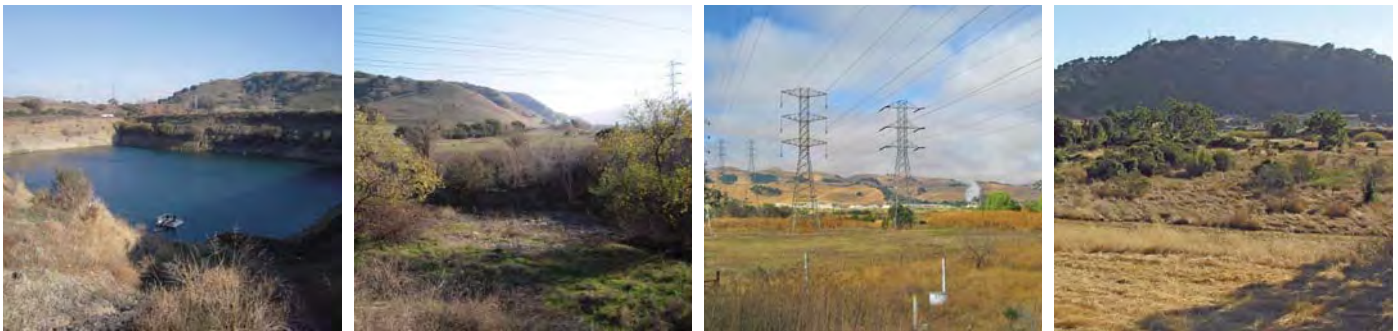


January 2012

Draft Environmental Impact Report Volume 2 of 2

For the San Francisco Public Utilities Commission's **SAN ANTONIO BACKUP PIPELINE PROJECT**



Appendices

San Francisco Planning Department Case No. 2007.0039E
State Clearinghouse No. 2007102030

Draft EIR Publication Date: January 25, 2012
Public Hearing Date: February 22, 2012, Sunol
Public Hearing Date: February 23, 2012, San Francisco
Public Comment Period: January 25, 2012 to March 12, 2012



**SAN FRANCISCO
PLANNING DEPARTMENT**

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APPENDIX A

Notice of Preparation

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San Antonio Backup Pipeline Project

Case No. 2007.0039E

1.0 OVERVIEW AND BACKGROUND

The San Francisco Public Utilities Commission (SFPUC) is proposing to construct and operate the San Antonio Backup Pipeline (SABPL) Project. To meet California Environmental Quality Act (CEQA) requirements, the San Francisco Planning Department will prepare and distribute an Environmental Impact Report (EIR) describing and analyzing the environmental effects of the proposed project. This Notice of Preparation (NOP) provides a brief description of proposed project, and identifies some of the project's key potential environmental effects.

1.1 San Francisco Water System and the San Antonio Backup Pipeline System

The City and County of San Francisco, through the SFPUC, owns and operates a regional water system that extends from the Sierra Nevada mountain range to the San Francisco Bay Area (see Figure 1 at the end of this document). This regional water system serves 2.4 million people in San Francisco, San Mateo, Santa Clara, Alameda, and Tuolumne Counties. The basic network of major facilities in the regional system was built from the late 1880s through the 1930s. Expansion and improvements of the major facilities continued through the 1970s. The current San Antonio Pipeline, which transmits water in an emergency water outage event to maintain water delivery to the San Francisco Bay Area and transmits water from San Antonio Reservoir to the Sunol Valley Water Treatment Plant, was built in 1967 and is a part of the SFPUC's water system.

Aging facilities within the water system are in need of major repair, rehabilitation, upgrade, and/or replacement. Currently, whenever there are unexpected water quality problems in the upper Hetch Hetchy system near Yosemite National Park, such as turbidity spikes, water is diverted to the existing San Antonio Pipeline in the Sunol Valley. The existing 60-inch diameter San Antonio Pipeline is a pre-stressed concrete cylinder pipe and is therefore susceptible to failure when the pre-stressing wires corrode and break, thereby preventing the emergency discharge of water out of the water system.

In February 2005, the SFPUC developed a regional Water System Improvement Program (WSIP). The basic goals of the WSIP are to increase the reliability of the regional water system with respect to water quality, seismic response, water delivery, and water supply to meet water delivery needs in the service area through the year 2030. To accomplish these goals, the SFPUC proposes 22 facility improvement projects throughout the regional water system under the WSIP. The SABPL Project is one of the proposed WSIP facility improvement projects. In June 2007, the San Francisco Planning Department published a Draft Program EIR (PEIR) to address the potential environmental impacts of the WSIP on a programmatic level and evaluate regional water supply alternatives. The Draft PEIR is available on the San Francisco Planning Department website at www.sfgov.org/planning/mea.

1.2 Environmental Review Process

The San Francisco Planning Department will prepare a project-specific EIR to evaluate the environmental effects of the proposed SABPL Project. The EIR will be prepared in compliance with the CEQA Guidelines Section 15161 and will address project-specific construction and operational impacts.

The first step in the environmental review process is the formal public scoping process, for which this NOP has been prepared. Following the public scoping meeting, a Draft EIR will be prepared and circulated for a 45-day public review period. Public comments on the Draft EIR will be accepted in writing during the review period or orally at formal public hearings to be held by the San Francisco Planning Commission. The San Francisco Planning Department then will prepare written responses to comments on environmental issues raised during the public review period, and a Response to Comments document will be prepared. This document will be considered by the San Francisco Planning Commission, along with the Draft EIR and any revisions to the draft based on the responses to comments, for certification as a Final EIR.

1.3 Public Scoping Meeting

The San Francisco Planning Department will hold a public scoping meeting at the following location, date, and time:

Date: **Thursday, October 25, 2007**
6:30 PM to 8:30 PM
Sunol, CA 94586

Location: **Sunol Glen School**
11601 Main St

The purpose of this meeting is to assist the San Francisco Planning Department with its review of the proposed scope and content of the EIR as summarized in this NOP. The public will have the opportunity to comment and offer testimony for consideration. The San Francisco Planning Department will also accept written comments at the meetings or by mail, e-mail, or fax until the close of business on **November 5, 2007**. Written comments should be sent to the San Francisco Planning Department, Attn: Bill Wycko, Acting Environmental Review Officer, 1650 Mission Street, Suite 400, San Francisco, CA 94103-2479, or be emailed to chris.kern@sfgov.org.

2.0 PROJECT DESCRIPTION

2.1 Existing Facilities and Proposed Project Components

The proposed project would be located between the San Antonio Pump Station and San Antonio Reservoir in the Sunol Valley in Alameda County, California. This project area lies just south of the intersection of Highways 680 and 84 along Calaveras Road (see Figure 2). There are four primary locations at which new construction and/or facility upgrades would occur, including: (1) along the alignment of the existing San Antonio Pipeline, which runs about two miles from the San Antonio Pump Station to the James Turner Dam, (2) the San Antonio Creek Discharge facilities at the base of the James Turner Dam at the San Antonio Reservoir, (3) the San Antonio Pump Station, and (4) the Alameda East Portal. The existing facilities and the proposed construction and/or facility upgrade activities at these locations are described below.

(1) ***San Antonio Backup Pipeline (SABPL).*** The existing San Antonio Pipeline is a 60-inch pre-stressed concrete cylinder pipe that runs 11,300 feet from the San Antonio Pump Station (SAPS) adjacent to Calaveras Road to the base of James Turner Dam at the San Antonio Reservoir. The route of this pipeline is west along the access road from the dam to Calaveras Road. It cuts the corner at the intersection of the access road and Calaveras Road, and then proceeds south along the west side of Calaveras Road until tying into the SAPS. The existing pipeline is a two-way conduit. It may be used to transfer up to 160 million gallons per day (MGD) of stored water from San Antonio Reservoir to the Sunol Valley Water Treatment Plant or it can be used to move 160 MGD of Hetch Hetchy water into San Antonio Reservoir under controlled release scenarios. The 160 MGD flow rate is controlled by the pumping capacity of SAPS. The existing San Antonio Pipeline is also used as an emergency discharge pipeline capable of diverting up to 230 MGD of Hetch Hetchy water out of the system and into San Antonio Creek when water quality parameters are exceeded. The 230 MGD flow rate is controlled by the size of SAPL and requires no pump assist. Failure of the San Antonio Pipeline, without the availability of the proposed SABPL, would limit water transmission and management options, and the reliability of these options in this area of the water system. The San Antonio Pipeline has failed before due to wire corrosion and breakage in the Pre-stressed Concrete Cylinder Pipe (PCCP).

