covered as needed to minimize dust generation;

- During construction, the amount of disturbed area shall be minimized, and onsite vehicle speeds should be reduced to 15 mph or less;

- Consistent with the County Land Use Ordinance and SWPPP, all exposed ground areas that are planned to be reworked at dates more than one month after initial grading during the rainy season (i.e., Oct. 15 to April 15) shall be sown with a fast-germinating native grass seed and watered until vegetation is established;

- After clearing, grading, earth moving, or excavation is completed, the entire area of disturbed soil shall be treated immediately by watering or revegetating or spreading soil binders to minimize dust generation until the area is paved or otherwise compacted so that dust generation is minimized;

- Grading and scraping operations shall be suspended when wind speeds exceed 20 mph (one hour average);

- Rumble pads (minor road obstructions designed to dislodge accumulated earth material from trucks) with spray washers shall be installed and maintained at all construction entrances;

- All roadways associated with construction activities shall be paved or utilize some other technique to control dust (i.e. water or APCD-approved soil stabilizer); and

- The contractor or builder shall designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the APCD prior to land use clearance for map recordation and finished grading of the area.

C. Project emissions remaining following implementation of the above conditions shall be offset through contribution to an off-site mitigation fund. The fund is managed by the APCD and used to finance regional emission reduction projects such as bikeways, vehicle scrapping programs, diesel bus conversions, agricultural engine replacements and similar activities. Therefore, project emissions would be offset on a regional basis through PXP-funded off-site projects that would result in emissions reductions. Based on past experience, the APCD has determined that $8,500 is required per ton NOx reduced. These funds would be used by the APCD to purchase clean-burning engines and other equipment/facilities that would result in a decrease in emissions in the County. The financial contribution shall be based on offsetting excess emissions (greater than 2.5 tons NOx per quarter) at $8,500 per ton.

7.

A. If utility pipelines are scheduled for removal or relocation, or building(s) are removed or renovated, the project may be subject to various regulatory jurisdictions, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M – asbestos NESHAP). These requirements include, but are not limited to: 1.) notification requirements to the District, 2.) asbestos survey conducted by a Certified Asbestos Inspector, and 3.) applicable removal and disposal requirements of identified ACM.

B. In the event demolition activities are required as part of project construction, a lead work plan shall be prepared and submitted to the APCD for review and approval ten days prior to the start of demolition. Depending on the lead-removal method, an APCD permit may be required. Proof of APCD approval and/or authorization shall be submitted to the County prior to start of demolition.

8. PXP shall incorporate the issue of ammonia odors into the existing Odor Monitoring and Complaint Response Plan.

Biological Resources

9. Construction operations shall be conducted prior to the initiation of nesting, or after the completion of nesting to avoid any potential impact to migratory birds. Specifically, the following measures should be implemented:

A. Construction operations shall be conducted prior to the initiation of nesting, or after the completion of nesting to avoid any potential impact to migratory birds. Therefore, all clearing, grading, and general construction operations should be conducted between the months of August and March.

B. If Condition 9.A is infeasible, pre-construction surveys shall be conducted between February 15 and August 15 to identify potential bird and raptor nesting sites:

- If active nest sites of common bird species protected under the Migratory Bird Treaty Act (e.g., northern mockingbird, house finch, etc.) are observed within the vicinity of the project site, then the project shall be modified and/or delayed as necessary to avoid direct take of the identified nests, eggs, and/or young; and

- If active nest sites of raptors and/or species of special concern (e.g., golden eagle, northern harrier, horned lark, etc.) are observed within the vicinity of proposed construction operations, then CDFG shall be contacted to establish the appropriate buffer around the nest site. Construction activities in the buffer zone shall be prohibited until the young have fledged the nest.

C. The proposed tempering pond shall be designed and constructed with ~~netting~~ a low permeability material to prevent the growth of vegetation and discourage the use and potential nesting by waterfowl and other bird species protected under the MBTA. This shall include construction of permanent fencing (i.e., chain-link) around the pond perimeter to prevent debris accumulation and general wildlife use of the structure. In addition, a Tempering Pond Maintenance and Monitoring Plan shall be prepared to ensure that the pond is inspected and maintained for the life of the Produced Water Reclamation Facility. This shall include provisions for periodic maintenance and monthly monitoring of the structure, as necessary through the life of the project to ensure that the pond is free of vegetation and miscellaneous debris that may attract birds and wildlife.

10. The following conditions are recommended to avoid and/or minimize impacts to special-status species known to occur or with the potential to occur within the proposed building envelope for the water reclamation facility, tempering pond, and associated pipeline routes during construction. This includes protective measures to avoid and/or minimize impacts to Pismo clarkia and Well's manzanita during the construction phase of the project:

    General Conditions:

    A. All equipment staging areas, construction-crew parking areas, and construction access routes shall be established in previously disturbed or developed areas;

    B. Exclusionary fencing will be erected at the boundaries of construction areas to avoid equipment and human intrusion into adjacent habitats with emphasis on protection of areas containing special status species. The exact location of exclusionary fencing for each construction area shall be determined by a County-approved biological monitor. The fencing shall remain in place throughout the construction phase for each individual project component;

    C. A County-approved biological monitor shall conduct a worker orientation for all construction contractors (site supervisors, equipment operators and laborers) which emphasizes the presence of special-status species within the project site, identification, their habitat requirements, and applicable regulatory policies and provisions regarding their protection, and measures being implemented to avoid and/or minimize impacts;

    D. If nighttime construction activities are warranted, all equipment lighting shall be shielded away from adjacent wildlife habitat areas and sky, to the extent feasible while still providing safe working conditions for construction personnel, to minimize lighting/glare impacts of wildlife; and

    E. Condition 6 (a dust control program during the construction phase of the project shall be implemented to minimize dust impacts to adjacent vegetation communities and special-status plant species).

Protective Conditions for Special-Status Plants:

F. Due to the fluctuation in annual plant populations (i.e., Pismo clarkia), spring botanical surveys shall be conducted annually by a County-approved biologist to update the location of special-status plant species populations on project plans until project construction is complete (as illustrated on Figure 5.3-2 and 5.3-3). Annual botanical survey results and documented fluctuations in populations shall be added cumulatively to the project plans (i.e. all newly discovered populations shall be added to existing populations documented in previous years). All mapped populations shall be clearly fenced off with exclusionary fencing prior to construction in those areas. If areas supporting Pismo clarkia and/or other sensitive plant species are determined by the County to be unavoidable then seed shall be collected from selected plants in impact areas and utilized to restore habitat within the pre-designated PXP Open Space Easement located on-site. The designated Open Space Easement is currently being utilized as a receiver site for mitigation plantings from Phase IV expansion operations (i.e. oak tree, Well's manzanita, and Pismo clarkia restoration efforts). The Open Space Easement should be sufficiently sized to handle the additional Pismo clarkia restoration efforts outlined above However, in the event the existing easement is determined to be insufficiently sized to handle the additional restoration plantings, then an additional Open Space Easement shall be dedicated by PXP for these purposes; and

G. The final project plans shall clearly illustrate the location of Well's manzanita to remain within 25 feet of construction activities. Prior to any construction, grubbing or tree removal, each manzanita within the vicinity of the work areas shall be clearly marked for protection. To further avoid impacts to Well's manzanita located adjacent to proposed pipeline routes and the proposed construction staging area(s), boundaries of all work areas shall be clearly defined and marked with visible flagging and/or orange protective fencing. All construction activities shall remain in existing roadways and pipeline routes. If Well's manzanita is deemed unavoidable during project implementation, then the same measures outlined in BIO-6B of the Phase IV EIR, would be implemented within the designated Open Space Easement to offset manzanita impacts.

Protective Conditions for Special-Status Wildlife:

H. A County-approved biologist shall conduct preconstruction surveys to determine presence/absence of California horned lizard within and adjacent to project components containing suitable chaparral and/or scrub habitat (i.e. proposed equipment staging area and pipeline routes). Surveys shall only be required during the active period of California horned lizards (generally April through September). If California horned lizards are identified adjacent to and/or within work areas, then hand rakes or an equivalent shall be utilized by biological monitors to scarify the ground surface and encourage the horned lizards (and other wildlife) to vacate the immediate area prior to construction. Alternatively, sampling composed of drift fences shall be used to capture horned lizards. As necessary, the County-approved biological monitor shall physically relocate California horned lizards to suitable habitat located outside the construction zone. Exact procedures and protocols for relocation shall be based upon pre-project consultation with CDFG;

I. A County-approved biological monitor shall be onsite during all vegetation clearing and shall periodically monitor the project site during construction activities to inspect protective fencing, equipment staging areas, and physically relocate/ remove any special-status wildlife species entering the construction zone (i.e., California horned lizard, etc.). All special-status species shall be relocated to suitable habitat located outside the construction zone by a qualified biologist. Exact procedures and protocols for relocation shall be based upon pre-project consultation with CDFG; and

J. Condition 9 (nesting bird surveys shall be conducted between February 15 and August 15 to identify nest sites of special-status bird species including golden eagle, American peregrine falcon, horned lark, northern harrier, and Cooper's hawk).

11. The following conditions are recommended to avoid and/or minimize impacts to special-status species known to occur or with the potential to occur within the Pismo Creek watershed:

A. Construction of the proposed tempering pongd and outfall at Pismo Creek including clearing and grubbing of vegetation shall be limited to the dry season (i.e., April 15 to Oct. 15);

B. The proposed outfall structure shall be designed to minimize impacts to the existing willow scrub habitat of Pismo Creek to the greatest extent feasible. Specifically, this shall include placement of the structure within a pre-disturbed area (i.e., existing rip-rap bank) located downstream of the "Hyla Crossing" near an existing pipe bridge. Additionally, the final design of the outfall shall include a series of 20- to 30-foot long discharge pipes positioned at appropriate intervals along the creek bank to further minimize the footprint of impact to habitat along the creek bank;

C. All existing downed woody debris and willow cuttings removed during construction of the outfall shall be placed and/or stockpiled in natural clumps on nearby creek banks to ensure no net loss of habitat for wildlife including special-status species;

D. PXP shall prepare and implement a Spill Contingency Plan that includes provisions for avoiding and/or minimizing impacts to Pismo Creek due to spills during construction of the proposed outfall. Specifically, the plan shall include an overview of the secondary containment structures to be installed along the toe of the creek bank to prevent discharge of concrete and gunite into the stream channel during construction operations. Further, the plan shall outline the response equipment that will be on-site during construction and procedures for responding to any inadvertent spills within the creek or surrounding areas including miscellaneous fuel and/or lubricant spills from construction equipment and vehicles during operations. Final specifications of the Spill Contingency Plan shall be reviewed and approved by the County and CDFG prior to project implementation;

E. All construction activities within a 100-foot buffer of Pismo Creek shall be monitored by a qualified biologist on a full-time basis or at a frequency deemed necessary by a qualified biologist in consultation with the appropriate regulatory agencies. The biological monitor shall conducted pre-construction surveys for special-status wildlife species (e.g., southwestern pond turtle, two-striped garter snake, Calif. red-legged frog, etc.), maintain protective fencing, inspect equipment staging areas, and, as necessary, physically relocate/remove any special-status wildlife species entering the construction zone;

F. Condition 10.A-E (General Protective Measures for Biological Resources); and

G. Condition 9 (nesting bird surveys shall be conducted between February 15 and August 15 to identify nest sites of special-status bird species including yellow warbler, southern willow flycatcher, and Cooper's hawk).

12. The following conditions are recommended to mitigate impacts to oak trees due to project implementation. This includes protective measures to avoid and/or minimize impacts to oak trees designated for long-term preservation:

A. Condition 10.A-E (General Protective Measures for Biological Resources);

B. Prior to construction, a Supplemental Habitat Enhancement Plan containing site-specific oak tree protection and replacement procedures shall be prepared for the project. The Supplemental Habitat Enhancement Plan shall clearly outline the procedures for protecting oak trees to remain in place during construction and provide details for replacing oak trees that are removed at a 4:1 ratio and those impacted at a 2:1 ratio. Final specifications of the Supplemental Habitat Enhancement Plan shall be approved by the County and CDFG prior to construction. At a minimum, the plan shall contain the following provisions:

- Utilizing the oak tree survey data collected in 2007, final project plans shall clearly illustrate the size and location of all oak trees to be removed as part of the project and all oak trees to remain within 25 feet of construction activities. Prior to any construction, grubbing or tree removal, each mature coast live oak tree within the vicinity of the proposed impact area shall be clearly marked for removal or protection;

- Protective fencing shall be installed around each oak tree to remain in place. The fencing shall be installed prior to grubbing/construction and provide protection of the root zone of oak trees (the outer edge of the tree root zone is 1-1/2 times the distance from the trunk to the drip line of the tree);

- To further protect oak trees to remain in place, a certified arborist shall be retained by the applicant to perform any necessary trimming of oak tree limbs overhanging equipment access routes. This shall be conducted prior to allowing construction equipment to enter the proposed impact area to avoid and/or minimize the potential for inadvertent damage to oak trees limbs (i.e., equipment, vehicles, etc.);

- Replacement oak trees shall be from vertical tubes or deep, one-gallon container stock. The 1-gallon stock shall be evenly placed within the designated restoration area;

- Replanting shall be completed in the fall season upon completion of grading within a given area and by a qualified individual familiar with native vegetation;

- Location of newly planted oak trees shall adhere to the following whenever possible: on the north side of and at the canopy/dripline edge of existing mature native trees; north-facing slopes; within drainages swales; where topsoil is present; and if clustered, at least 10' "on-center" separation between each tree. Tree spacing will average approximately 15 feet on-center. Some clustering is acceptable to maintain a more natural appearance; and

- Newly planted trees shall be maintained until successfully established. This shall include protection (e.g., caging, tree shelters) from burrowing and browsing animals (e.g., deer, rodents), regular weeding (minimum of once early fall and once early spring) of at least a 3-foot radius around the plant base and adequate watering (i.e., drip irrigation system). Heavy mulching consisting of local oak leaf litter/mulch so seedlings are exposed to local mycorrhizal fungi to enhance survivability and growth is also recommended. Irrigation shall be slowly terminated over a 3-year period. If possible, planting during the warmest, driest months (June through September) shall be avoided. Replacement oak trees identified as dead and/or diseased during the monitoring period shall be replaced accordingly.

C. Condition 9 (the tree removals shall be conducted as to avoid a take of raptors or migratory birds).

13. The following measures shall be implemented to compensate for the actual permanent loss of vegetation resulting from project implementation and potential long-term degradation of adjacent habitat areas from projected long-term utilization of the site:

    A. Prior to construction, an area within the previously dedicated PXP Open Space Easement shall be set aside to accommodate the required oak replacement (estimated at 104 total) and Pismo clarkia plantings (Conditions 10 and 12). If the available area within the existing open space easement is not sufficient to accommodate all of the required oak tree and Pismo clarkia plantings additional mitigation areas containing suitable habitat shall be identified by the applicant and dedicated as supplemental open space easement areas. These areas should contain a representative mixture of oak woodland and annual grassland with known populations of Pismo clarkia. Final specifications of any additional dedicated easement areas (size and location) shall be reviewed and approved by the County and CDFG prior to construction. In addition, future equipment staging areas, access routes, and additional well pads shall be prohibited in the dedicated easement areas;

    B. Provision B of Condition 12 (Supplemental Habitat Enhancement Plan) shall also contain measures to offset additional impacts to Pismo clarkia and oak woodland within the dedicated easement area. Specifically, the Supplemental Habitat Enhancement Plan shall include species lists, installation and maintenance methods, performance criteria, and monitoring protocols for enhancing existing habitats within the dedicated easement area. At a minimum, the plan shall contain the following additional provisions:

        - Procedures to further mitigate permanent loss of California live oak woodland by augmenting existing oak woodland habitat within the dedicated easement with a portion of the required 4:1 ratio oak tree plantings;

        - Planting of Pismo clarkia as required by Condition 10 shall occur within selected areas (if loss is deemed unavoidable by the County) of the dedicated easement to augment existing populations, concentrating the majority of seed dispersal along the northeastern perimeter of the existing oak woodland habitat;

        - Installation of all replacement planting and/or seed dispersal shall be conducted within the appropriate season to promote survivability (i.e. fall/winter). If possible, planting during the warmest, driest months (June through September) shall be avoided;

        - Shall provide procedures to ensure eradication of exotic plant species (i.e., pampus grass, tree tobacco, etc.) within the dedicated easement. This shall include provisions for controlling the spread of exotic species throughout the project area; and

        - Shall provide an implementation schedule which emphasizes initiation of the Habitat Enhancement Plan within the 1st year of improvements authorized under this approval. The schedule shall outline the sequencing of all mitigation planting and timing for long-term monitoring and maintenance of the dedicated open space easement through the life of the project.

    C. To offset approximately 0.62-acre of state wetland impacts due to construction of the proposed tempering pond, PXP shall either develop a compensatory wetland mitigation plan which outlines procedures for restoring wetland habitat on-site in-kind (i.e., bulrush-cattail series) or pay an in-lieu fee as directed by the County into a designated wetland restoration fund.

D. To avoid further impacts to state-designated wetland habitat areas, the proposed water reclamation facility and tempering pond shall be modified to avoid impacts to the wetland features mapped on Figure 5.3.-3 and discussed in Appendix E – Wetland Assessment. This shall include the following provisions:

- 10-foot buffer measured outward from the edge of the seasonal wetland swale and riparian woodland (i.e., willows) should be preserved in a natural vegetation state. This includes the seasonal freshwater wetland, riparian woodland, and roadside drainage located along the southeastern corner of the currently proposed water reclamation facility site plan as well as the riparian woodland habitat located along the southeastern corner of the proposed tempering pond. This measure shall not apply to the three man-made storm water conveyance structures/ ponds (0.07-acre) located along the southeastern corner of the proposed reclamation facility, and

- Wetlands and setback areas shall be temporarily fenced with silt fencing and other appropriate measures, and orange protective fencing during construction to minimize and/or avoid inadvertent impacts due to temporary construction related erosion and sedimentation.

E. To offset approximately 0.01-acre of riparian woodland impacts due to installation of the proposed outfall structure, PXP shall prepare a Compensatory Mitigation Plan which outlines the procedures for restoring willow habitat removed due to project implementation at a 3:1 ratio with emphasis on habitat enhancement. The plan shall clearly identify planting areas within and adjacent to the proposed impact area in addition to the performance criteria for re-establishing willow habitat within Pismo Creek. The plan shall be approved by the County, CDFG, RWQCB, and Corps prior to project implementation.

F. Condition 6 (a dust control program during the construction phase of the project shall be implemented to minimize dust impacts to adjacent wetland communities);

G. Condition 19 (in compliance with the Land Use Ordinance, the applicant will prepare and implement a Sediment and Erosion Control Plan (SECP) which will outline procedures for stabilizing the site and minimizing sedimentation and erosion impacts to adjacent wetland habitat areas).

14. The following measures shall be implemented to avoid impacts to Pismo Creek tributaries, compensate for the permanent loss of waters of the U.S. resulting from installation of the proposed outfall structure and potential long-term degradation of adjacent federal wetland habitat areas from projected long-term utilization of the site:

A. In the event that no pipe racks exist along the existing roadways at tributary crossings and excavation of the roadway base material would require removal and/or replacement of existing road culvert(s), then a jack-and-bore technique would implemented for pipeline installation to ensure that no impacts occur to the subject drainages;

B. Condition 13 (avoidance and minimization measures for protection of wetland habitat features and development of Compensatory Mitigation Plan for Pismo Creek [Condition 13.E]); and

C. The applicant shall obtain a permit from the U.S. Army Corps of Engineers pursuant to 404 of the Clean Water Act, Water Quality Certification from the Regional Water Quality Control Board pursuant to 401 of Clean Water Act and a Streambed Alteration Agreement or waiver from the California Department of Fish and Game pursuant to

Section 1600 et seq. of the California Fish and Game Code for placement of permanent structures along Pismo Creek (i.e., fill activities) including trimming/removal of riparian vegetation. As part of the permitting process, PXP shall be required to provide the Compensatory Mitigation Plan (Condition 13.E) to the Corps and the RWQCB for review and approval prior to permit issuance. As part of this process, the agencies may require a higher mitigation ratio and/or include additional performance criteria in the form of special permit conditions. All agency permits and the Final Compensatory Mitigation Plan shall be submitted to the County prior to issuance of grading permit.

15. The following measures shall be implemented to offset potential impacts to special-status species potentially occurring within Pismo Creek and the Pismo Creek Estuary associated due to operation of the proposed Produced Water Reclamation Facility:

    A. PXP shall obtain appropriate approvals and/or authorizations from the NMFS and USFWS to discharge treated water into Pismo Creek per Section 7 of the ESA. If deemed necessary by NMFS, this shall include preparation of an Essential Fish Habitat Analysis per the Magnuson-Stevens Fishery Conservation and Management Act. All conditions and/or specified recommendations from these agencies to afford maximum protection of special-status species known to occur in Pismo Creek including temperature requirements (e.g., steelhead, tidewater goby, California red-legged frog) shall be adhered to and implemented as part of the project. Approvals and/or authorizations from these agencies shall be provided to the County for review prior to issuance of grading permit;

    B. Condition 21.A and 21.B (PXP shall obtain an NPDES permit from the RWQCB the requirements of which shall be fully implemented including waste discharge limitations, and monitoring and reporting requirements. During plant operations, the applicant shall report phenol concentrations in effluent samples indicated above the method detection limits but less than quantitation limits. At such a time that laboratory analytical methods allow for lower quantitation limits, the applicant shall report phenol concentrations to the RWQCB to ensure compliance with the RWQCB's water quality standards);

    C. Condition 22 (water treatment system shall be constructed with sufficient holding capacity to contain water that fails to meet water quality per the NPDES permit or other agency permit conditions so that water not meeting specifications is not released to Pismo Creek);

    D. To mitigate potentially significant impacts to steelhead and other special-status species due to increased water temperatures within Pismo Creek, PXP shall prepare a Stream Monitoring Plan in consultation with the Pismo Creek Watershed Group for the proposed water reclamation facility. The Plan shall be prepared for County and NMFS review and approval prior to project implementation and shall contain at a minimum the following provisions:

        - Identification of permanent temperature monitoring stations within Pismo Creek both upstream and immediately downstream of the proposed discharge location. The upstream location shall be utilized to determine baseline stream temperature conditions of Pismo Creek;

        - The monitoring stations shall consist of HOBO continuous temperature recorders or an equivalent to allow automatic stream temperature measurements at approximate 2-hour intervals;

        - DO levels shall also be monitored at the designated stations on a periodic basis (to be defined in the Plan) utilizing appropriate water quality sampling equipment. If

deemed necessary, additional features shall be installed to the treatment system and/or along the splash pad to increase oxygenation of the discharge water;

- The Plan shall identify the procedures and schedule for stream temperature data collection and reporting requirements which will be utilized to determine the maximum discharge water temperature from the water reclamation facility to ensure compliance with the RWQCB Basin Plan and NMFS requirements throughout the life of the project (i.e., at no time shall the temperature of receiving waters be increased by more than 5°F). This shall include modifying water temperatures accordingly throughout the year to coincide with seasonal fluctuations of Pismo Creek;

- The Plan shall include maintenance and inspection procedures to ensure that the temperature monitoring stations are periodically serviced and/or replaced, as necessary throughout the life of the project. This shall include inspections after significant storm events to ensure that the stations are not dislodged and/or damaged by storm flows and debris; and

- The Plan shall include a reporting schedule that provides quarterly monitoring reports to the County and the RWQCB. The Plan shall also contain provisions for the immediate reporting of upset conditions to the County and RWQCB.

E. To mitigate potentially significant impacts to steelhead due to stranding during periodic maintenance events, emergency shut-downs, and transfer of water to adjacent landowners, PXP shall prepare a Steelhead Stranding Plan in consultation with the Pismo Creek Watershed Group for the proposed water reclamation facility. Per NMFS requirements, the Plan shall clearly outline a series of steelhead stranding avoidance measures that shall be adhered to for the life of the facility. The Plan shall be prepared for County and NMFS review and approval prior to project implementation and shall contain at a minimum the following provisions:

- An analysis of the expected flow fluctuations of Pismo Creek in conjunction with the Water Reclamation Facility;

- Development and implementation of a steelhead monitoring program with emphasis on habitat areas downstream of the facility to provide baseline estimates of steelhead populations within the vicinity of the facility and periodically thereafter as deemed necessary by the NMFS;

- Identification of all factors affecting steelhead stranding potential including but not limited to changes in wetted width with modifications in stream flows and stranding potential in side channels;

- Recommendations for appropriate ramping rates to ensure that the water discharge rate is decreased slowly over a long-duration to prevent to the extent feasible steelhead stranding with emphasis on fry and juveniles;

- Monitoring program during extended temporary shut-downs and emergencies which outlines procedures for qualified biologists to monitor pools and stream channels downstream of the facility and relocate stranded steelhead to suitable habitat areas. Information on relocation sites and estimated steelhead mortalities shall be provided to NMFS and the County in comprehensive monitoring reports; and

- To mitigate potential impacts to steelhead due to stranding and/or relocation through the life of the project (i.e., worst case scenario), the Plan shall include several mitigation options such as implementation of creek habitat restoration projects within

the PXP facility and/or provisions for monetary compensation to fund high priority projects identified within the Pismo Creek Watershed Plan and adjacent watersheds. Mitigation options, if required, would be commensurate to the level of impact (i.e. installation of a series of root wads to enhance steelhead production). Maximum monetary compensation amounts shall be provided in the Plan and agreed upon by all parties prior to Plan approval.