The proposed SABPL would be a 66-inch pipe (material to be determined) installed alongside the existing San Antonio Pipeline. It would be designed to transfer up to 315 MGD of Hetch Hetchy water from Alameda Siphon No. 3 to the base of James Turner Dam at San Antonio Reservoir. This design capacity is based on planned future Hetch Hetchy flow capacity when another proposed WSIP project, the San Joaquin Pipeline System, is completed. This water would be de-chlorinated and pH adjusted at the SAPS before entering the pipeline. Additional chemical storage and distribution facilities would be located adjacent to the existing SAPS (see description # 3, below). The 315 MGD discharge would occur through a new cone valve structure and then into San Antonio Creek. The creek banks in the immediate vicinity of the new and existing cone valves would be reinforced with riprap to protect against bank erosion (see description #2, below).

As the backup water pipeline to the existing San Antonio Pipeline, the SABPL would be configured with three air gap connections between the new and the existing pipeline. These air gaps would allow the existing San Antonio Pipeline to be taken off-line for repairs and still allow water to be transferred as needed to and from the SAPS and the San Antonio Reservoir.

- (2) ***San Antonio Creek Discharge Facility:*** The existing San Antonio Creek discharge facility is located at the end of the existing San Antonio Pipeline at the base of the James Turner Dam at the San Antonio Reservoir. It is the junction point for San Antonio Reservoir and Hetch Hetchy discharges.

This facility is used as necessary to allow for an emergency draw down of the San Antonio Reservoir by discharging the reservoir water into San Antonio Creek. It is also the San Antonio Pipeline discharge point for quality impaired water diverted from the

water delivery system. Water is discharged into San Antonio Creek through a flow control cone valve.

The existing discharge facility includes a 48-inch cone valve housed in a 20-foot long, 14-foot wide trapezoidal outlet structure. However, the existing structure is not adequate to prevent downstream erosion of the San Antonio Creek channel. The water jet discharging from the existing cone valve has damaged the banks of the creek immediately outside the structure and undermined a retaining wall along the south side of the creek.

The proposed action would include construction of a second discharge structure at the end of the SABPL and just west of the existing facility. The new discharge facility would include a 54-inch cone valve housed in a concrete outlet structure similar to the existing facility, and the creek bed in the immediate vicinity of the discharge points of both the new and old discharge facilities would be armored with riprap to protect against scouring during discharge events. The new cone valve is designed to substantially reduce creek bank erosion.

- (3) ***San Antonio Pump Station Chemical Facility Upgrades:*** The existing chemical facility is located on the north side of the SAPS compound. It houses the chemicals and feed system used to dechlorinate treated water before it is discharged either back to the San Antonio Reservoir or into San Antonio Creek. The equipment used for this includes two 2,000-gallon sodium bisulfite chemical storage tanks, four chemical feed pumps; and other auxiliary components. These facilities have been used successfully when the existing 48-inch cone valve at the base of Turner Dam is tested annually. The estimated flow and treatment capacity during these annual tests is about 240 MGD.

The current facility would have to be expanded by approximately 50% to provide treatment for a full diversion of the 315 MGD of Hetch Hetchy water supply. The additional facilities that would be required to meet this demand include another chemical storage tank, two new chemical feed pumps, and the piping, valves, and controls required to convey the sodium bisulfite to the injection point on the proposed SABPL. This additional equipment would be housed in a new structure to be built just north of the existing chemical facility.

- (4) ***Alameda East Portal Improvements:*** The proposed project includes several security improvements at the Alameda East Portal site. All the improvements except the new fence would occur within the existing site footprint and would include the following actions:
- (a) Replace the existing perimeter fence and access gates with new chain-link fence. Access gates would be relocated into the new fence line where it would cross the existing access road;
 - (b) Construct new steel, concrete, and soil backfill enclosures around the portal structures and a moveable concrete wall in front of the portal access manifold; and
 - (c) Relocate the existing overhead crane to allow it to reach both the new moveable concrete wall and the portal access manifold when access to the latter is required.

These improvements would involve grading and removal of trees and other vegetation.

The existing San Antonio Pipeline and the related existing and proposed facilities run along the active Calaveras fault, which is part of the Hayward Fault complex (see Figure 4). All project components would be designed to accommodate seismic activity associated with this fault area.

2.2 Project Goals and Objectives

The overall objectives of the proposed project are to provide a more efficient and reliable conveyance option for emergency water diversion when Hetch Hetchy water cannot be conveyed through the Alameda West Portal and Irvington Tunnel, and to provide a redundant water transmission pipeline from San Antonio Reservoir to the Hetch Hetchy system if needed.

For the specific project components, the SABPL improvements are designed to meet the following goals and objectives:

- (1) San Antonio Backup Pipeline:** The SABPL would give SFPUC greater flexibility in managing a potential emergency situation along the Hetch Hetchy system when water cannot be conveyed through the Alameda West Portal and on to water customers in the San Francisco Bay area. This could occur as a result of high turbidity in the Hetch Hetchy supply caused by erosion and ashes from a fire. This kind of event is unpredictable and rare, but serious when it occurs. The existing San Antonio Pipeline has limited conveyance capacity and has a history of failure due to wire corrosion and breakage in the Pre-stressed Concrete Cylinder Pipe (PCCP).

The SABPL also would serve as a backup water supply conveyance alternative from San Antonio Reservoir to the Hetch Hetchy system in the event the existing, aging, San Antonio Pipeline is out of service due to maintenance or failure.

- (2) San Antonio Creek Discharge Facility:** Construction of the new discharge facility would be necessary to provide a safe and adequate method for discharging the emergency release of water from the SABPL. There are two reasons for this. First, the current discharge facility would not be able to handle the full 315 MGD flow capability of the proposed SABPL, necessitating the construction of an additional, larger capacity discharge facility. And second, due to the current alignment of the existing discharge facility and the proposed alignment of the SABPL, it is not possible to use the existing facility as a discharge point for the SABPL (the angle of the pipeline bend that would be necessary to match alignments between the SABPL and the existing discharge facility would exceed engineering parameters for the pressure and volume of flow in the pipe). Thus, a second discharge facility is proposed.

- (3) San Antonio Pump Station Chemical Facility Upgrades:** As noted in Section 2.1, the upgrades to the chemical facility are proposed in order to allow for dechlorination of the full 315 MGD of treated water from the Hetch Hetchy supply should it need to be diverted to San Antonio Creek due to water quality issues.

- (4) Alameda East Portal Improvements:** The proposed project includes several security improvements at the Alameda East Portal site. All the improvements except the new

fence would occur within the existing site footprint and would include the following actions:

- (a) Replace the existing perimeter fence and access gates with new chain-link fence. Access gates would be relocated into the new fence line where it would cross the existing access road;
- (b) Construct new steel, concrete, and soil backfill enclosures around the portal structures and a moveable concrete wall in front of the portal access manifold; and
- (c) Relocate the existing overhead crane to allow it to reach both the new moveable concrete wall and the portal access manifold when access to the latter is required.

These improvements would involve grading and removal of trees and other vegetation.

The existing San Antonio Pipeline and the related existing and proposed facilities run along the active Calaveras Fault, which is part of the Hayward Fault complex. All project components would be designed to accommodate seismic activity associated with this fault area

2.3 Schedule

Depending on the environmental review and permitting processes for the proposed project construction of the SABPL could begin as early as Fall 2009 and would be completed around Spring 2012.

3.0 ENVIRONMENTAL ANALYSIS

3.1 Key Environmental Issues to be Addressed in the EIR

The following paragraphs describe the key environmental issues that the EIR will address. The EIR will address both construction and operation activities, and will propose mitigation measures for impacts considered to be potentially significant.

Biological Resources – The proposed project would have potential temporary and long-term impacts on sensitive species, including California red-legged frog, California tiger salamander, Alameda whipsnake, and raptors. Construction of the proposed San Antonio Creek Discharge Facility would involve destruction of wetlands and riparian habitat at the base of the James Turner Dam. Operation of the SABPL for emergency discharges would impact riparian habitat along San Antonio Creek. Trees and other vegetation would be removed at the Alameda East Portal site, and oak woodlands and grasslands may be affected within the proposed alignment of the SABPL.

Cultural Resources – Sensitive cultural resources that could be affected by the proposed project include historical and prehistoric features. Resources, including archaeological sites and historical structures, have been documented in the proposed project area and impacts on these resources will be addressed in the EIR. Identified resources will be evaluated for their significance according to CEQA, the National Register of Historic Places and the California Register of Historic Resources. A cultural resources impact could occur during excavation if unidentified cultural resources are disturbed or if the

value of a historic building is adversely affected. Impacts on paleontological resources could occur during excavation if unanticipated resources are uncovered and damaged.

Hydrology and Water Quality – Construction of the proposed backup pipeline could result in discharges of contaminants to receiving waters (either surface or groundwater). Dewatering of the pipeline trench may be required during construction, and the water would need to be discharged in accordance with regulatory standards. Erosion could occur during construction as a result of grading and other activities. Once the project is operational, managing an emergency along the regional water system may require that water be discharged from the proposed pipeline into San Antonio Creek. This could result in habitat destruction along the creek due to higher flows and degradation of the creek's water quality.

Geology, Soils, and Seismology – The proposed SABPL would cross active and potentially active faults that have potential to rupture the pipeline. Other potential geologic hazards to which the proposed project could be exposed include settlement, liquefaction, and landslides. Geologic hazards that the proposed project could potentially cause, including landslides, will also be evaluated in the EIR.

Traffic and Transportation - Construction of the facilities would generate additional vehicle traffic above baseline levels. Traffic would be generated by construction vehicles traveling to and from the work site and trucks transporting supplies and equipment. Pipeline installation could temporarily disrupt traffic at the road crossings. Upgrades to existing access roads off the SFPUC's right-of-way could potentially cause minor localized traffic disruption.

Other Environmental Issues

Other topics that will be addressed in detail in the EIR include potential impacts related to:

- **Mineral Resources**
- **Air Quality**
- **Land Use**
- **Agricultural Resources**
- **Recreation**
- **Noise**
- **Utilities and Public Service Systems**
- **Hazards/Hazardous Materials**
- **Growth-inducing Impacts**
- **Cumulative Impacts**

3.2 Project Alternatives

As required by CEQA, the EIR will describe and evaluate a reasonable range of alternatives to the proposed SABPL project. The alternatives would feasibly attain most of the proposed SABPL project's basic objectives while avoiding or substantially lessening any significant effects of the project. CEQA also requires evaluation of the 'No Project' alternative. The No Project Alternative will compare the potential impacts of the proposed project with the impacts that would be expected to occur if the SABPL project is not implemented.

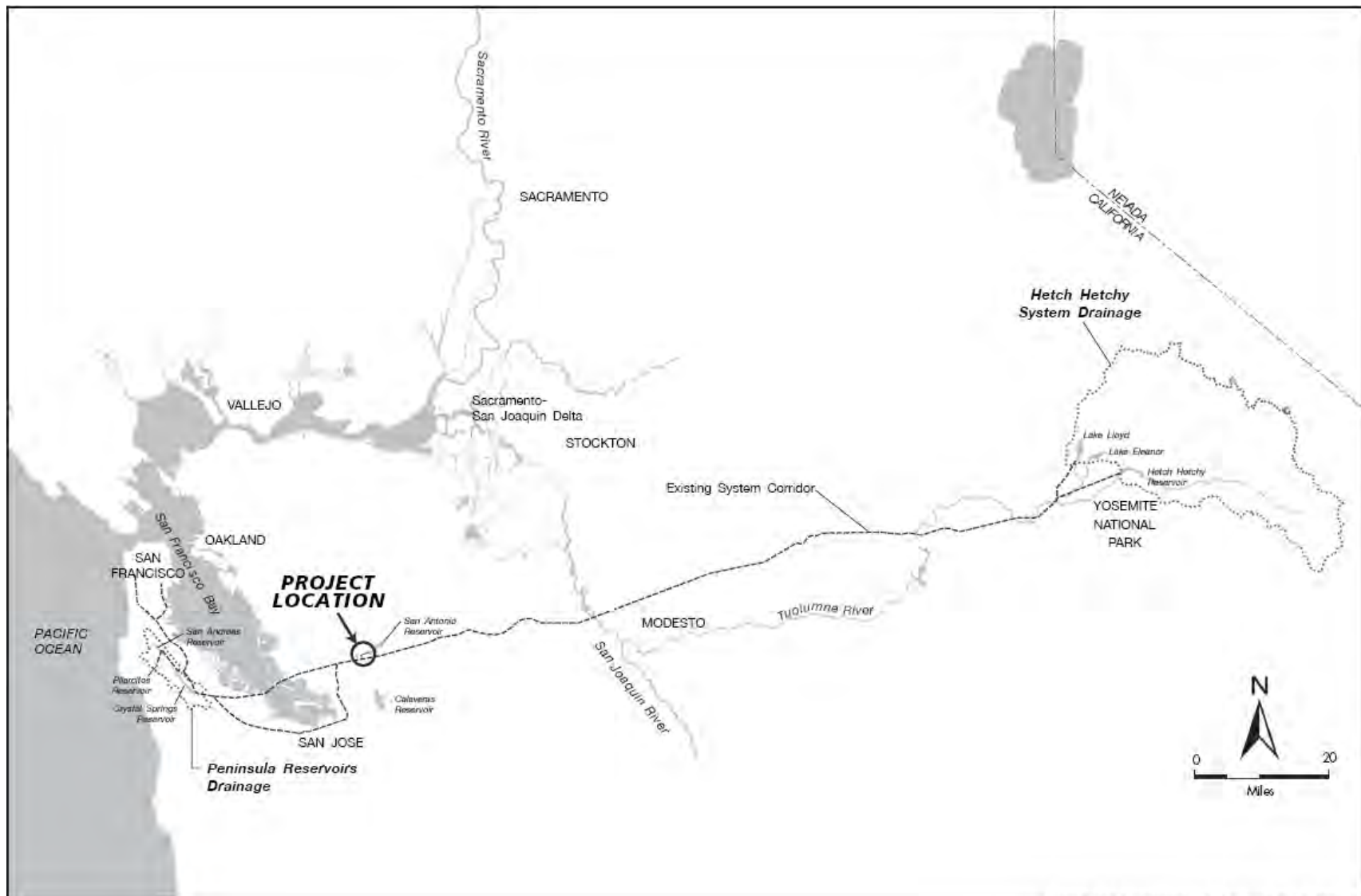
Attachments:

Figure 1: SFPUC Regional Water System

Figure 2: SFPUC SABPL Project Area

Figure 3: SABPL Project Site

Figure 4: Proposed San Antonio Creek Discharge Facility



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Figure 1
SFPUC Regional Water System
 San Antonio Backup Pipeline Project