16. The following measures shall be implemented to offset potential impacts to steelhead populations established within Pismo Creek due to decommissioning of the Produced Water Reclamation Facility:

    A. At the time PXP determines to decommission the Produced Water Reclamation Facility, PXP shall be required to obtain formal approval and/or authorization from the County and NMFS. As part of the decommissioning request, PXP shall conduct a complete assessment of all baseline parameters for the existing steelhead population and their associated habitat within Pismo Creek. This shall include a detailed summary of the steelhead monitoring data required as part of Condition 15.E and development of a Habitat Suitability Index (HIS) for the lower 4 miles of Pismo Creek which would be potentially impacted by removal of the artificial water supply from the creek system;

    B. In the event it is determined by NMFS and the County after review of the data that removal of the facility would result in a significant impact to the existing Pismo Creek steelhead population, then PXP shall submit a Steelhead Habitat Mitigation Plan (Plan) to the County and NMFS for review and approval prior to approval of facility decommissioning. The Plan shall be prepared in accordance with the most current California salmonid habitat restoration techniques and identify a series of creek habitat restoration projects that will be completed by PXP over a specified time period to enhance the existing breeding and over-summering habitat within Pismo Creek (i.e. creation of pools, etc.) and/or an adjacent watershed, such as Arroyo Grande Creek. The Plan shall focus on restoration of the portion of Pismo Creek located within the PXP Arroyo Grande oil field or within a comparable section of Arroyo Grande Creek and include, as necessary, replacement of any dilapidated road crossings and associated culverts that may be acting as fish barriers. Again, mitigation options, if required, would be commensurate to the level of impact. Alternatively, the Plan can include provisions for monetary compensation to fund high priority projects identified within other portions of the Pismo Creek and/or Arroyo Grande Watersheds. Maximum monetary compensation amounts shall be provided in the Plan and agreed upon by all parties prior to Plan approval. Monetary compensation can be provided as mitigation anytime prior to decommissioning of the facility at the discretion of PXP.

Geology/Soils

17. The applicant shall provide the County with a geotechnical engineering report prepared and certified by a State of California licensed geotechnical engineer, which addresses slope stability, landslides, liquefaction, settlement, seismic hazards, and expansive soils at the area of proposed facilities. The applicant shall implement the recommendations contained in the geotechnical engineer's report in preparation of grading plans and during construction.

18. A drainage, sedimentation and erosion control plan shall be required with any permits involving structures or site disturbance.

Hydrology and Water Quality

19.

A. In compliance with the Land Use Ordinance, the applicant will prepare and implement a Sediment and Erosion Control Plan (SECP) for the proposed project. The SECP will include:

- Slope surface stabilization measures, such as temporary mulching, seeding, and other suitable stabilization measures to protect exposed erodible areas during construction, and installation of earthen or paved interceptors and diversion at the top of cut of fill slopes where there is a potential for erosive surface runoff;
- Erosion and sedimentation control devices, such as energy absorbing structures or devices, will be used, as necessary, to reduce the velocity of runoff water to prevent polluting sedimentation discharges;
- Installation of mechanical and/or vegetative final erosion control measures within 30 days after completion of grading;
- Confining land clearing and grading operations to the period between April 15 and October 15 to avoid the rainy season consistent with the County Land Use Ordinance and SWPPP requirements;
- Minimizing the land area disturbed and the period of exposure to the shortest feasible time;
- The SECP will be prepared in accordance with the Land Use Ordinance; and
- Install long-term drainage devices at new/modified pads, including headwalls, basins, culverts with down-drains and energy dissipating devices (riprap or diffusers).

B. In compliance with Section 23.05.020 - Grading, the applicant will prepare a grading plan for the project.

C. PXP will comply with the requirements under a general stormwater construction permit. Such requirements will include preparation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP shall include provisions for the installation and maintenance of Best Management Practices to reduce the potential for erosion of disturbed soils at the project site.

20. With either disposal method, the treatment and re-use or discharge of produced water would have a beneficial impact on the shallow alluvial aquifer along Pismo Creek down-stream of the oil field. This is considered a beneficial impact.

21.

A. **Prior to operation**, the applicant shall obtain an NPDES permit from the RWQCB. The requirements of the Permit shall be fully implemented including waste discharge limitations, and monitoring and reporting requirements.

B. **During plant operations**, the applicant shall report phenol concentrations in effluent samples indicated above the method detection limits but less than quantitation limits. At such a time that laboratory analytical methods allow for lower quantitation limits, the

applicant shall report phenol concentrations to the RWQCB to ensure compliance with the RWQCB's water quality standards.

22. The proposed water treatment system shall be constructed with sufficient holding capacity to contain water that fails to meet water quality per the NPDES permit or other agency permit conditions so that water not meeting specifications is not released to Pismo Creek.

23. A flood hazard plan shall be required for any work with the 100 year flood zone.

24. The applicant shall consult with the City of Pismo Beach to determine appropriate flow levels for operation shut-downs. During rain events that equal or exceed the identified shut-down criteria (as approved by the City of Pismo Beach and the County of San Luis Obispo) along Pismo Creek, the applicant shall agree to shut-down the discharge component of the project until the flow levels are below the approved criteria for a minimum of 24-hours. The applicant shall install a stream gage for flow measurements with oversight from the City of Pismo Beach and the County of San Luis Obispo. All permits that may be required for installation of the stream gage will be obtained by PXP prior to installation. The location of the stream gage shall be determined in consultation with the City of Pismo Beach, the County of San Luis Obispo and the Pismo Creek Watershed Group.

Hazards

25. **Prior to system start-up**, the applicant shall submit an amended Hazardous Materials Business Plan to the San Luis Obispo Division of Environmental Health for review and approval.

26.

A. PXP shall complete an environmental site assessment of areas to be utilized for the proposed project to determine whether the project site has been impacted with petroleum or hazardous substances. The site assessment work plan shall be prepared by a registered professional and submitted to the County of San Luis Obispo Division of Environmental Health (SLODEH) for review and approval prior to implementation. The site assessment activities shall include the advancement of drill holes and collection of soil and, if contamination is present, groundwater samples for chemical analyses. A site assessment report shall be submitted to SLODEH for review and approval. If necessary, a corrective action plan shall be submitted to SLODEH for the proper management of contaminated soil and groundwater that may be disturbed as part of the proposed project grading activities. Corrective actions shall be completed at the project site to the satisfaction of SLODEH prior to implementation of the proposed grading activities. Corrective actions, other than compliance with the RWQCB's beneficial reuse provisions for crude oil containing soil excavated during the course of project construction activities, shall not be required for naturally-occurring petroleum hydrocarbon containing soils present at the project site.

B. Should hydrocarbon contaminated soil be encountered during construction activities, the APCD must be notified as soon as possible and no later than 48 hours after affected material is discovered to determine if an APCD Permit will be required. In addition, the following measures shall be implemented immediately after contaminated soil is discovered:

- Covers on storage piles shall be maintained in place at all times in areas not actively involved in soil addition or removal;

- Contaminated soil shall be covered with at least six inches of packed uncontaminated soil or other TPH -non-permeable barrier such as plastic tarp. No headspace shall be allowed where vapors could accumulate;

- Covered piles shall be designed in such a way to eliminate erosion due to wind or water. No openings in the covers are permitted;

- During soil excavation, odors shall not be evident to such a degree as to cause a public nuisance; and

- Clean soil must be segregated from contaminated soil. Crude oil-containing soil excavated during the course of project construction activities shall be handled and reused on-site in accordance with the RWQCB's Beneficial Reuse Order #R3-2005-005. The notification and permitting determination requirements shall be directed to Karen Brooks of the APCD Enforcement Division at (805) 781-5912.

27.

A. The applicant shall produce CALFIRE/County Fire a Fire Hydrant System plan for approval prior to construction. This plan shall be implemented before construction commences.

B. PXP shall submit a vegetation management plan to CALFIRE/County Fire for approval prior to issuance of construction permits. This will identify measures to minimize the risk of wildfires due to operation of existing and proposed new pipelines and power lines. It will also make recommendations for protection of such facilities from a wildfire.

28. Future connection to a water treatment facility or construction of water transmission lines for off-site use requires either an amendment of this conditional use permit or the approval of a new conditional use permit. Approval of a new conditional use permit shall be in addition to this conditional use permit, and shall address the use of treated produced water off-site. Approval of a new conditional use permit shall not affect the applicant's (PXP) ability to operate consistent with the terms of this conditional use permit and the required NPDES permit, including discharge of treated produced water into Pismo Creek. Additional noticing shall be provided to the parcels shown on Attachment 6.

29. The applicant shall as a condition of approval of this conditional use permit defend, at his sole expense, any action brought against the County of San Luis Obispo, its present or former officers, agents, or employees, by a third party challenging either its decision to approve this conditional use permit or the manner in which the County is interpreting or enforcing the conditions of approval of this conditional use permit, or any other action by a third party relating to approval or implementation of this conditional use permit. The applicant shall reimburse the County for any court costs and attorney's fees which the County may be required by a court to pay as a result of such action, but such participation shall not relieve the applicant of his obligation under this condition.

EXHIBIT C – REQUIRED CEQA FINDINGS

PROJECT DESCRIPTION

A Final Subsequent Environmental Impact Report (SEIR) (comprised of the draft SEIR, Final SEIR "response to comments" chapter with change pages) has been prepared to evaluate the proposed Plains Exploration and Production (PXP) Produced Water Treatment Facility Conditional Use Permit/Development Plan (CUP/DP) and project alternatives.

The PXP Produced Water Treatment Facility project is located in Price Canyon approximately 3 miles northeast of the City of Pismo Beach in San Luis Obispo County, California. The proposed project is in the Arroyo Grande oilfield. The project site is located east and west of Price Canyon Road near its intersection with Ormonde Road, midway between Highway 101 and Highway 227.

The PXP Produced Water Treatment Facility has been proposed by PXP to facilitate continued operations and expansion associated with their approved Phase IV Development Plan. The proposed Project consists of development of a treatment facility for the produced water resulting from oil recovery activities, including delivery systems and a discharge outfall. Disposal routes would include an outfall to Pismo Creek (primary disposal option) and re-use disposal routes to the north and south of the project site. Project specific details are provided in Section 3.4 of the Final SEIR.

Eight water-disposal options (hereinafter, referred to as alternatives) were evaluated as part of the proposed project, but were deleted from further consideration because they were not considered feasible, as they would not substantially reduce project impacts or meet the project objectives either in the short-term or long-term. The specific details of each of these alternatives are provided in Section 6.1 of the Final SEIR and have been summarized below:

- **Onsite Injection:** PXP evaluated numerous potential areas to inject the produced water into the subsurface without adversely impacting the steam drive oil production enhancement program but all were deemed infeasible.
- **Surface Discharge:** An evaluation of surface discharge by Entrix onto the oilfield itself concluded that any water that could be percolated would quickly encounter shallow bedrock and remerge as surface flow into Pismo Creek. Thus, this alternative was eliminated from further consideration.
- **Irrigation of Edible Crops:** PXP communicated with wineries in the Edna Valley and with growers in the area regarding use of the reclaimed water for irrigation of edible crops. Due to potential public health issues, the California Department of Health Services places limitations on the use of reclaimed water on edible crops. No potential users were willing to undertake the additional treatment of the water, and there was no further negotiation.
- **Irrigation of Non-Edible Crops (No Disposal to Pismo Creek):** This option would involve limiting discharge of treated water to only nearby non-edible crop agricultural water users. There would be no discharge of water to Pismo Creek. This alternative was eliminated as it would not achieve project objectives due to constraints related to lack of re-use agreements with neighboring properties and water needs would not be consistent throughout the year to accommodate anticipated year-round facility output.
- **Onsite Disposal via Evaporation/Percolation Ponds:** This option would consist of disposing the treated water into on-site ponds, which would evaporate and percolate. Percolation tests indicated that infiltration capacity would result in very low percentages of percolation, thus very large areas would be required for evaporation; therefore, this alternative would be environmentally inferior.

- **City of Pismo Beach Wastewater Reclamation Facility and Ocean Outfall.** With this alternative, a new pipeline would need to be constructed to connect to the City of Pismo Beach's wastewater reclamation facility (WWTF). This option would be infeasible for the following reasons: 1) there are currently capacity constraints at the existing WWTF, and 2) City of Pismo Beach policy currently prohibits accepting wastewater from outside the city limits.
- **Displacement of Existing Groundwater Use at the Oil Field:** This re-use option involves reducing or eliminating uses of groundwater on the oil field, and replacing the groundwater with the produced treated water. Although this option was considered to be a viable beneficial re-use of the water, it was determined that the amount of water replaced would be very small, and therefore would not meet project objectives.
- **Landfill Dust Control:** This option would entail construction of a new pipeline and delivery of water to Cold Canyon Landfill for use as a dust suppressant during the summer; however, the landfill has limited needs for water (approximately 100,000 gallons per day). The Landfill would only be able to use the water during the dry season, and thus would require an alternate disposal method during the wet season. Coupled with new pipeline impacts to biological resources, this reduced project alternative was deemed infeasible.

With elimination of the eight alternatives above from further consideration, the following three alternatives are examined in this SEIR:

- **Alternative 1:** No Project Alternative. This alternative would have no construction or operational impacts. It would allow the existing operations of the Phase IV project to continue as it is currently configured but would not allow any expansion of the Arroyo Grande Field to include a water treatment facility.
- **Alternative 2:** Reduced Project Alternative. Alternative 2 is the proposed project as intended for implementation, but reduced in overall size and scope with the intention of reducing project-related impacts. In a conceptual sense, this alternative would minimize the footprint of disturbance and the overall daily output of treated water to Pismo Creek by 50 percent.
- **Alternative 3:** Fully Mitigated Project Alternative. Alternative 3 is an alternative whereby the mitigation measures identified in Chapter 5.0 of the SEIR to reduce significant or potentially significant impacts to less-than-significant levels are factored entirely into the project. With the mitigation measures included in the project as proposed, the project becomes an entity that is defined differently than the originally proposed project.

Alterative 3 – Fully-Mitigated Alternative is identified as the Environmentally Superior Alternative because it would better meet County policies than Alternative 2, meet all of the project objectives consistent with the Master Plan for the Arroyo Grande oil field, and minimize the majority of the project impacts. Although Alterative 1 - No Project Alternative would have less impacts than the Alternative 3, it would not meet any of the objectives of the project and is not consistent with the Master Plan for the oil field. As such, the EIR found that the Alternative 3 – Fully Mitigated Project that includes all mitigation measures factored into the project as the Environmentally Superior Alternative.

THE RECORD

For the purposes of CEQA and the Findings identified in the following Sections IV-VI, the record of the Planning Commission relating to the application includes:

A. Documentary and oral evidence received and reviewed by the Planning Commission during the public hearings on the project.

B. The Final Subsequent Environmental Impact Report prepared for the PXP Produced Water Treatment Facility including the Appendices.
C. Matters of common knowledge to the Planning Commission which they consider, such as:
   1. The County General Plan, including the land use maps and elements thereof;
   2. The County Land Use Element (Inland);
   3. The County Agriculture and Open Space Element;
   4. The County Energy Element;
   5. County Noise Element;
   6. The County Land Use Ordinance (Inland);
   7. The California Environmental Quality Act and the State Guidelines implementing the act;
   8. The County Annual Resources Summary Report;
   9. The County Noise Element;
   10. The County Hazardous Waste Management Plan;
   11. The Clean Air Plan;
   12. State Natural Diversity Database;
   13. California's Health and Safety Code;
   14. Other formally-adopted County, State and Federal regulations, status, policies, and ordinances; and,
   15. Additional documents referenced in the PXP Produced Water Treatment Facility SEIR.

CERTIFICATION OF THE FINAL ENVIRONMENTAL IMPACT REPORT

It is recommended that the Planning Commission certify the PXP Produced Water Treatment Facility Final Subsequent Environmental Impact Report (comprised of the Draft SEIR, Final SEIR "response to comments" chapter with change pages, "additional information" document).

A. The Final Subsequent Environmental Impact Report (FSEIR) for the PXP Produced Water Treatment Facility has been completed in compliance with the California Environmental Quality Act.
B. The Final Subsequent Environmental Impact Report and all related public comments and responses have been presented to the Planning Commission, and the Planning Commission has reviewed and considered the information contained in the Final Subsequent Environmental Impact Report and testimony presented at the public hearings prior to approving the proposed project.
C. The Final Subsequent Environmental Impact Report was prepared by consultants under the direction of staff, but reflects the independent judgment of the Planning Commission.

FINDINGS FOR IMPACTS IDENTIFIED AS INSIGNIFICANT (Class III)

The findings below are for Class III impacts. Class III impacts are impacts that are adverse, but not significant.

AESTHETICS (Class III)

Impact: Construction of the proposed project may result in visual impacts to motorists traveling along Price Canyon Road and nearby residences.

a. **Mitigation** - None determined needed.
b. **Findings** - Insignificant.
c. **Supportive Evidence** - On-site analysis determined that only the air strippers, which would be 14 feet in diameter and 70 feet in height, may be visible from Price Canyon

Road; however, the proposed towers are not expected be silhouetted against the sky. This conclusion is based on the fact that the elevation of the building pad with existing and higher 85-foot towers, which would be in close proximity to the air strippers, is not silhouetted. Due to the potential visibility of these proposed towers to travelers on Price Canyon Road and associated potential impacts to the visual quality of surrounding slopes containing native vegetation (i.e. oak woodland), a painting color scheme would be incorporated into the project description (see Section 3.4.2), intended to blend in with the natural landscape. Additionally a lighting plan consistent with the existing use, including height limits and shielding requirements would also be incorporated into the project description to minimize any new aesthetic impacts due to lighting. Overall, these impacts will not change the visual character of the project area and do not represent a significant impact. Please refer to pages 5.1-1 through 5.1-2 of the Final SEIR.

AGRICULTURE (Class III)

Impact: Construction of the proposed project may include the use of treated water for non-edible crops of adjacent landowners at some future dates.

a. **Mitigation** - None determined needed.
b. **Findings** - Insignificant.
c. **Supportive Evidence** - The project area is located within the County's "Energy and Extractive Resource" area and does not include any agricultural operations. Properties adjacent to the project area support agricultural uses, and may potentially use the treated water produced by the proposed project for irrigation of non-edible crops; however, at this time, no formal agreements for re-use have been made concerning production of treated water. As such, the proposed project would not adversely affect agricultural resources in the area. Rather, for the purposes of this analysis, it is assumed that re-use of treated water for agricultural irrigation would occur in the future. Re-use of treated water may potentially represent a beneficial impact to agricultural resources outside of the PXP property, as well as to groundwater resources, as re-use would result in an overall reduction to the drawdown of local groundwater supply for the life of the project. The produced water would not be treated to drinking water standards; therefore, water re-use would be limited to only agricultural users. Additionally, no significant impacts were identified in the original Phase IV EIR.

AIR QUALITY (Class III)

Impact: Diesel fuel combustion associated with project construction activity would generate emissions of toxic air contaminants (TACs).

a. **Mitigation** - None required.
b. **Findings** - Insignificant.
c. **Supportive Evidence** - The emissions of construction equipment and vehicles would be short-term, lasting only for the duration of the water reclamation facility construction phase. Diesel PM emissions would be up to 29.3 pounds per day (PM_{10} in Table 5.2-3 less fugitive dust). These emissions would be much less than the APCD's 185 pounds per day threshold. Therefore, construction-related PM emissions specific to diesel engines are considered a less than significant impact. Please refer to pages 5.2-13 through 5.2-14 of the SEIR.

Impact: Operation of the proposed water reclamation facility would increase the number of heavy truck trips to and from the proposed project site, resulting in increased emissions.

a. **Mitigation** - None required.
b. **Findings** - Insignificant.
c. **Supportive Evidence** - Based on a 25-ton per truck hauling and delivery capacity, liquid chemical deliveries are anticipated at two per week, plus one to two truck trips per week for solid chemical deliveries and three to four truck trips per week to haul waste to a Class II disposal site; therefore, a total of eight heavy-duty truck trips would be added to local roadways during project operations. Operational emissions thresholds for ROG (10 lbs/day) and CO (550 lbs/day) would be applicable. The addition of eight heavy-duty truck trips per week (assuming diesel fuel) would produce emissions of ROG and CO well below operational emission thresholds. Impacts would be less than significant. Please refer to page 5.2-14 through 5.2-15 of the SEIR.

Impact: Operation of the proposed water treatment facility would result in emissions of contaminants into the atmosphere which may result in a health risk to local residents.

a. **Mitigation** –None required.
b. **Findings** - Insignificant.
c. **Supportive Evidence** - A facility-wide Health Risk Assessment (HRA) was recently completed and included the TAC emissions from the proposed water treatment plant. The results of the HRA indicate that health risk associated with PXP operations, including the proposed water treatment facility would be less than significant. In addition, the facility would not be subject to BACT under APCD Rule 219 as the cancer health risk would be less than 1 per million and a hazard index less than 0.1. Please refer to Pages 5.2-15 through 5.2-17 of the SEIR.

BIOLOGICAL RESOURCES (Class III)

Impact: Construction activities could result in the disturbance of wildlife occupying adjacent habitats.

a. **Mitigation** - None required.
b. **Findings** - Insignificant.
c. **Supportive Evidence** - Construction will entail the use of heavy equipment and increased human presence throughout the project area. This could potentially disturb wildlife at the construction sites and result in mortality of less mobile species, particularly ground-dwelling (fossorial) species such as California ground squirrel, Botta's pocket gopher, broad-footed mole, and dusky-footed woodrat. More mobile species are likely to be temporarily displaced to alternative habitats until the completion of construction. These short-term construction impacts are considered temporary and less than significant.

Impact: Construction activities could adversely affect special-status plant and terrestrial animal species (i.e. foraging migratory birds) potentially occurring in the project area.

a. **Mitigation** - None required.
b. **Findings** - Insignificant.
c. **Supportive Evidence** – Special-status species occurring in the project area have the potential to be adversely affected by the proposed short-term construction activities throughout the project area. However, impacts to migratory special-status species (loggerhead shrike, and sharp-shinned hawk) that have the potential to periodically frequent the project area for the purpose of foraging are considered short-term and less than significant. Please refer to pages 5.3-37 through 5.3-38 of the SEIR.

Impact: The proposed Produced Water Reclamation Facility will result in the permanent loss and/or long-term degradation and fragmentation of natural habitats (i.e. annual grassland and coyote brush scrub), which provide forage, cover, and breeding elements for a wide variety of wildlife species, including several special-status species.

a. **Mitigation** - None required.
b. **Findings** - Insignificant.
c. **Supportive Evidence** - Loss of non-native annual grassland areas is not considered a significant impact to wildlife because it supports a relatively low density and diversity of species and is considered abundant both locally and statewide. Although coyote brush scrub provides moderate foraging and nesting habitat for wildlife species it is not considered a sensitive plant community. Therefore, loss of 0.07-acre of coyote brush scrub is not considered a significant impact. Please refer to pages 5.3-49 through 5.3-50 of the SEIR.

GEOLOGY AND SOILS (Class III)

Impact: Construction of the proposed project may result in a substantial, or potentially substantial, adverse change in the physical condition of the land.

a. **Mitigation** - None determined needed.
b. **Findings** - Insignificant.
c. **Supportive Evidence** - Topography will be impacted by construction. Potential soil erosion and vegetation removal impacts would be addressed by Mitigation Measures HYD-1 and BIO-6. Therefore, the physical change to the land is considered adverse, but less than significant. Please refer to pages 5.4-7 through 5.4-8 of the SEIR.

Impact: The treatment and discharge of produced water could result in decreased oil production due to the loss of reservoir pressures.

a. **Mitigation** - None determined needed.
b. **Findings** - Insignificant.
c. **Supportive Evidence** - The removal of water from the oil-producing formation will lower reservoir pressures which could have a negative impact on oil production rates within the oilfield. It is anticipated that the applicant will continue to monitor reservoir pressures as part of its ongoing reservoir management practices and adjustments would be made to ensure that oil production rates are maintained. Please refer to pages 5.4-8 through 5.4-9 of the SEIR.

HYDROLOGY AND WATER QUALITY (Class III)

Impact: Discharge of treated water to Pismo Creek would affect stream geomorphology due to higher dry-season flows.

a. **Mitigation** - None required.
b. **Findings** - Insignificant.
c. **Supportive Evidence** - With implementation of the mitigation measures HYD-4a, HYD-4b, and HYD-5, the increased summer flows are anticipated to result in a beneficial impact to fisheries and aquatic species within Pismo Creek. Additionally, erosion at the discharge point would be reduced by gunite applied to the rip-rap slope. This is anticipated to be a less than significant impact. Please refer to pages 5.5-10 through 5.5.11 of the SEIR.

FINDINGS FOR IMPACTS IDENTIFIED AS SIGNIFICANT BUT MITIGABLE (Class II)

Class II impacts are those which are significant, but they can be mitigated to insignificance by implementation of certain mitigation measures.

CULTURAL RESOURCES (Class II)

Impact: Construction during the proposed project could result in the inadvertent damage to historic, cultural, archaeological, and/or burials during earthmoving activities.

a. **Mitigation** - Mitigation Measure CUL-1 (Incorporated from original Phase IV EIR): In the event that unknown cultural remains are encountered anywhere within the project area during construction, activities shall be terminated or redirected to another area until a qualified archaeologist can be retained to evaluate the potential significance of the finds in a Phase 2 archaeological significance investigation or PXP shall have the option to relocate work permanently without need to conduct further studies at that location. Relocation of work and any subsequent archaeological investigation would be done in consultation with the County of San Luis Obispo. If they are significant and cannot be feasibly avoided, then a Phase 3 data recovery mitigation program shall be performed by a qualified archaeologist, and all construction activity within the site and 150-foot buffer area shall be monitored by a qualified archaeologist and Native American monitor. All Phase 3 significance assessments and Phase 3 mitigation activities shall be funded by the applicant.
b. **Findings** - Insignificant.
c. **Supportive Evidence** - Implementation of the mitigation measures referenced above will minimize any impact to archaeological resources. Please refer to page 5.1-3 through 5.1-5 of the Final SEIR.

PALEONTOLOGICAL RESOURCES (Class II)

Impact: Grading and excavation activities may uncover and adversely affect paleontological resources.

a. **Mitigation** - Mitigation Measure PAL-1 (Incorporated from original Phase IV EIR):
   1. Prior to construction, the applicant will retain a qualified paleontologist to implement the mitigation plan and maintain professional standards of work.
   2. A qualified monitor will perform full-time monitoring of all grading, enlargement of pads and all other open excavation work in native sediments. Monitoring will include inspection of exposed surfaces and microscopic examination of matrix. The monitor will have authority to divert grading away from exposed resources temporarily in order to recover the specimens and contextual data. PXP shall have the option to relocate work permanently without need to conduct further studies at that location. Relocation of work and any subsequent paleontological investigation would be done in consultation with the County of San Luis Obispo. Cooperation and assistance from on-site personnel will greatly assist timely resumption of work in the area of the discovery.
   3. If the discovery meets the criteria for a fossil locality, formal locality documentation activities will be performed.
   4. If microfossil localities are discovered, locality documentation activities shall include the collection of matrix material for processing. These activities may include use of equipment to excavate fossil-containing soils, and establishment of stockpiles away from the construction area. Testing of stockpiles shall consist of screen washing small samples (200 pounds) to determine if fossils are present. Productive tests shall result in screen washing of additional matrix from the stockpiles to a maximum of 6000 pounds per locality.