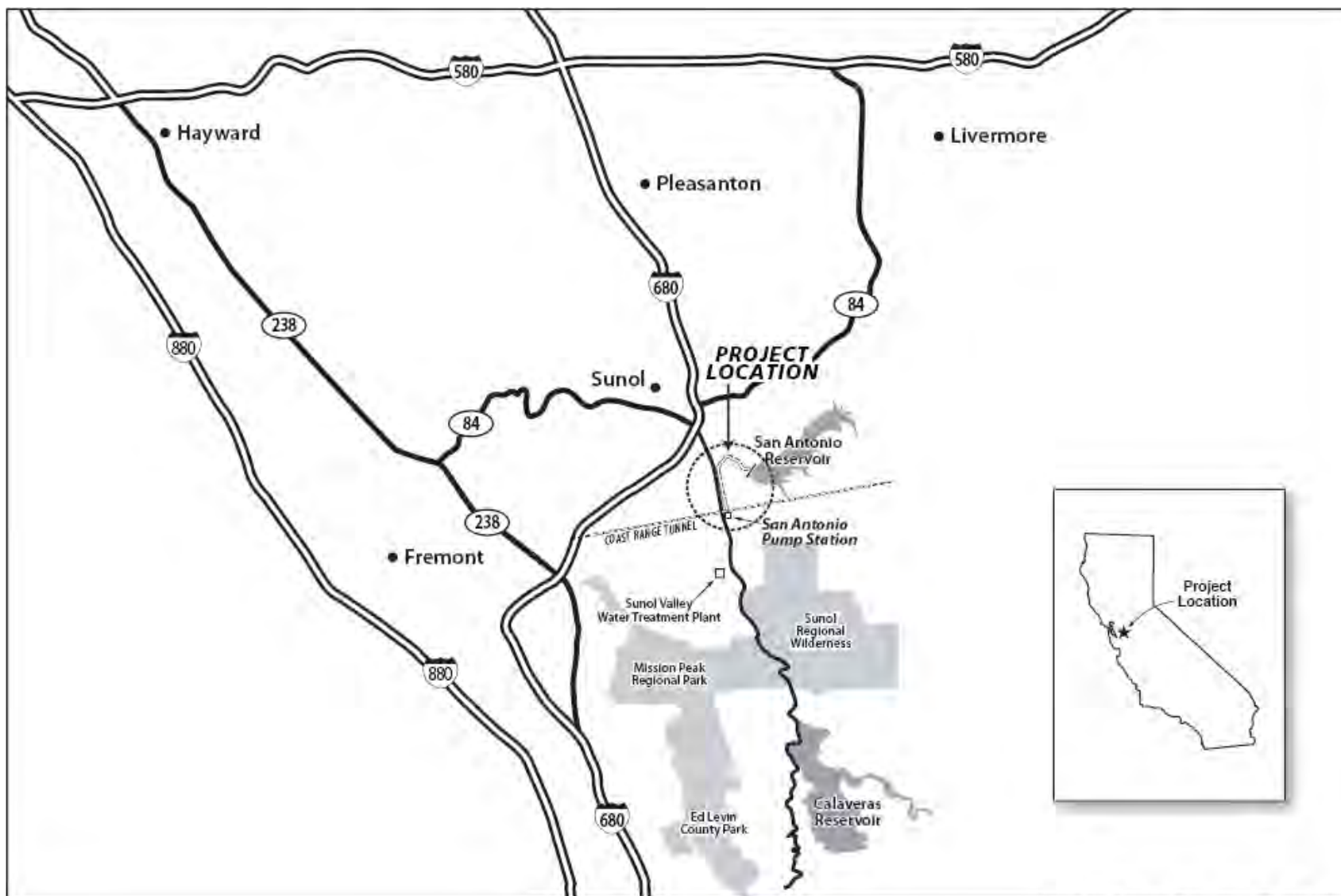
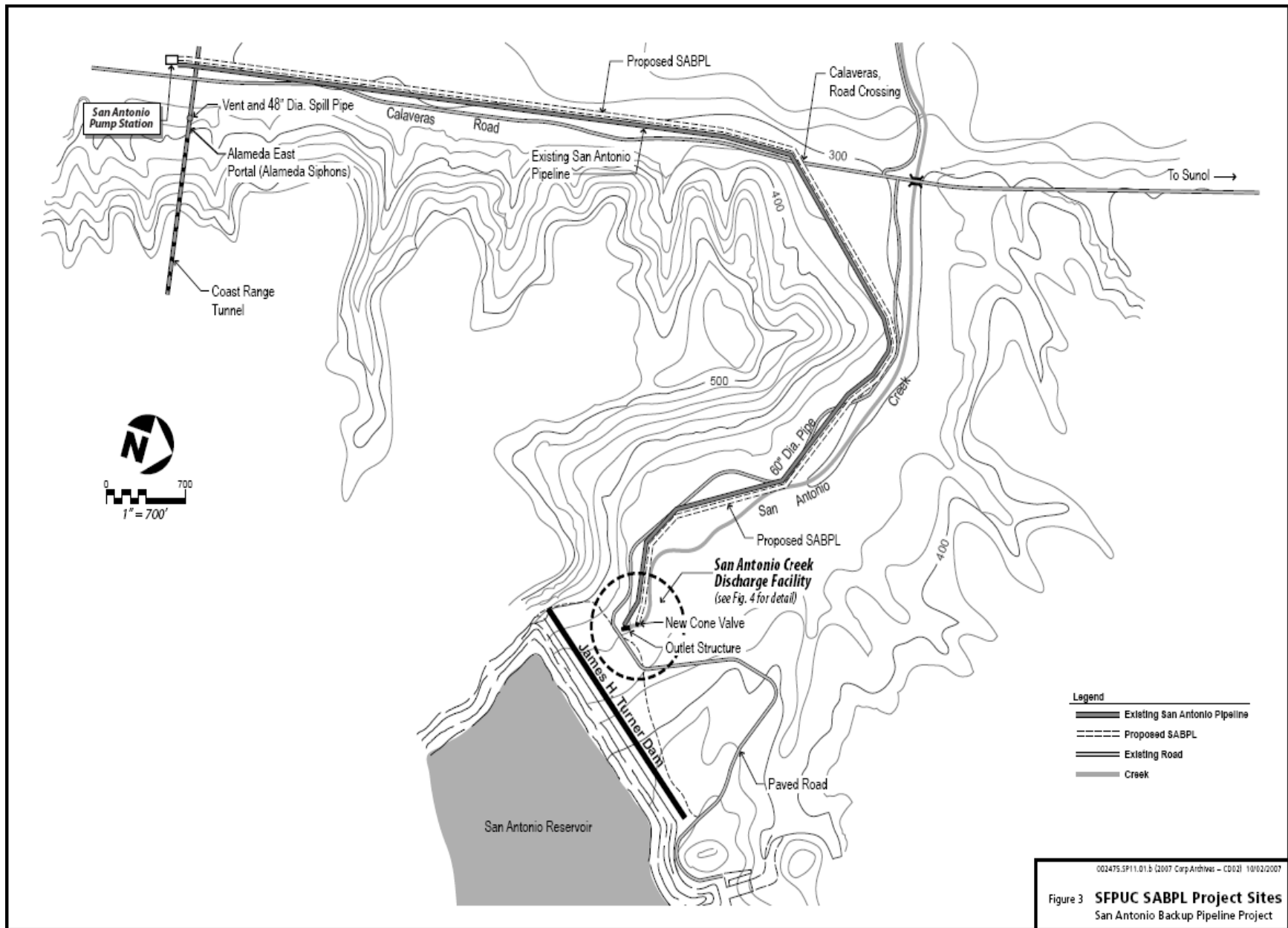
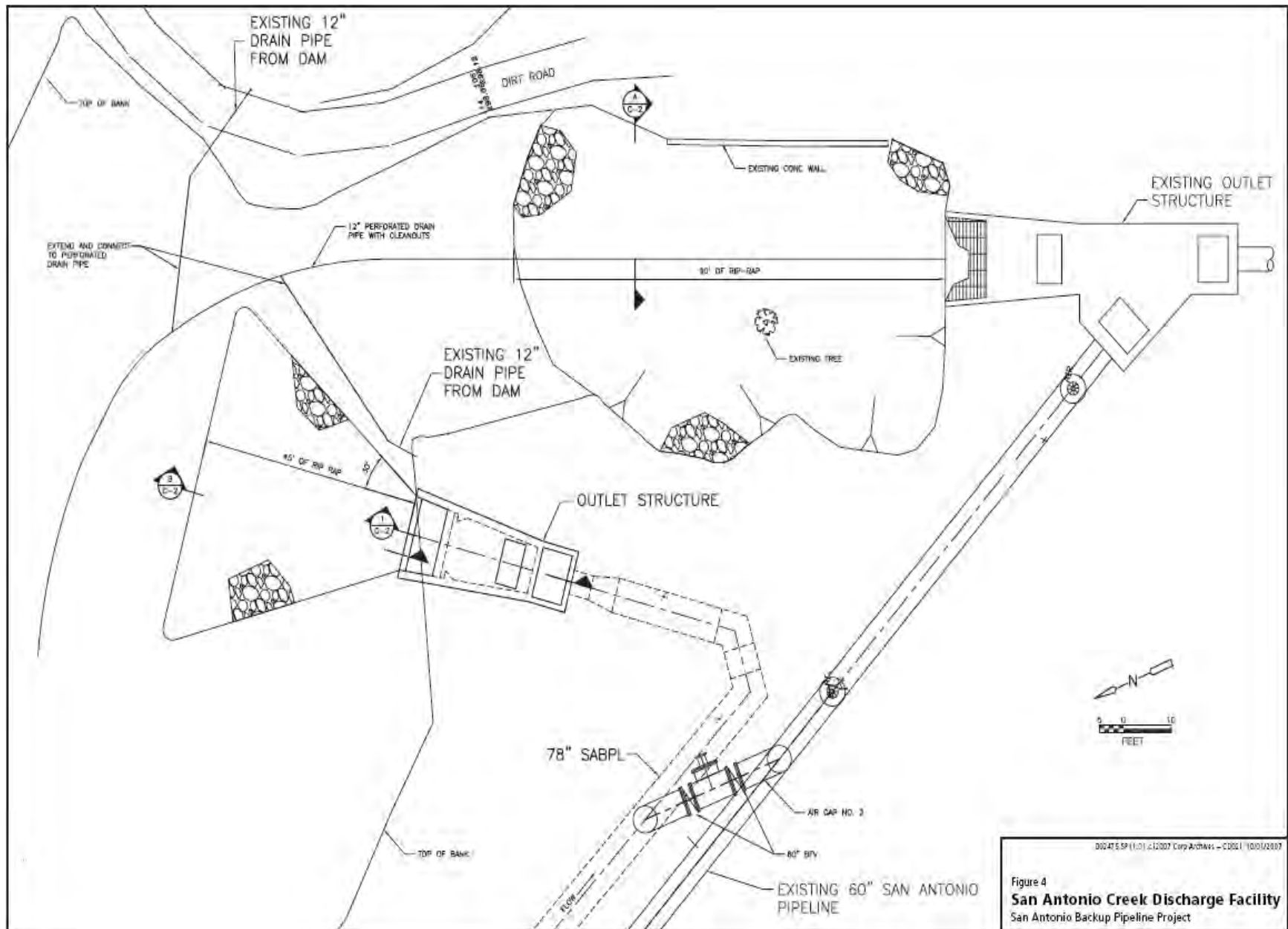