5. Fossils recovered shall be prepared, identified and cataloged, and donated to an accredited repository approved by the County of San Luis Obispo. Any resources determined not to meet significance criteria shall be offered to local schools for use in educational programs.
6. The principal investigator shall prepare monthly progress reports to be filed with the applicant and the County of San Luis Obispo. The principal investigator shall prepare a final report to be filed with the applicant and the County of San Luis Obispo. The report shall include a list of resources recovered, documentation of each site/locality, interpretation of resources recovered and shall include all specialist's reports as appendices

b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.
c. **Supportive Evidence** - Implementation of the mitigation measures referenced above will minimize any impact to paleontological resources. Refer to pages 5.1-5 through 5.1-6 of the Final SEIR.

NOISE (Class II)

Impact: Construction activities would result in short-term noise impacts to nearby residences.

a. **Mitigation** - Mitigation Measure NOI-1 (Incorporated from original Phase IV EIR): No use of heavy equipment or vehicles for the purposes of construction activities shall occur between 7 p.m. and 7 a.m., to the extent feasible.
b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.
c. **Supportive Evidence** - Construction-related noise levels would be less than existing conditions at the site (i.e., active oil field operations). Therefore, residual impacts are considered less than significant. Refer to pages 5.1-7 of the Final SEIR.

TRAFFIC AND CIRCULATION (Class II)

Impact: Entering and exiting of the trucks may reduce traffic safety on Price Canyon Road during the A.M. and P.M. peak hour.

a. **Mitigation** - Mitigation Measure TRA-1 (Incorporated from original Phase IV EIR):
   - Trucks (delivery, hauling and transportation trucks) should be scheduled outside the A.M. and P.M. peak period (7:00 to 9:00 A.M. and 4:00 to 6:00 P.M.) to the extent feasible (no increase in trucks trips will occur during the A.M. and P.M. peak periods);
   - Construction related traffic shall use on-site roads wherever possible; and,
   - Warning signs should be placed on Price Canyon Road prior to construction to notify through traffic of trucks entering and exiting the site.
b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.
c. **Supportive Evidence** - With the inclusion of mitigation measures, impacts to traffic safety during peak hours will be minimal. Refer to pages 5.1-7 through 5.1-8 of the Final SEIR.

AIR QUALITY (Class II)

Impact: Construction activity would generate air emissions that may adversely impact local and regional air quality.

a. **Mitigation** - Mitigation Measure AQ-1:
A. Equipment Emission Control Measures. According to Rule 402 of the APCD Handbook of Rules and Regulations, an Authority to Construct permit shall require the use of Best Available Control Technology (BACT) where emissions of subject air contaminants would be 25 pounds per day or more (which is applicable to NOx). Prior to construction, a Nitrogen Oxide Emissions Reduction and Monitoring Plan shall be developed using the previously implemented Monitoring Plan for the Phase IV EIR, approved by the County and fully implemented. The Plan shall specify the emissions control measures to be implemented on each emission source, the expected reduction for each criteria pollutant, the period the emissions control measures are to be in place, and a quarterly summary of the emissions reductions. The summary shall include sufficient information for the APCD to verify the emissions reductions have occurred. Potential emission reduction measures shall include, but not be limited to, a combination of the following:
- All mobile construction equipment shall use engines certified by the EPA and ARB to meet Tier 2 emission standards as listed in Title 40 Part 89 of the Code of Federal Regulations and employ Currently Verified Technologies per the ARB;
- All portable equipment shall be registered under the Statewide Portable Equipment Registration Program and implement all emissions and reporting requirements (if a piece of equipment is 50 horsepower or greater, and is not registered under the ARB state program, it will need an APCD permit);
- Installation of diesel reduction catalyst/catalyzed diesel particulate filter system (25 to 40 percent NOx reduction); and,
- Use of PuriNOx fuel by Lubrizol (15 percent NOx reduction).

B. Dust Control Measures. Dust generated by construction activities shall be kept to a minimum by full implementation of the following measures.
- During clearing, grading, earth moving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems shall be used to prevent dust from leaving the site and to create a crust after each day's activities cease;
- During construction, water trucks or sprinkler systems shall be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this would include wetting down such areas in the morning and after work is completed for the day. Watering frequency may need to be increased whenever wind exceeds 15 miles per hour;
- Stockpiled earth material shall be sprayed or covered as needed to minimize dust generation;
- During construction, the amount of disturbed area shall be minimized, and onsite vehicle speeds should be reduced to 15 mph or less;
- Consistent with the County Land Use Ordinance and SWPPP, all exposed ground areas that are planned to be reworked at dates more than one month after initial grading during the rainy season (i.e., Oct. 15 to April 15) shall be sown with a fast-germinating native grass seed and watered until vegetation is established;
- After clearing, grading, earth moving, or excavation is completed, the entire area of disturbed soil shall be treated immediately by watering or revegetating or spreading soil binders to minimize dust generation until the area is paved or otherwise compacted so that dust generation is minimized;

- Grading and scraping operations shall be suspended when wind speeds exceed 20 mph (one hour average);
- Rumble pads (minor road obstructions designed to dislodge accumulated earth material from trucks) with spray washers shall be installed and maintained at all construction entrances;
- All roadways associated with construction activities shall be paved or utilize some other technique to control dust (i.e. water or APCD-approved soil stabilizer); and,
- The contractor or builder shall designate a person or person to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the APCD prior to land use clearance for map recordation and finished grading of the area.

C. CEQA Off-site Mitigation. Project emissions remaining following implementation of the above mitigation measures shall be offset through contribution to an off-site mitigation fund. The fund is managed by the APCD and used to finance regional emission reduction projects such as bikeways, vehicle scrapping programs, diesel bus conversions, agricultural engine replacements and similar activities. Therefore, project emissions would be offset on a regional basis through PXP-funded off-site projects that would result in emissions reductions. Based on past experience, the APCD has determined that $8,500 is required per ton NOx reduced. These funds would be used by the APCD to purchase clean-burning engines and other equipment/facilities that would result in a decrease in emissions in the County. The financial contribution shall be based on offsetting excess emissions (greater than 2.5 tons NOx per quarter) at $8,500 per ton.

b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.

c. **Supportive Evidence** - NOx and fugitive dust emissions can feasibly be reduced below the threshold of significance; therefore, impacts are significant, but mitigable. Please refer to pages 5.2-9 through 5.2-13 of the Final SEIR.

Impact: Fugitive dust generated by construction or relocation/demolition activity may contain asbestos and/or lead and result in exposure of the public to these TACs.

a. **Mitigation** – Mitigation Measure AQ-3:

A. In the event utility pipelines are scheduled for removal or relocation, or building(s) are removed or renovated, the project shall be subject to various regulatory jurisdictions, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M – asbestos NESHAP). These requirements include, but are not limited to: 1) notification requirements to the District, 2) asbestos survey conducted by a Certified Asbestos Inspector, and, 3) applicable removal and disposal requirements of identified ACM.

B. In the event demolition activities are required as part of project construction, a lead work plan shall be prepared and submitted to the APCD for review and approval ten days prior to the start of demolition. Depending on the lead-removal method, an APCD permit may be required. Proof of APCD approval and/or authorization shall be submitted to the County prior to start of demolition.

b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.

c. **Supportive Evidence** – As discussed in the original Phase IV EIR, the project site is located within the Pismo Formation, a sedimentary geologic unit, which is not

expected to include ultramafic or asbestos-containing materials. According to the County Geologist, the potential for encountering asbestos-containing materials is very low. Further, potential health risks associated with handling asbestos and/or lead-based materials during relocation/demolition of existing facilities can be reduced to less than significant; therefore impacts are considered significant, but mitigable. Please refer to page 5.2-14 of the SEIR.

Impact: Due to the high levels of ammonia emissions from the air strippers, the impact of related odors is considered an air quality issue.

a. **Mitigation** – Mitigation Measure AQ-6:
   A. PXP shall incorporate the issue of ammonia odors into the existing Plan referenced in Supportive Evidence below.
b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.
c. **Supportive Evidence** - Per APCD Rule 402, which deals with nuisance, ammonia odors could potentially create a significant impact due to the high levels of emissions predicted by the screening-level HRA. Thus, the air strippers' emissions must be incorporated into the Odor Monitoring and Complaint Response Plan incorporated as part of the Phase IV EIR. This plan included various contingency measures, programs and procedures designed to address detectable odors and chronic odor complaints. If odors associated with ammonia become a monitoring issue, BACT measures such as carbon canisters or scrubbers may be implemented to the satisfaction of the APCD. Please refer to page 5.2-17 of the Final SEIR.

BIOLOGICAL RESOURCES (Class II)

Impact: Construction activities could adversely affect nesting activities of protected migratory birds.

a. **Mitigation** – Mitigation Measure BIO-2: Construction operations shall be conducted prior to the initiation of nesting, or after the completion of nesting to avoid any potential impact to migratory birds. Specifically, the following measures shall be implemented:
   A. Construction operations shall be conducted prior to the initiation of nesting, or after the completion of nesting to avoid any potential impact to migratory birds. Therefore, all clearing, grading, and general construction operations should be conducted between the months of August and March.
   B. If Measure A is infeasible, pre-construction surveys shall be conducted between February 15 and August 15 to identify potential bird and raptor nesting sites:
      - If active nest sites of common bird species protected under the Migratory Bird Treaty Act (e.g., northern mockingbird, house finch, etc.) are observed within the vicinity of the project site, then the project shall be modified and/or delayed as necessary to avoid direct take of the identified nests, eggs, and/or young; and,
      - If active nest sites of raptors and/or species of special concern (e.g., golden eagle, northern harrier, horned lark, etc.) are observed within the vicinity of proposed construction operations, then CDFG shall be contacted to establish the appropriate buffer around the nest site. Construction activities in the buffer zone shall be prohibited until the young have fledged the nest.
   C. The proposed tempering pond shall be designed and constructed with a low permeability material to prevent the growth of vegetation and discourage the use and potential nesting by waterfowl and other bird species protected under the MBTA. This shall include construction of permanent fencing (i.e., chain-link)

around the pond perimeter to prevent debris accumulation and general wildlife use of the structure. In addition, a Tempering Pond Maintenance and Monitoring Plan shall be prepared to ensure that the pond is inspected and maintained for the life of the Produced Water Reclamation Facility. This shall include provisions for periodic maintenance and monitoring of the structure by facility staff to ensure that the pond is free of vegetation and miscellaneous debris that may attract birds and wildlife as necessary through the life of the project.

b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.
c. **Supportive Evidence** - Implementation of this mitigation measure will reduce potential impacts to less than significant levels. Please refer to pages 5.3-35 through 5.3-37 of the Final SEIR.

Impact: Construction activities could adversely affect special-status plant and animal species potentially occurring in the project area.

a. **Mitigation** – Mitigation Measure BIO-3: The following mitigation measures are required to avoid and/or minimize impacts to special-status species known to occur or with the potential to occur within the proposed building envelope for the water reclamation facility, tempering pond, and associated pipeline routes during construction. This includes protective measures to avoid and/or minimize impacts to Pismo clarkia and Well's manzanita during the construction phase of the project:

General Measures:

A. All equipment staging areas and construction-crew parking areas shall be established within the two proposed construction staging areas identified on Figure 3-4. Additionally, all construction access routes shall be established in previously disturbed areas and/or existing roadways;
B. Exclusionary fencing will be erected at the boundaries of construction areas to avoid equipment and human intrusion into adjacent habitats with emphasis on protection of areas containing special-status species. The exact location of exclusionary fencing for each construction area shall be determined by a County-approved biological monitor. The fencing shall remain in place throughout the construction phase for each individual project component;
C. A County-approved biological monitor shall conduct a worker orientation for all construction contractors (site supervisors, equipment operators and laborers) which emphasizes the presence of special-status species within the project site, identification, their habitat requirements, and applicable regulatory policies and provisions regarding their protection, and measures being implemented to avoid and/or minimize impacts;
D. If nighttime construction activities are warranted, all equipment lighting shall be shielded away from adjacent wildlife habitat areas and sky, to the extent feasible while still providing safe working conditions for construction personnel, to minimize lighting/glare impacts of wildlife; and,
E. Mitigation Measure AQ-1 (a dust control program during the construction phase of the project shall be implemented to minimize dust impacts to adjacent vegetation communities and special-status plant species).