Figure 2

SFPUC SABPL Project Area
San Antonio Backup Pipeline Project

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APPENDIX B

Public Scoping Process Summary Report

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San Antonio Backup Pipeline Project Environmental Impact Report

(CS-834A7)

PUBLIC SCOPING PROCESS SUMMARY REPORT

December 5, 2007

Prepared For:

San Francisco Planning
Major Environmental Analysis

San Francisco Public Utilities Commission
Bureau of Environmental Management

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ACRONYMS AND ABBREVIATIONS

ACA	Alameda Creek Alliance
BAWSCA	Bay Area Water Supply & Conservation Agency
CA	California
CAC	Citizen's Advisory Committee
CalTrans	California Department of Transportation
CCSF	City and County of San Francisco
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
EBRPD	East Bay Regional Park District
EIR (or DEIR)	Environmental Impact Report (Draft EIR) (under CEQA)
NOP	Notice of Preparation
PEIR	Program Environmental Impact Report
RWQCB	Regional Water Quality Control Board
SABPL	San Antonio Backup Pipeline
SFPUC	San Francisco Public Utilities Commission
WSIP	Water System Improvement Program

1.0 INTRODUCTION

The San Francisco Planning Department is the lead agency for implementation of California Environmental Quality Act (CEQA) requirements for all projects sponsored by the City and County of San Francisco (CCSF) or conducted within San Francisco. The San Francisco Planning Department is preparing a Draft Environmental Impact Report (EIR) on the San Francisco Public Utilities Commission's (SFPUC's) proposed San Antonio Backup Pipeline (SABPL) Project. This Draft EIR, which will assess the potential impacts of the SABPL on the physical environment of the project area, is being prepared in accordance with CEQA. CEQA requires the preparation of an EIR when a proposed project could significantly affect the physical environment.

As part of the Draft EIR process, the San Francisco Planning Department conducted a public scoping effort in October 2007 to solicit comments from regulatory agencies and the public to help determine the scope of the Draft EIR. This report describes that scoping process and summarizes the public and regulatory agencies' comments received during that process.

2.0 PURPOSE OF THE SCOPING PROCESS

The purpose of the scoping process is to solicit input from the public and agencies on the appropriate scope, focus, and content of the Draft EIR. The San Francisco Planning Department will consider all of the input received during this process in the preparation of the Draft EIR.

The Draft EIR will describe the existing environmental conditions of the area that could be affected by the proposed project and evaluate the potential effects of the SABPL in accordance with CEQA. The comments provided by the public and agencies during scoping will help the San Francisco Planning Department identify pertinent issues, methods of analyses, and the level of detail that should be addressed in the Draft EIR. The scoping comments also will be considered in developing a reasonable range of feasible alternatives that will be evaluated in the Draft EIR.

The scoping comments received will augment the information developed by the EIR team, which includes specialists in each of the environmental subject areas to be covered in the EIR. This combined input will result in an EIR scope of work that is both comprehensive and responsive to the issues raised by the public and agencies, and that meets CEQA requirements. The Draft EIR is scheduled to be available for public comment in 2008.

In addition to facilitating public and regulatory agency input on the scope and focus of the Draft EIR, scoping allows the San Francisco Planning Department to explain the EIR process to the public and to identify additional opportunities for public comment and public involvement during the EIR process. CEQA requires that the public be informed about the significant environmental effects of a proposed project or program, and the ways in which those environmental effects can be avoided or reduced before the project or program is approved.

3.0 SCOPING PROCESS FOR THE SABPL EIR

In general, the scoping process involves six basic requirements as defined by CEQA. These are:

- 1) Identify the potential area of impact and development of a mailing list of potentially affected persons and agencies that would have an interest in or jurisdiction over actions taken within that area.
- 2) Prepare and mail a Notice of Preparation (NOP).

- 3) Provide other notification of the upcoming scoping meeting for the proposed project. This takes several forms, including publication of legal notices in local papers and providing information on the San Francisco Planning Department web page.
- 4) Hold the public scoping meeting to solicit verbal comments from the public and agencies.
- 5) Receive written comments via mail and email.
- 6) Document the results of this process in a public scoping summary report (this document).

The actions taken by the San Francisco Planning Department to complete this process are described in the sections that follow.

3.1 NOP Mailing List

The San Francisco Planning Department maintains a list of agencies, organizations, and individuals that have requested to receive notices of all projects proposed by this department. This list was supplemented with the names of local and state elected officials, regional and local interest groups, and property owners within 300 feet of the project area. A total of 289 names and addresses were placed on the mailing list for this project. Table 1 describes the general characteristics of those on this mailing list.

Table 1 General Description of NOP Mailing List Contacts

Number on Mailing List	Type of Contact
1	Owners/Occupants of property within 300 feet of the defined project area
47	SFPUC Wholesale Water Customers (includes representatives of cities, towns, water districts, and the Bay Area Water Supply & Conservation Agency [BAWSCA])
15	SFPUC Citizen's Advisory Committee (CAC)
167	Other Interested Parties (includes residents and business in or near to Sunol, CA, state and federal elected officials, and state and local agencies, including the State Clearinghouse)
16	Federal and State Permitting Agencies
23	Local Jurisdictions
5	Bordering Jurisdictions
15	Libraries and Media Outlets
289	Total

3.2 Prepare and Mail NOP

The San Francisco Planning Department prepared the NOP (see Appendix A) and mailed it to the addressees on the mailing list on October 5, 2007, starting the thirty-day public scoping period. An additional 15 copies were provided to the State Clearinghouse on that date, as well. The NOP summarized the goals, objectives, and elements of the proposed SABPL projects and presented the San Francisco Planning Department's determination that the proposed projects may have a significant effect on the environment, requiring the preparation of an EIR on the SABPL projects under CEQA. Lastly, the NOP described the public scoping process and included information on the public scoping meeting and the methods by which interested parties could submit comments on the SABPL projects.

The NOP was mailed to 289 recipients (see Table 1). Of these, 18 were sent to state and federal agencies by certified mail. The remaining 271 were sent via regular first class mail. The copies of the NOP sent to the State Clearinghouse were delivered by courier on the morning of October 5, 2007.