Protective Measures for Special-Status Plants:

F. Due to the fluctuation in annual plant populations (i.e., Pismo clarkia), spring botanical surveys shall be conducted annually by a County-approved biologist to update the location of special-status plant species populations on project plans until project construction is complete (as illustrated on Figure 5.3-2 and 5.3-3). Annual botanical survey results and documented fluctuations in populations shall

be added cumulatively to the project plans (i.e., all newly discovered populations shall be added to existing populations documented in previous years). All mapped populations shall be clearly fenced off with exclusionary fencing prior to construction in those areas. If areas supporting Pismo clarkia and/or other sensitive plant species are determined by the County to be unavoidable then seed shall be collected from selected plants in impact areas and utilized to restore habitat within the pre-designated PXP Open Space Easement located directly south of the proposed RO facility within the PXP oil field (see Figure 5.3-4). The designated Open Space Easement was required as Mitigation Measure BIO-6 in the original Phase IV EIR and is currently being utilized as a receiver site for mitigation plantings from Phase IV expansion operations (i.e., oak tree, Well's manzanita, and Pismo clarkia restoration efforts). The Open Space Easement includes approximately 4.5 acres of oak woodland and grassland habitat areas and should be sufficiently sized to handle the additional Pismo clarkia restoration efforts outlined above. However, in the event the existing easement is determined to be insufficiently sized to handle the additional restoration plantings, then an additional Open Space Easement shall be dedicated by PXP for these purposes; and,

G. No Well's Manzanita shall be removed and/or impacted as part of the proposed project. The final project plans shall clearly illustrate the location of all Well's manzanita existing within 25 feet of construction activities. Prior to any construction, grubbing or tree removal, each manzanita within the vicinity of the work areas shall be clearly marked for protection. To further avoid impacts to Well's manzanita located adjacent to proposed pipeline routes and the proposed construction staging area(s), boundaries of all work areas shall be clearly defined and marked with visible flagging and/or orange protective fencing. All construction activities shall remain in existing roadways and pipeline routes. If Well's manzanita is deemed unavoidable during project implementation, then the same measures outlined in BIO-6B of the Phase IV EIR (incorporated here by reference), would be implemented within the designated Open Space Easement to offset manzanita impacts.

Protective Measures for Special-Status Wildlife:

H. A County-approved biologist shall conduct pre-construction surveys to determine presence/absence of California horned lizard within and adjacent to individual well pads containing suitable chaparral and/or scrub habitat. Surveys shall only be required during the active period of California horned lizards (generally April through September). If California horned lizards are identified adjacent to and/or within work areas, then hand rakes or an equivalent shall be utilized by biological monitors to scarify the ground surface and encourage the horned lizards (and other wildlife) to vacate the immediate area prior to construction. Alternatively, sampling composed of drift fences shall be used to capture horned lizards. As necessary, the County-approved biological monitor shall physically relocate California horned lizard to suitable habitat located outside the construction zone. Exact procedures and protocols for relocation shall be based upon pre-project consultation with CDFG;

I. A County-approved biological monitor shall be on-site during all vegetation clearing and shall periodically monitor the project site during construction activities to inspect protective fencing, equipment staging areas, and physically relocate/remove any special-status wildlife species entering the construction zone (i.e., California horned lizard, etc.). All special-status species shall be relocated to suitable habitat located outside the construction zone by a qualified biologist. Exact procedures and protocols for relocation shall be based upon pre-project consultation with CDFG; and,

J. Mitigation Measure BIO-2 (nesting bird surveys shall be conducted between

February 15 and August 15 to identify nest sites of special-status bird species including American peregrine falcon, horned lark, northern harrier, and Cooper's hawk).

b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.
c. **Supportive Evidence** - Implementation of this mitigation measure will reduce potential impacts to special-status species to less than significant levels. Please refer to pages 5.3-37 through 5.3-45 of the Final SEIR.

Impact: Construction activities could result in direct and indirect impacts to special-status species potentially occurring within the proposed tempering pond and Pismo Creek and associated tributaries.

a. **Mitigation** – Mitigation Measure BIO-4: The following mitigation measures are recommended to avoid and/or minimize impacts to special-status species known to occur or with the potential to occur within the proposed tempering pond and the Pismo Creek watershed:
   A. Construction of the proposed tempering pond and outfall at Pismo Creek including clearing and grubbing of vegetation shall be limited to the dry season (i.e., April 15 to Oct. 15);;
   B. The proposed outfall structure shall be designed to minimize impacts to the existing willow scrub habitat of Pismo Creek to the greatest extent feasible. Specifically, this shall include placement of the structure within a pre-disturbed area (i.e., existing rip-rap bank) located downstream of the "Hyla Crossing" near an existing pipe bridge. Additionally, the final design of the outfall shall include a series of 20- to 30-foot long discharge pipes positioned at appropriate intervals along the creek bank to further minimize the footprint of impact to habitat along the creek bank;
   C. All existing downed woody debris and willow cuttings removed during construction of the outfall shall be placed and/or stockpiled in natural clumps on nearby creek banks to ensure no net loss of habitat for wildlife including special-status species;
   D. PXP shall prepare and implement a Spill Contingency Plan that includes provisions for avoiding and/or minimizing impacts to Pismo Creek due to spills during construction of the proposed outfall. Specifically, the plan shall include an overview of the secondary containment structures to be installed along the toe of the creek bank to prevent discharge of concrete and gunite into the stream channel during construction operations. Further, the plan shall outline the response equipment that will be on-site during construction and procedures for responding to any inadvertent spills within the creek or surrounding areas including miscellaneous fuel and/or lubricant spills from construction equipment and vehicles during operations. Final specifications of the Spill Contingency Plan shall be reviewed and approved by the County and CDFG prior to project implementation;
   E. All construction activities within a 100-foot buffer of Pismo Creek shall be monitored by a qualified biologist on a full-time basis or at a frequency deemed necessary by a qualified biologist in consultation with the appropriate regulatory agencies. The biological monitor shall conduct pre-construction surveys for special-status wildlife species (e.g., southwestern pond turtle, two-striped garter snake, Calif. red-legged frog, etc.), maintain protective fencing, inspect equipment staging areas, and, as necessary, physically relocate/remove any special-status wildlife species entering the construction zone,
   F. Mitigation Measures BIO-3A-E (General Protective Measures for Biological Resources); and,

G. Mitigation Measure BIO-2 (nesting bird surveys shall be conducted between February 15 and August 15 to identify nest sites of special-status bird species including yellow warbler, southern willow flycatcher, and Cooper's hawk).

b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.

c. **Supportive Evidence** - Implementation of this mitigation measure will reduce potential impacts to special-status species to less than significant levels. Please refer to pages 5.3-45 through 5.3-47 of the Final SEIR.

Impact: Development of the produced water reclamation facility will result in the removal of up to 26 coast live oak trees and an additional six oak trees could be impacted by proposed activities.

a. **Mitigation** – Mitigation Measure BIO-5: The following mitigation measures are recommended to mitigate impacts to oak trees due to project implementation. This includes protective measures to avoid and/or minimize impacts to oak trees designated for long-term preservation:

A. Mitigation Measures BIO-3A-E (General Protective Measures for Biological Resources);

B. Prior to construction, a Supplemental Habitat Enhancement Plan containing site-specific oak tree protection and replacement procedures shall be prepared for the project. The Supplemental Habitat Enhancement Plan shall tier off of the previously developed Habitat Enhancement Plan established per mitigation measure BIO-5 of the original Phase IV EIR and clearly outline the procedures for protecting oak trees to remain in place during construction and provide details for replacing oak trees that are removed at a 4:1 ratio and those impacted at a 2:1 ratio. Final specifications of the Supplemental Habitat Enhancement Plan shall be approved by the County and CDFG prior to construction. At a minimum, the plan shall contain the following provisions:

- Utilizing the oak tree survey data collected in 2007, final project plans shall clearly illustrate the size and location of all oak trees to be removed as part of the project and all oak trees to remain within 25 feet of construction activities. Prior to any construction, grubbing or tree removal, each mature coast live oak tree within the vicinity of the proposed impact area shall be clearly marked for removal or protection;
- Protective fencing shall be installed around each oak tree to remain in place with emphasis on the six mature oak trees located along the perimeter of the proposed Produced Water Reclamation Facility. The fencing shall be installed prior to grubbing/construction and provide protection of the root zone of oak trees (the outer edge of the tree root zone is 1-1/2 times the distance from the trunk to the drip line of the tree);
- To further protect oak trees to remain in place, a certified arborist shall be retained by the applicant to perform any necessary trimming of oak tree limbs overhanging equipment access routes. This shall be conducted prior to allowing construction equipment to enter the proposed impact area to avoid and/or minimize the potential for inadvertent damage to oak trees limbs (i.e., equipment, vehicles, etc.);
- Replacement oak trees shall be from vertical tubes or deep, one-gallon container stock;
- Replanting shall be completed in the fall season upon completion of grading within a given area and by a qualified individual familiar with native vegetation;
- Location of newly planted oak trees shall adhere to the following whenever possible: on the north side of and at the canopy/dripline edge of existing

mature native trees; north-facing slopes; within drainages swales; where topsoil is present; and if clustered, at least 10' "on-center" separation between each tree. Tree spacing will average approximately 15 feet on-center. Some clustering is acceptable to maintain a more natural appearance; and,

- Newly planted trees shall be maintained until successfully established. This shall include protection (e.g., caging, tree shelters) from burrowing and browsing animals (e.g., deer, rodents), regular weeding (minimum of once early fall and once early spring) of at least a 3-foot radius around the plant base and adequate watering (i.e., drip irrigation system). Heavy mulching consisting of local oak leaf litter/mulch so seedlings are exposed to local mycorrhizal fungi to enhance survivability and growth is also recommended. Irrigation shall be slowly terminated over a 3-year period. If possible, planting during the warmest, driest months (June through September) shall be avoided. Replacement oak trees identified as dead and/or diseased during the monitoring period shall be replaced accordingly.

C. Mitigation Measure BIO-2 (the tree removals shall be conducted as to avoid a take of raptors or migratory birds).

b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.

c. **Supportive Evidence** - Implementation of the above listed mitigation measure will reduce project impacts to oak trees to less than significant levels. Please refer to pages 5.3-47 through 5.3-49 of the Final SEIR.

Impact: The proposed Produced Water Reclamation Facility will result in the permanent loss and/or long-term degradation and fragmentation of natural habitats, which provide forage, cover, and breeding elements for a wide variety of wildlife species, including several special-status species.

a. **Mitigation** – Mitigation Measure BIO-6: The following measures shall be implemented to compensate for the actual permanent loss of vegetation resulting from project implementation and potential long-term degradation of adjacent habitat areas from projected long-term utilization of the site:

A. Prior to construction, an area within the previously dedicated PXP Open Space Easement shall be set aside to accommodate the required oak replacement (estimated at 104 total) and Pismo clarkia plantings (BIO-3 and BIO-5). If the available area within the existing open space easement is not sufficient to accommodate all of the required oak tree and Pismo clarkia plantings additional mitigation areas containing suitable habitat shall be identified by the applicant and dedicated as supplemental open space easement areas. These areas should contain a representative mixture of oak woodland and annual grassland with known populations of Pismo clarkia. Final specifications of any additional dedicated easement areas (size and location) shall be reviewed and approved by the County and CDFG prior to construction. In addition, future equipment staging areas, access routes, and additional well pads shall be prohibited in the dedicated easement areas;

B. Provision B of Mitigation Measure BIO-5 (Supplemental Habitat Enhancement Plan) shall also contain measures to offset additional impacts to Pismo clarkia and oak woodland within the dedicated easement area. Specifically, the Supplemental Habitat Enhancement Plan shall include species lists, installation and maintenance methods, performance criteria, and monitoring protocols for enhancing existing habitats within the dedicated easement area. At a minimum, the plan shall contain the following additional provisions:

- Procedures to further mitigate permanent loss of California live oak woodland by augmenting existing oak woodland habitat within the dedicated easement with a portion of the required 4:1 ratio oak tree plantings;
- Planting of Pismo clarkia as required by Mitigation Measure BIO-3 shall occur within selected areas (if loss is deemed unavoidable by the County) of the dedicated easement to augment existing populations, concentrating the majority of seed dispersal along the northeastern perimeter of the existing oak woodland habitat;
- Installation of all replacement planting and/or seed dispersal shall be conducted within the appropriate season to promote survivability (i.e., fall/winter). If possible, planting during the warmest, driest months (June through September) shall be avoided;
- Shall provide procedures to ensure eradication of exotic plant species (i.e., pampus grass, tree tobacco, etc.) within the dedicated easement. This shall include provisions for controlling the spread of exotic species throughout the project area; and,
- Shall provide an implementation schedule which emphasizes initiation of the Habitat Enhancement Plan within the 1st year of improvements authorized under this approval. The schedule shall outline the sequencing of all mitigation planting and timing for long-term monitoring and maintenance of the dedicated open space easement through the life of the project.

C. To offset approximately 0.62-acre of state wetland impacts due to construction of the proposed tempering pond, PXP shall either develop a compensatory wetland mitigation plan which outlines procedures for restoring wetland habitat on-site in-kind (i.e., bulrush-cattail series) or pay an in-lieu fee as directed by the County into a designated wetland restoration fund.

D. To avoid further impacts to state-designated wetland habitat areas, the proposed water reclamation facility and tempering pond shall be modified to avoid impacts to the wetland features mapped on Figure 5.3.-3 and in Appendix E - Wetland Assessment. This shall include the following provisions:
   - A 10-foot buffer measured outward from the edge of the seasonal wetland swale and riparian woodland (i.e., willows) shall be preserved in a natural vegetation state. This includes the seasonal freshwater wetland, riparian woodland, and roadside drainage located along the southeastern corner of the currently proposed water reclamation facility site plan as well as the riparian woodland habitat located along the southeastern corner of the proposed tempering pond. This measure shall not apply to the three man-made storm water conveyance structures/ponds (0.07-acre) located along the southeastern corner of the proposed reclamation facility, and;
   - Wetlands and setback areas shall be temporarily fenced with silt fencing and orange protective fencing during construction to minimize and/or avoid inadvertent impacts due to temporary construction related erosion and sedimentation.

E. To offset approximately 0.01-acre of riparian woodland impacts due to installation of the proposed outfall structure, PXP shall prepare a Compensatory Mitigation Plan which outlines the procedures for restoring willow habitat removed due to project implementation at a 3:1 ratio with emphasis on habitat enhancement. The plan shall clearly identify planting areas within and adjacent to the proposed impact area in addition to the performance criteria for re-establishing willow habitat within Pismo Creek. The plan shall be approved by the County, CDFG, RWQCB, and Corps prior to project implementation.

F. Mitigation Measure AQ-1 (a dust control program during the construction phase of the project shall be implemented to minimize dust impacts to adjacent wetland communities);
G. Mitigation Measure HYD-1 (in compliance with the Land Use Ordinance, the applicant will prepare and implement a Sediment and Erosion Control Plan (SECP) which will outline procedures for stabilizing the site and minimizing sedimentation and erosion impacts to adjacent wetland habitat areas);

b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.
c. **Supportive Evidence** - Implementation of the above listed measures will reduce long-term project impacts to natural habitats supporting special-status species to less than significant levels. Please refer to pages 5.3-49 through 5.3-53 of the Final SEIR.

Impact: Development of the proposed the Produced Water Reclamation Facility could result in the permanent loss of wetlands regulated by the Corps under Section 404 of the Clean Water Act.

a. **Mitigation** - Mitigation Measure BIO-7: The following measures shall be implemented to avoid impacts to Pismo Creek tributaries, compensate for the permanent loss of waters of the U.S. resulting from installation of the proposed outfall structure and potential long-term degradation of adjacent federal wetland habitat areas from projected long-term utilization of the site as required by the Corps (M. Vandersande, Corps, pers. comm., 2007):
   A. In the event that no pipe racks exist along the existing roadways at tributary crossings and excavation of the roadway base material would require removal and/or replacement of existing road culvert(s), then a jack-and-bore technique would implemented for pipeline installation to ensure that no impacts occur to the subject drainages.
   B. Mitigation Measure BIO-6 (avoidance and minimization measures for protection of wetland habitat features and development of Compensatory Mitigation Plan for Pismo Creek [BIO-6E]); and,
   C. The applicant shall obtain a permit from the U.S. Army Corps of Engineers pursuant to 404 of the Clean Water Act, Water Quality Certification from the Regional Water Quality Control Board pursuant to 401 of Clean Water Act and a Streambed Alteration Agreement or waiver from the California Department of Fish and Game pursuant to Section 1600 et seq. of the California Fish and Game Code for placement of permanent structures along Pismo Creek (i.e., fill activities) including trimming/removal of riparian vegetation. As part of the permitting process, PXP shall be required to provide the Compensatory Mitigation Plan (Mitigation Measure BIO-6E) to the Corps and RWQCB for review and approval prior to permit issuance. As part of this process, the agencies may require a higher mitigation ratio and/or include additional performance criteria in the form of special permit conditions. All agency permits and the Final Compensatory Mitigation Plan shall be submitted to the County prior to issuance of grading permit.
b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.
c. **Supportive Evidence** - Implementation of the above listed measures will reduce potential impacts to wetland habitat areas to less than significant levels. Please refer to pages 5.3-53 through 5.3-55 of the Final SEIR.

Impact: Operation of the proposed Produced Water Reclamation Facility could result in long-term direct and indirect impacts to special-status species potentially occurring within Pismo Creek and the Pismo Creek Estuary.

a. **Mitigation** - Mitigation Measure BIO-8: The following measures shall be implemented to offset potential impacts to special-status species potentially occurring within Pismo Creek and the Pismo Creek Estuary due to long-term operation of the proposed Produced Water Reclamation Facility:
   A. PXP shall obtain appropriate approvals and/or authorizations from the NMFS and USFWS to discharge treated water into Pismo Creek per Section 7 of the ESA. If deemed necessary by NMFS, this shall include preparation of an Essential Fish Habitat Analysis per the Magnuson-Stevens Fishery Conservation and Management Act. All conditions and/or specified recommendations from these agencies to afford maximum protection of special-status species known to occur in Pismo Creek including temperature requirements (e.g., steelhead, tidewater goby, California red-legged frog) shall be adhered to and implemented as part of the project. Approvals and/or authorizations from these agencies shall be provided to the County for review prior to issuance of grading permit;
   B. Mitigation Measure HYD 4A and 4B (PXP shall obtain an NPDES permit from the RWQCB the requirements of which shall be fully implemented including waste discharge limitations, and monitoring and reporting requirements. During plant operations, the applicant shall report phenol concentrations in effluent samples indicated above the method detection limits but less than quantitation limits. At such a time that laboratory analytical methods allow for lower quantitation limits, the applicant shall report phenol concentrations to the RWQCB to ensure compliance with the RWQCB's water quality standards);
   C. Mitigation Measure HYD 5 (water treatment system shall be constructed with sufficient holding capacity to contain water that fails to meet water quality per the NPDES permit or other agency permit conditions so that water not meeting specifications is not released to Pismo Creek);
   D. To mitigate potentially significant impacts to steelhead and other special-status species due to increased water temperatures within Pismo Creek, PXP shall prepare a Stream Monitoring Plan for the proposed water reclamation facility. The Plan shall be prepared for County and NMFS review and approval prior to project implementation and shall contain at a minimum the following provisions:
      - Identification of permanent temperature monitoring stations within Pismo Creek both upstream and immediately downstream of the proposed discharge location. The upstream location shall be utilized to determine baseline stream temperature conditions of Pismo Creek and downstream shall be utilized as a temperature control station;
      - The monitoring stations shall consist of HOBO continuous temperature recorders or an equivalent to allow automatic stream temperature measurements at approximate 2-hour intervals;
      - DO levels shall also be monitored at the designated stations on a periodic basis (to be defined in the Plan) utilizing appropriate water quality sampling equipment. If deemed necessary, additional features shall be installed to the treatment system and/or along the splash pad to increase oxygenation of the discharge water;
      - The Plan shall identify the procedures and schedule for stream temperature data collection and reporting requirements which will be utilized to determine the maximum discharge water temperature from the water reclamation facility to ensure compliance with the RWQCB Basin Plan and NMFS requirements throughout the life of the project (i.e., at no time shall the temperature of receiving waters be increased by more than 5°F). This shall include modifying water temperatures accordingly

throughout the year to coincide with seasonal fluctuations of Pismo Creek;

- The Plan shall include maintenance and inspection procedures to ensure that the temperature monitoring stations are periodically serviced and/or replaced, as necessary throughout the life of the project. This shall include inspections after significant storm events to ensure that the stations are not dislodged and/or damaged by storm flows and debris; and,
- The Plan shall include a reporting schedule that provides quarterly monitoring reports to the County and the RWQCB. The Plan shall also contain provisions for the immediate reporting of upset conditions to the County and RWQCB.

E. To mitigate potentially significant impacts to steelhead due to stranding during periodic maintenance events, emergency shut-downs, and transfer of water to adjacent landowners, PXP shall prepare a Steelhead Stranding Plan for the proposed water reclamation facility. Per NMFS requirements, the Plan shall clearly outline a series of steelhead stranding avoidance measures that shall be adhered to for the life of the facility. The Plan shall be prepared for County and NMFS review and approval prior to project implementation and shall contain at a minimum the following provisions:

- An analysis of the expected flow fluctuations of Pismo Creek in conjunction with the Water Reclamation Facility at the time of shutdown and/or water transfers;
- Development and implementation of a steelhead monitoring program with emphasis on habitat areas downstream of the facility to provide baseline estimates of steelhead populations within the vicinity of the facility and periodically thereafter as deemed necessary by the NMFS;
- Identification of all factors affecting steelhead stranding potential including but not limited to changes in wetted width with modifications in stream flows and stranding potential in side channels;
- Recommendations for appropriate ramping rates to ensure that the water discharge rate is decreased slowly over a long-duration to prevent to the extent feasible steelhead stranding with emphasis on fry and juveniles;
- Monitoring program during extended temporary shut-ins and emergencies which outlines procedures for qualified biologists to monitor pools and stream channels downstream of the facility and relocate stranded steelhead to suitable habitat areas. The extent of areas within and/or downstream of the PXP property to be monitored for potential steelhead stranding shall be determined as part of the analysis and include a map identifying approximate locations of likely habitat areas (i.e., pools) and distances downstream. Information on relocation sites and estimated steelhead mortalities shall be provided to NMFS and the County in comprehensive monitoring reports; and,
- To mitigate potential impacts to steelhead due to stranding and/or relocation through the life of the project (i.e., worst case scenario), the Plan shall include several mitigation options such as implementation of creek habitat restoration projects within the PXP facility and/or provisions for monetary compensation to fund high priority projects identified within the Pismo Creek Watershed Plan and adjacent watersheds. Mitigation options, if required, would be commensurate to the level of impact (i.e., installation of a series of root wads to enhance steelhead production). Maximum monetary compensation amounts shall be provided in the Plan and agreed upon by all parties prior to Plan approval.

b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.
c. **Supportive Evidence** - Implementation of the above listed measures will reduce potential long-term impacts to special-status species of Pismo Creek to less than significant levels. Please refer to pages 5.3-55 through 5.3-61 of the Final SEIR.

Impact: Termination of the PXP Arroyo Grande oil field and eventual decommissioning of the proposed Produced Water Reclamation Facility could result in significant impacts to steelhead populations potentially occurring within Pismo Creek.

a. **Mitigation** - Mitigation Measure BIO-9: The following measures shall be implemented to offset potential impacts to steelhead populations established within Pismo Creek due to decommissioning of the Produced Water Reclamation Facility:
   A. At the time PXP determines to decommission the Produced Water Reclamation Facility, PXP shall be required to obtain formal approval and/or authorization from the County and NMFS. As part of the decommissioning request, PXP shall conduct a complete assessment of all baseline parameters for the existing steelhead population and their associated habitat within Pismo Creek. This shall include a detailed summary of the steelhead monitoring data required as part of BIO-8E and development of a Habitat Suitability Index (HIS) for the lower 4 miles of Pismo Creek which would be potentially impacted by removal of the artificial water supply from the creek system;
   B. In the event it is determined by NMFS and the County after review of the data that removal of the facility would result in a significant impact to the existing Pismo Creek steelhead population, then PXP shall submit a Steelhead Habitat Mitigation Plan (Plan) to the County and NMFS for review and approval prior to approval of facility decommissioning. The Plan shall be prepared in accordance with the most current California salmonid habitat restoration techniques and identify a series of creek habitat restoration projects that will be completed by PXP over a specified time period to enhance the existing breeding and over-summering habitat within Pismo Creek (i.e., creation of pools, etc.) and/or an adjacent watershed, such as Arroyo Grande Creek. The Plan shall focus on restoration of the portion of Pismo Creek located within the PXP Arroyo Grande oil field or within a comparable section of Arroyo Grande Creek and include, as necessary, replacement of any dilapidated road crossings and associated culverts that may be acting as fish barriers. Again, mitigation options, if required, would be commensurate to the level of impact. Alternatively, the Plan can include provisions for monetary compensation to fund high priority projects identified within other portions of the Pismo Creek and/or Arroyo Grande Watersheds. Maximum monetary compensation amounts shall be provided in the Plan and agreed upon by all parties prior to Plan approval. Monetary compensation can be provided as mitigation anytime prior to decommissioning of the facility at the discretion of PXP.
b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.
c. **Supportive Evidence** - Implementation of the above listed measures will reduce potential long-term impacts to steelhead due to facility decommissioning to less than significant levels. Please refer to pages 5.3-63 through 5.3-65 of the Final SEIR.

GEOLOGY AND SOILS (Class II)

Impact: Construction of new graded pads and proposed detention pond modifications could result in unstable slopes prone to failure during a seismic event.

a. **Mitigation** – Mitigation Measure GEO-2: The applicant shall provide the County with a geotechnical engineering report prepared and certified by a State of California licensed geotechnical engineer which addresses slope stability, landslides, liquefaction, settlement, seismic hazards, and expansive soils at the area of proposed facilities. The applicant shall implement the recommendations contained in the geotechnical engineer's report in preparation of grading plans and during construction.
b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.
c. **Supportive Evidence** - No significant residual impacts are anticipated with implementation of the mitigation measure presented above. Please refer to page 5.4-8 of the SEIR.

HYDROLOGY AND WATER QUALITY

Impact: Construction of the proposed project could result in short-term increases in erosion and sedimentation resulting from earth-moving operations and exposed soils.

a. **Mitigation** – Mitigation Measure HYD-1:
   A. In compliance with the Land Use Ordinance, the applicant will prepare and implement a Sediment and Erosion Control Plan (SECP) for the proposed project. The SECP will include:
      - Slope surface stabilization measures, such as temporary mulching, seeding, and other suitable stabilization measures to protect exposed erodible areas during construction, and installation of earthen or paved interceptors and diversion at the top of cut of fill slopes where there is a potential for erosive surface runoff;
      - Erosion and sedimentation control devices, such as energy absorbing structures or devices, will be used, as necessary, to reduce the velocity of runoff water to prevent polluting sedimentation discharges;
      - Installation of mechanical and/or vegetative final erosion control measures within 30 days after completion of grading;
      - Confining land clearing and grading operations to the period between April 15 and October 15 to avoid the rainy season consistent with the County Land Use Ordinance and SWPPP requirements;
      - Minimizing the land area disturbed and the period of exposure to the shortest feasible time;
      - The SECP will be prepared in accordance with the Land Use Ordinance; and,
      - Install long-term drainage devices at new/modified pads, including headwalls, basins, culverts with down-drains and energy dissipating devices (riprap or diffusers).
   B. In compliance with Section 23.05.020 – Grading, the applicant will prepare a grading plan for the project.
   C. PXP will comply with the requirements under a general stormwater construction permit. Such requirements will include preparation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP shall include provisions for the installation and maintenance of Best Management Practices to reduce the potential for erosion of disturbed soils at the Project site.
b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.
c. **Supportive Evidence** – The proposed project will be required to comply with the provisions of the County Land Use Ordinance (i.e., SECP) and the requirements of

the general stormwater construction permit (i.e., SWPPP). Collectively, implementation of these measures will reduce erosion and sedimentation impacts from construction activities to less than significant levels. Please refer to pages 5.5-9 through 5.5-10 of the Final SEIR.