3.3 Additional Scoping Process Notification

In addition to mailing the NOP, the San Francisco Planning Department also published meeting notices on October 6, 2007, in the *Examiner* (San Francisco, CA), *The Valley Times* (Pleasanton, CA), and *The Argus* (Fremont, CA). Copies of these notices are provided in Appendix B of this report. The NOP, the public scoping meeting notice, and project contact information also were posted on the San Francisco Planning Department website at <http://www.sfgov.org/site/planning/mea>.

3.4 Public Scoping Meeting

The San Francisco Planning Department and SFPUC held a public scoping meeting at the Sunol Glen School in Sunol, California, on Thursday October 25, 2007. This meeting began at 6:30 PM. Only one member of the general public attended and provided comment.

The scoping meeting was designed to follow an informal format to allow meeting participants to review displays, maps, and literature about the proposed project, and to meet members of the EIR project team and SFPUC personnel to discuss the project. SFPUC staff and members of the EIR project team were available throughout the meeting to answer questions and receive written comments. Project fact-sheets and copies of the NOP were made available to the public in English. These meeting materials are provided in Appendix C of this report.

The scoping meeting began with opening remarks by Mr. Chris Kern of the San Francisco Planning Department, introducing the key project contacts and providing an overview of the CEQA EIR process. Ms. Vivian Chow of the SFPUC then provided an overview of the proposed project, including illustrations of the proposed project locations. Mr. Kern then invited the public to make oral comments on the scope or content of the proposed EIR.

A court reporter recorded the public scoping meeting and provided a transcript of the comments, presentations, and the identifying information of the person who commented. The participant provided his oral comments, but also was advised he could submit additional written comments at a later date. The scoping meeting transcript is provided in Appendix D.

3.5 Scoping Comments Received

The public scoping period ran for thirty days from publication of the NOP on October 5, 2007, to its close on November 5, 2007. Comments were received by the San Francisco Planning Department throughout this period and at the public scoping meeting on October 25, 2007. A total of ten commenters submitted comments during the scoping period, submitting their comments via seven letters, two emails, and one verbal comment (provided at the scoping meeting). Of these, one letter and one email contained additional supplemental material entered into the comments database as separate comment documents from the respective agencies, bringing the total number of comments received to 13. An additional comment letter was received after the close of the comment period and has been included in the database of scoping comments. These 14 comment documents were further evaluated and divided into distinct subcomments based on the topic areas described, bringing to 98 the total number of comments identified from the scoping process.

Table 2 identifies the seven state and local public agencies, one non-governmental organization, one company, and one individual who submitted comments. Table 3 lists the document number assigned to

each of the 14 comments and provides more information on the commenters. The actual comment documents are provided in Appendix E.

Table 2 Sources of Comments Received

Commenter Type	Commenter Name	# Documents Received
Public Agency (State or Local)	Alameda County Public Works Agency	1
	Alameda County Water District	1
	Bay Area Water Supply and Conservation Agency (BAWSCA)	1
	California Department of Fish and Game (CDFG)	1
	California Department of Transportation (CalTrans)	1
	California Regional Water Quality Control Board (RWQCB)	2
	East Bay Regional Park District (EBRPD)	4
Non-governmental Organization	Alameda Creek Alliance (ACA)	1
Company/Businesses	Chevron Pipe Line Company	1
Private Citizen	Mr. Stanley Garcia (local resident within the project area)	1
Total comment letters, emails and public statements received		14

Table 3 Persons or Agencies Providing Comment

Document Number	Date on Comment	Comment Source (Agency / Organization)	Comment Author	Commenter Address	Commenter Phone Number	Comment Type	Date Rec'd	Additional Information
CO001	10/18/07	Chevron Pipe Line Company	Jeremy Gross Contract ROW/Conflict Inquiry Specialist Los Medanos	2360 Buchanan Rd. Pittsburg, CA 94565	NA	Email	18-Oct-07	
LA001	11/5/2007	County of Alameda Public Works Agency	Arthur Valderrama, P.E. Supervising Civil Engineer	Development Services Department 951 Turner Court, Room 100 Hayward, CA 94545-2698	510-670-6601	Letter	6-Nov-07	
LA002	10/29/2007	Bay Area Water Supply & Conservation Agency	Nicole M. Sandkulla, P.E. Senior Water Resources Engineer	155 Bovet Road, Suite 302 San Mateo, CA 94402	650-349-3000	Letter	2-Nov-07	
LA003	10/25/200	Alameda County Water District	Paul Piraino General Manager	43885 South Grimmer Blvd. PO Box 5110 Fremont, CA 94537-5110	510-668-4200	Letter	13-Nov-07	
LA004a	10/30/2007	East Bay Regional Park District	Chris Barton Senior Planner	2950 Peralta Oaks Court PO Box 5381 Oakland, CA 94605	510-635-0135	Letter	31-Oct-07	Primary comment from EBRPD re: SABPL NOP
LA004b	10/12/2005	East Bay Regional Park District	Brad Olson Environmental Programs Manager	2950 Peralta Oaks Court PO Box 5381 Oakland, CA 94605	510-635-0135	Letter	31-Oct-07	Attachment to 10/30/07 EBRPD comments, re: EBRPD scoping comments on San Francisco WSIP DEIR, specifically impacts to the Sunol/Ohlone Regional Wilderness
LA004c	8/16/07	East Bay Regional Park District	Brad Olson Environmental Programs Manager	2950 Peralta Oaks Court PO Box 5381 Oakland, CA 94605	510-635-0135	Letter	31-Oct-07	Attachment to 10/30/07 EBRPD comments, re: EBRPD scoping comments on SFPUC Habitat Reserve Program (Case #2006.1505E)
LA004d	10/1/2007	East Bay Regional Park District	Chris Barton Senior Planner	2950 Peralta Oaks Court PO Box 5381 Oakland, CA 94605	510-635-0135	Letter	31-Oct-07	Attachment to 10/30/07 EBRPD scoping comments, re: EBRPD comments on SFPUC WSIP DPEIR
NP001	11/5/2007	Alameda Creek Alliance	Jeff Miller Executive Director	PO Box 192 Canyon, CA 94516	510-499-9185	Letter	5-Nov-07	
PC001	10/25/2007	Private Citizen	Mr. Stanley Garcia	6501 Calaveras Road Sunol, CA 94586		Verbal Comment	25-Oct-07	

Table 3 Persons or Agencies Providing Comment

Document Number	Date on Comment	Comment Source (Agency / Organization)	Comment Author	Commenter Address	Commenter Phone Number	Comment Type	Date Rec'd	Additional Information
SA001a	10/16/2007	California Regional Water Quality Control Board -- San Francisco Bay Region	Keith H. Lichten, P.E. Senior Engineer	1515 Clay Street, Suite 1400 Oakland, CA 94612	510-622-2300	Letter	18-Oct-07	
SA001b	11/9/2007	California Regional Water Quality Control Board -- San Francisco Bay Region	Xavier Fernandez Environmental Scientist	1515 Clay St, Suite 1400 Oakland, CA 94612	510-622-5685	Email with comment attached	8-Nov-07	Email sent by Mr. Fernandez added as a supplemental RWQCB comment an attached document dated 9 May 2006, prepared by Philip Williams & Associates (San Francisco, CA), regarding a "Draft approach for assessing erosion potential of reservoir releases."
SA002	10/19/2007	California Department of Fish and Game	Charles Armor Regional Manager Bay Delta Region	PO Box 47 Yountville, CA 94599	707-944-5500	Letter	24-Oct-07	
SA003	11/2/2007	California Department of Transportation	Timothy C. Sable District Branch Chief	111 Grand Avenue PO Box 23660 Oakland, CA 94623-0660	510-286-5505	Letter	5-Nov-07	

Notes:

The Document Number was created using a code for the commenter type (see below) followed by a unique sequential number. Comments from this commenter are then listed sequentially starting at "01," as shown in the second column of Table 2. The commenter type codes are:

- CO Private Company/Business
- LA Local Agency
- NP Non-profit Organization
- PC Private Citizen
- SA State Agency

Table 4 categorizes the 98 comments by general topic areas. However, individual comments may fall under other categories as well. For example a comment categorized under mitigation measures also may concern water quality, biological resources, land use, or traffic.

Table 4 General Comment Topic Areas

Topic Area Discussed	Number of Topic Comments
Alternatives	3
Biological Resources	9
Cultural Resources	2
Hazardous Materials	3
Hydrology & Water Quality	11
Land Use	1
Mailing List	6
Mitigation Measures	27
Noise	1
Permit Processes	3
Project Description	8
Project Design	4
Public Utilities and Services	1
Purpose and Need for the Project	1
Recreation	4
Regulatory Process / Public Involvement	5
Traffic	9
Total number of comments received	98

Table 5 summarizes the individual comments, sorted by the comment number. Table 6 lists the same comments as Table 5, but sorted by comment topic.

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Table 5 Summary of Individual Comments, Sorted by Comment Source

Comment Document #	Comment #	Topic / Resource Area	Comment Received
CO001 – Chevron Pipe Line Company			
CO001	CO001-01	Mailing List	Requests a copy of plans and drawings associated with the project.
CO001	CO001-02	Project Description	Chevron has an active petroleum projects pipeline in the project vicinity.
LA001 – County of Alameda Public Works Agency			
LA001	LA001-01	Traffic	Define how the project will impact traffic in the project area.
LA001	LA001-02	Biological Resources (Fish)	Potential impact from armoring creek bottoms -- may create barriers to fish passage.
LA001	LA001-03	Hydrology & Water Quality	Potential impacts on flood control channel/creek and road crossings.
LA001	LA001-04	Biological Resources (TES)	Effects on: red legged frog, San Joaquin kit fox, California tiger salamander, steelhead, Alameda whipsnakes, rare plants, and wetlands.
LA001	LA001-05	Hydrology & Water Quality	Potential impacts of flow diversions on downstream segment of Alameda Creek.
LA001	LA001-06	Cultural Resources	Potential impacts on cultural resources.
LA002 – Bay Area Water Supply & Conservation Agency			
LA002	LA002-01	Purpose and Need	A better description of the project need should be added to the DEIR.
LA002	LA002-02	Project Description / Alternatives	The EIR should describe the change in project scope to eliminate certain modifications at Alameda East Portal.
LA002	LA002-03	Project Description	The EIR should address that the project would assist in flushing the Coast Range Tunnel of sediment after a seismic event.

Table 5 Summary of Individual Comments, Sorted by Comment Source

Comment Document #	Comment #	Topic / Resource Area	Comment Received
LA002	LA002-04	Project Description	Provide further information on the operating limitations of the existing pipeline. Provide scenarios where the new pipeline would enhance operational flexibility.
LA002	LA002-05	Project Description (Hazmat)	Please describe the holding time for the de-chlorinating agent that will be stored in liquid form at the site.
LA002	LA002-06	Hazardous Materials	What measures will be employed for chemical spills at the chemical storage facility?
LA002	LA002-07	Project Description	Highlight the fact that a forest fire in the watershed caused the closure of the Hetch Hetchy delivery system for six weeks within the last 10 years.
LA003 – Alameda County Water District			
LA003	LA003-01	Hydrology & Water Quality	DEIR should fully evaluate all potential downstream impacts to water quality from site activities, including discharge of contaminants to receiving waters, dewatering of pipeline trench, and erosion as a result of grading and other activities.
LA003	LA003-02	Mitigation (Water Quality)	Provide complete mitigation to ensure there are no adverse impacts to ACWD's water supplies from the Alameda Creek Watershed, including providing a notification plan for events that could affect downstream water quality.
LA003	LA003-03	Hydrology & Water Quality	DEIR should evaluate potential impacts on water quality, hydrology, and water supplies during releases/discharges of high flows from the backup pipeline.
LA003	LA003-04	Mitigation (Water Quality)	Mitigation for the high flow discharges from the backup pipeline also should include a notification plan of these events.

Table 5 Summary of Individual Comments, Sorted by Comment Source

Comment Document #	Comment #	Topic / Resource Area	Comment Received
LA003	LA003-05	Hazardous Materials	DEIR also should evaluate potential impacts due to potential spills during chemical handling and storage.
LA003	LA003-06	Mitigation (Hazmat)	Provide for appropriate mitigation for potential chemical spills to prevent adverse impacts to downstream drinking water supplies, and that an appropriate notification plan is in place should such a spill occur.
LA004 – East Bay Regional Park District (includes supplemental comments LA004b, LA004c, and LA004d, attached to LA004a)			
LA004a	LA004a-01	Traffic	Identify road closures and provide methods to minimize effects.
LA004a	LA004a-02	Traffic	Account for increased use of Regional Parks during weekends and holidays in traffic impacts.
LA004a	LA004a-03	Recreation	Traffic analysis should include mitigation measures for loss of access to regional parks.
LA004a	LA004a-04	Traffic	Disclose details of traffic control plan in DEIR or incorporate measurable performance standards into mitigation measures that reference traffic control plan. Develop traffic control plan in coordination with EBRPD. Traffic control plan should recognize peak recreational demand periods.
LA004a	LA004a-05	Traffic	The EIR should address how traffic delays, road hazards, and detours would be communicated to the public, including signage, pamphlets, displays at park kiosks, and media outreach.
LA004a	LA004a-06	Traffic	Project should be designed or mitigation measures provided to avoid or minimize deterioration of affected roads.
LA004a	LA004a-07	Hydrology & Water Quality	The DEIR should address how the project would alter flows of San Antonio and Alameda Creeks.

Table 5 Summary of Individual Comments, Sorted by Comment Source

Comment Document #	Comment #	Topic / Resource Area	Comment Received
LA004a	LA004a-08	Biological Resources	The DEIR should evaluate how diminished water quality and habitat loss resulting from project construction and operations would affect the recovery of anadromous fish in Alameda Creek. Mitigation measures for impacts on biological resources should include measurable, performance-based standards.
LA004a	LA004a-09	Mitigation (Biology-TES)	The DEIR should address how the use of SFPUC watershed lands for mitigation of habitat impacts would not result in a net loss of habitat for special status species.
LA004a	LA004a-10	Mailing List	Request 1 hard copy and 1 CD copy of DEIR
LA004b	LA004b-01	Hydrology & Water Quality	The DEIR should evaluate surface water resource impacts from changes in water system operations, changes in primary versus secondary watershed status, changes in existing drainage patterns, increased erosion or deposition of sediments, and impacts on riparian vegetation, fisheries, and wildlife habitat.
LA004b	LA004b-02	Recreation	SFPUC must fully assess and mitigate the potential impacts of the proposed pipeline construction on access to and use of existing and planned trails and recreation in watershed areas that may result due to trail closure or rerouting, dust, noise, visual impacts, and trail safety and convenience.
LA004c	LA004c-01	Mitigation (General)	Agreement that the HRP's coordinated and consolidated approach to mitigations is a better approach.
LA004c	LA004c-02	Mitigation (General)	Why are the proposed program and the HCP being prepared separately?
LA004c	LA004c-03	Reg. Process/Pub. Involvement	LA004c-2 could result in a segmentation violation under CEQA.

Table 5 Summary of Individual Comments, Sorted by Comment Source

Comment Document #	Comment #	Topic / Resource Area	Comment Received
LA004c	LA004c-04	Mitigation (Land Use)	The primary project impact would take place in watersheds that are already in conservancy. To mitigate the project would have to purchase additional lands in fee.
LA004c	LA004c-05	Mitigation (Land Use)	Fee purchase of lands for mitigation is preferred to purchasing conservation easements.
LA004c	LA004c-06	Mitigation (Land Use)	Acquisition of mitigation lands should be proximate to the project location.
LA004c	LA004c-07	Mitigation (Biological Resources-Vegetation)	The NOP state on page 5 that " habitat preservation would involve fencing, periodic weed control and managed grazing." Such measures would seem to be just good property management measures that SFWD has already implemented and not necessarily mitigation for impacts.
LA004c	LA004c-08	Mitigation (General)	It is unclear what would be the added value of preserving watershed lands that have already been acquired by SFWD to protect water quality and associated natural resources (see LA004c-4).
LA004c	LA004c-09	Mitigation (Biological Resources-Vegetation)	Provide management and monitoring provisions for the following: yellow starthistle, non-native animals, pond management, property management, public access, and habitat monitoring.
LA004d	LA004d-01	Recreation (Indirect Impacts)	Any disruption of parks users experience may result in a significant environmental impact under CEQA. The WSIP PEIR analysis of impacts on recreation did not fully account for impacts on recreation resources from resource categories other than construction impacts and aesthetics. Recreation impacts also may occur indirectly as a result of impacts from traffic, noise, air quality, and biological resources. Please account for these indirect impacts also.