Impact: The proposed project could result in water discharges that exceed water quality objectives of the Central Coast Water Quality Control Plan or the California Toxics Rule.

a. **Mitigation** – Mitigation Measure HYD-4:
   A. Prior to operation, the applicant shall obtain an NPDES permit from the RWQCB. The requirements of the Permit shall be fully implemented including waste discharge limitations, and monitoring and reporting requirements.
   B. During plant operations, the applicant shall report phenol concentrations in effluent samples indicated above the method detection limits but less than quantitation limits. At such a time that laboratory analytical methods allow for lower quantitation limits, the applicant shall report phenol concentrations to the RWQCB to ensure compliance with the RWQCB's water quality standards.
   Also refer to Mitigation Measure BIO-8 regarding proposed mitigation measures to ensure temperature and dissolved oxygen concentrations due not exceed ranges required for sensitive aquatic species.
b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.
c. **Supportive Evidence** - The proposed project would be required to comply with applicable federal and state water quality standards regulated under the National Pollutant Discharge Elimination System (NPDES), which would ensure any discharges do not violate water quality objectives. However, to ensure compliance with NPDES regulations additional mitigation consisting of reporting requirements for phenol is being required to further reduce water quality impacts to less than significant levels. Please refer to pages 5.5-11 through 5.5-14 of the Final SEIR.

Impact: An upset condition at the water treatment facility could result in the release of water not meeting water quality standards into Pismo Creek.

a. **Mitigation** – Mitigation Measure HYD-5: The proposed water treatment system shall be constructed with sufficient holding capacity to contain water that fails to meet water quality per the NPDES permit or other agency permit conditions so that water not meeting specifications is not released to Pismo Creek.
b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.
c. **Supportive Evidence** - The proposed project would include water quality monitoring devices that record water quality parameters and alarms for significant changes in water quality. Please refer to page 5.5-14 of the Final SEIR.

HAZARDS AND HAZARDOUS MATERIALS (Class II)

Impact: Operation of the proposed water treatment facilities would include the use of hazardous chemicals which could potentially impact the project site, Price Canyon Road, and potentially Pismo Creek if ruptured during an upset condition.

a. **Mitigation** – Mitigation Measure HAZ-1: Prior to system start-up, the applicant shall submit an amended Hazardous Materials Business Plan to the San Luis Obispo Division of Environmental Health for review and approval.

b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.
c. **Supportive Evidence** – Implementation of the above measure would reduce potential impacts associated with hazardous chemicals stored at the facility to less than significant. Please refer to pages 5.6-5 through 5.6-6 of the Final SEIR.

Impact: Petroleum hydrocarbon-containing soil may be encountered during project construction activities.

a. **Mitigation** – Mitigation Measure HAZ-2A: The applicant shall complete an environmental site assessment of areas to be utilized for the proposed project to determine whether the project site has been impacted with petroleum or hazardous substances. The site assessment work plan shall be prepared by a registered professional and submitted to the SLODEH for review and approval prior to implementation. The site assessment activities shall include the advancement of drill holes and collection of soil and, if contamination is present, groundwater samples for chemical analyses. A site assessment report shall be submitted to SLODEH for review and approval. If necessary, a corrective action plan shall be submitted to SLODEH for the proper management of contaminated soil and groundwater that may be disturbed as part of the proposed project grading activities. Corrective actions shall be completed at the project site to the satisfaction of SLODEH prior to implementation of the proposed grading activities. Corrective actions, other than compliance with the RWQCB's beneficial reuse provisions for crude oil-containing soil excavated during the course of project construction activities, shall not be required for naturally-occurring petroleum hydrocarbon containing soils present at the project site.

   Mitigation Measure HAZ-2B: Should hydrocarbon contaminated soil be encountered during construction activities, the APCD must be notified as soon as possible and no later than 48 hours after affected material is discovered to determine if an APCD Permit would be required. In addition, the following measures shall be implemented immediately after contaminated soil is discovered:
   - Covers on storage piles shall be maintained in place at all times in areas not actively involved in soil addition or removal;
   - Contaminated soil shall be covered with at least six inches of packed uncontaminated soil or other TPH -non-permeable barrier such as plastic tarp. No headspace shall be allowed where vapors could accumulate;
   - Covered piles shall be designed in such a way to eliminate erosion due to wind or water. No openings in the covers are permitted;
   - During soil excavation, odors shall not be evident to such a degree as to cause a public nuisance; and,
   - Clean soil must be segregated from contaminated soil.

   Crude oil-containing soil excavated during the course of project construction activities shall be handled and reused on-site in accordance with the RWQCB's Beneficial Reuse Order #R3-2005-005. The notification and permitting determination requirements shall be directed to Karen Brooks of the APCD Enforcement Division at (805) 781-5912.
b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.
c. **Supportive Evidence** - With implementation of the mitigation measure presented above, impacts associated with petroleum hydrocarbon-containing soils encountered during construction are anticipated to be less than significant. Please refer to page 5.6-6 through 5.6-7 of the Final SEIR.

Impact: Location of the project within a high fire hazard could result in additional fire risk for the project area.

a. **Mitigation** – Mitigation Measure HAZ-3A: The applicant shall submit a Fire Hydrant System plan to County/CALFIRE for approval prior to construction. This plan shall be implemented before construction commences.
   Mitigation Measure HAZ-3B: The applicant shall submit a vegetation management plan to County/CALFIRE for approval prior to issuance of construction permits. This would identify measures to minimize the risk of wildfires due to operation of existing and proposed facilities. It would also make recommendations for protection of such facilities from a wildfire.
b. **Findings** - Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment to a level of insignificance.
c. **Supportive Evidence** - With implementation of the mitigation measure presented above, impacts associated with increased fire hazards within the project area are anticipated to be less than significant. Please refer to pages 5.6-7 through 5.6-8 of the Final SEIR.

FINDINGS FOR IMPACTS IDENTIFIED AS SIGNIFICANT AND UNAVOIDABLE (Class I)

No impacts were identified that were significant and unavoidable.

STATEMENT OF OVERRIDING CONSIDERATIONS

Findings pursuant to CEQA Guidelines sections 15093 and 15092.

The project has no significant, unmitigable, unavoidable adverse effects; therefore, no Statement of Overriding Considerations is required.

CEQA GENERAL FINDINGS

A. The Planning Commission finds that changes or alterations have been incorporated into the project to mitigate or avoid significant impacts to the greatest degree practicable. These changes or alterations include mitigation measures and project modifications outlined herein and set forth in more detail in the PXP Produced Water Treatment Facility Final SEIR.
B. The Planning Commission finds that the project as approved includes an appropriate Mitigation Monitoring Program. This mitigation monitoring program ensures that measures that avoid or lessen the significant project impacts, as required by CEQA and the State CEQA Guidelines, will be implemented as described.

MITIGATION MONITORING PROGRAM

Per CEQA (Section 21081.6), the County "shall adopt a reporting or monitoring program for the changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation".

TO: COUNTY CLERK
COUNTY OF SAN LUIS OBISPO
1055 MONTEREY STREET, STE D120
SAN LUIS OBISPO, CA 93408

(ENDORSED)
FILED
OCT 10 2008
JULIE L. RODEWALD COUNTY CLERK
BY Annie Ramirez
DEPUTY CLERK

FROM: ELLEN CARROLL
ENVIRONMENTAL COORDINATOR
COUNTY PLANNING & BUILDING DEPT.
COUNTY GOVERNMENT CENTER
SAN LUIS OBISPO, CA 93408

(County Clerk Use – Received file date stamp)

SUBJECT: FILING OF NOTICE OF DETERMINATION IN COMPLIANCE WITH SECTION 21108 OR 21152 OF THE PUBLIC RESOURCES CODE

PROJECT TITLE: Plains Exploration and Production Company - Produced Water Reclamation Facility Project

STATE CLEARINGHOUSE NUMBER: SCH# 2007051143

LEAD AGENCY: COUNTY OF SAN LUIS OBISPO
COUNTY PLANNING & BUILDING DEPARTMENT
976 OSOS STREET, ROOM 300
SAN LUIS OBISPO, CA 93408-2040

LEAD AGENCY CONTACT PERSON: Murry Wilson **TELEPHONE**: (805) 788-2352

PROJECT LOCATION: Arroyo Grande; San Luis Obispo County, California

PROJECT DESCRIPTION: Request by Plains Exploration and Production Company for a Conditional Use Permit to allow a for the construction of a produced water reclamation facility at their Arroyo Grande Oil Field including the following components: construction of a 20,000 barrel per day (2.5 acre feet per day or 840,000 gallon per day) water treatment / reclamation facility including five water tanks, three air stripping towers, two heat exchangers, construction of water transmission pipelines, creation of

tempering ponds within an existing dry pond, relocation of existing pipelines within the proposed footprint of the water treatment / reclamation facility including a new flare location, placement of a reclaimed water outfall structure on an existing rip-rap bank along Pismo Creek, an approximately 100 foot by 150 foot construction staging area and associated grading activities. The project will also include reuse of treated water in the oil field, introduction of treated water into Pismo Creek via the proposed water outfall structure and disposal of rejected water from the reverse osmosis treatment via existing onsite injection wells. The project will result in the disturbance of approximately 5.6-acres, and lies primarily within the 320-acre Arroyo Grande Oil Field, which is part of the larger 1,480-acre project site. The three 70-foot air stripping towers will require a waiver of the 35-foot height limit of the Land Use Ordinance.

ACTION BY THE BOARD OF SUPERVISORS:

On September 23, 2008, the Board of Supervisors certified the Environmental Impact Report for the Plains Exploration and Production Company - Produced Water Reclamation Facility.

This is to advise that the Board of Supervisors of the County of San Luis Obispo as Lead Agency has approved the above-described project by the adoption of Resolution #2008-311 on September 23, 2008 , and has made the following determination regarding the above-described project:

1. The project will not have a significant effect on the environment.
2. ☒A Subsequent Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   ☐ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures were made as condition of the approval of the project.
4. A Statement of Overriding Considerations was not adopted for this project
5. Findings were made pursuant to the provisions of CEQA.

The Subsequent Environmental Impact Report (with comments and responses) and record of project approval may be examined at:

County Clerk's Office
County of San Luis Obispo
1055 Monterey Street, Suite D120
San Luis Obispo, CA 93408

County Planning & Building Department
976 Osos St., Rm 200
San Luis Obispo, CA 93408-2040

Date received for filing at OPR:

ATTACH CDFG FEE FORM

Environmental Document Filing Fee

SAN LUIS OBISPO COUNTY DEPARTMENT OF PLANNING AND BUILDING
976 OSOS STREET • ROOM 200 • SAN LUIS OBISPO • CALIFORNIA 93408 • (805) 781-5600

Promoting the Wise Use of Land • Helping to Build Great Communities

Lead Agency: County of San Luis Obispo Date: 9/23/2008

County: San Luis Obispo Project No. DRC2005-00252

Project Title: Conditional Use Permit

Project Applicant

Name: Plains Explortion and Production

Address: 5640 South Fairfax Avenue

City, State, Zip Code: Los Angeles, CA, 90056

Telephone #: 323-298-3266

Action Taken

☐ The CDFG environmental filing fee was collected previously for this project and no additional fee is necessary. Please attach copy of environmental filing fee payment receipt from County Clerk's Office and indicate project name and number if it differs from current project.

Project Name _____

Project Number _____

☒ This project will have an effect on fish and wildlife resources. Therefore, the applicant will be assessed an environmental filing fee pursuant to section 711.4 of the California Fish and Game Code. The California Environmental Quality Act (Section 21089) provides that this project is not operative, vested or final until the filing fee is paid.

The applicant shall remit the following amount to the **County Clerk-Recorder:**

(X) Environmental Impact Report	$2,606.75
( ) Negative Declaration	$1,876.75
( ) Certified Regulatory Program (PRC Section 21080.5)	$886.25
(X) Clerk's Fee	$25.00
Total amount due	**$2631.75**
AMOUNT ENCLOSED:	$2631.75

Important Filing Notes:

1) Checks should be made out to the "**County of San Luis Obispo**". Payment must be received by the County Clerk, 1055 Monterey Street, Room D-120, San Luis Obispo, CA 93408-2040.

2) Filing of the Notice of Determination (NOD) for the attached environmental document requires a filing fee in the amount specified above. If the fee is not paid when required, the NOD cannot be filed. Filing of the NOD reduces the legal filing period from 180 to 30 days. CEQA requires the Negative Declaration/EIR to be filed within 5 days of project approval.

CDFG filing fee letter
CDFG Env Filing Fee Procedures