Table 5 Summary of Individual Comments, Sorted by Comment Source

Comment Document #	Comment #	Topic / Resource Area	Comment Received
LA004d	LA004d-02	Recreation (Traffic)	Effects of road closures and increased vehicle trips (along Calaveras Road) should be evaluated in the project level analysis to determine potential impacts from increased traffic congestion and delays on access to recreational areas.
LA004d	LA004d-03	Mitigation (Recreation)	Traffic control plans should recognize peak demand hours for park use and minimize construction traffic volumes and road/lane closures to not overlap these hours. This may require that construction traffic is significantly restricted or prohibited during holidays and weekends.
LA004d	LA004d-04	Mitigation (Public Notification)	SFPUC should be the sole agency with responsibility to notify the public about any road closures from this project, including being responsible for providing proper signage, informational pamphlets and displays at nearby parks, and other needed outreach efforts.
LA004d	LA004d-05	Mailing List (Document Review Request)	Provide EBRPD with opportunity to review the proposed traffic control plans associated with this project.
LA004d	LA004d-06	Project Description (Traffic)	Add information in the project description to define the time over which any roads or driveways will be closed or the number of available lanes will be reduced due to construction activities.
LA004d	LA004d-07	Mitigation (Traffic)	Adopt a performance-based mitigation measure to determine/set deadlines for when affected roads are to re-open following construction of the proposed projects.
LA004d	LA004d-08	Traffic	Address how road surfaces will be maintained during and after construction of the SABPL projects.
LA004d	LA004d-09	Mitigation (Traffic)	The project traffic control plan should include mandatory language clarifying traffic restrictions, signage, and public outreach regarding possible road closure (comment originally addressed to Calaveras Dam EIR)

Table 5 Summary of Individual Comments, Sorted by Comment Source

Comment Document #	Comment #	Topic / Resource Area	Comment Received
LA004d	LA004d-10	Mailing List (Document Review Request)	Please provide the EBRPD and the Alameda Creek Fisheries Restoration Workgroup opportunity to review the draft EIR and mitigation monitoring and reporting plans.
LA004d	LA004d-11	Mitigation (Biological Resources - Riparian Habitat)	Use of existing SFPUC watershed preserve land for mitigation of project impacts may be considered inadequate under CEQA unless the mitigation were to rehabilitate or enhance disturbed or marginal habitat areas with the watershed.
LA004d	LA004d-12	Mitigation (Biological Resources - Habitat Restoration)	Use fee purchase of mitigation lands instead of conservation easements to compensate for loss of habitat and to reduce problems associated with enforcement of land use restrictions, maintaining public access to areas, and assuring long-term management occurs.
LA004d	LA004d-13	Noise	When evaluating noise impacts on users at nearby recreation areas, consider that an increase in 5dB CNEL over noise levels is considered a significant noise impact.
LA004d	LA004d-14	Land Use	Refer to the existing recreation area management plans for additional guidance on land use in those areas.
LA004d	LA004d-15	Public Services / Utilities	Coordinate with EBRPD Fire Department re fire suppression planning and response, including traffic control plans.
NP001 – Alameda Creek Alliance			
NP001	NP001-01	Project Design	Design the new cone valve to release low and moderate flows to facilitate the return of native steelhead populations.
NP001	NP001-02	Biological Resources (Fish)	The EIR should address potential for restoration of steelhead and other native fishes below Turner Dam and the stream flows required to accomplish this. The proposed cone valve should be sized to allow future

Table 5 Summary of Individual Comments, Sorted by Comment Source

Comment Document #	Comment #	Topic / Resource Area	Comment Received
			low-flow water releases to San Antonio Creek for this purpose.
NP001	NP001-03	Project Description	The EIR should quantify how much of the bank of San Antonio Creek would be armored with rip-rap to prevent erosion.
NP001	NP001-04	Mitigation (Water Quality)	Armoring San Antonio Creek with rip-rap will require mitigation in the form of creek restoration or habitat enhancement downstream.
NP001	NP001-05	Hazardous Materials	In May 2002 SFPUC had discharged contaminated water from the SVWTP. The SABPL project must include fail-safe measures to prevent any further chemical spills.
NP001	NP001-06	Mitigation (Hazmat)	The DEIR must outline containment, spill response, and mitigation measures in case a chemical spill does occur.
NP001	NP001-07	Biological Resources	The DEIR should discuss the potential for occurrence of special status species in the vicinity of the proposed project and potential impacts to species or their habitat.
NP001	NP001-08	Mitigation (Biological Resources-General)	The project should emphasize avoidance of sensitive habitats and fully mitigate for any direct or indirect impacts to native wildlife.
PC001 – Mr. Stanley Garcia			
PC001	PC001-01	Mailing List	Please delete Mr. Garcia's mother (Mrs. Rosie Garcia) from the SFPUC mail list as she has been deceased for about 14 years.
PC001	PC001-02	Traffic	Please make sure that Mr. Garcia has access to his driveway as the new pipeline is installed.
PC001	PC001-03	Traffic	Please make sure traffic flows along Calaveras Road are maintained as pipeline is installed where it crosses from the east to the west side of the road.

Table 5 Summary of Individual Comments, Sorted by Comment Source

Comment Document #	Comment #	Topic / Resource Area	Comment Received
SA001 – California Regional Water Quality Control Board (includes comments received from SA001b, supplement to SA001a)			
SA001a	SA001a-01	Hydrology & Water Quality	Consideration must be given in the EIR to the Beneficial Uses of both Alameda Creek and of San Antonio Creek as a tributary to Alameda Creek.
SA001a	SA001a-02	Reg. Process/Pub. Involvement	EIR should discuss the Regional Water Quality Control Board's jurisdiction (in addition to the CDFG and USFWS) with regard to special-status species as it relates to the beneficial uses of Alameda Creek and San Antonio Creek.
SA001a	SA001a-03	Permit Process	Both CWA Section 401water quality certification and Section 404 permit from the USACE will be necessary for fill impacts to San Antonio Creek. In addition, A Report of Waste Discharge also may be needed if the project may impacts waters of the State, even if such waters have been excluded from federal jurisdiction. A Streambed Alteration Agreement from the CDFG also may be necessary since the proposed project involves stream channels and riparian habitats.
SA001a	SA001a-04	Hydrology & Water Quality	CWA Section 404 (b)(1) "...prohibit all discharge of fill material into regulated waters of the United States, unless a discharge, as proposed, constitutes the least environmentally damaging practicable alternative that will achieve the basic project purpose."
SA001a	SA001a-05	Mitigation (Water Quality)	Where impacts to water quality cannot be avoided the creation of adequate mitigation habitat to compensate for the loss of water body acreage, functions and values must be provided.
SA001a	SA001a-06	Alternatives	The LEDPA analysis in the EIR should evaluate alternatives that would (1) avoid impacts to waters, (2) modify project to minimize impacts to waters, and (3) mitigate, once impacts have been fully minimized, to compensate for unavoidable impacts.

Table 5 Summary of Individual Comments, Sorted by Comment Source

Comment Document #	Comment #	Topic / Resource Area	Comment Received
SA001a	SA001a-07	Hydrology & Water Quality	Potential impacts from discharging water into San Antonio and Alameda creeks must be identified. Include the potential cumulative and indirect impacts include deposition of sediments; erosion of substratum; additional water (flooding); and creating a condition of pollution.
SA001a	SA001a-08	Alternatives	Project also should evaluate alternatives that avoid discharges into San Antonio Creek by retaining water with SFPUC's water supply system.
SA001a	SA001a-09	Mitigation (Water Quality)	Treatment of discharges to San Antonio Creek should be considered as a mitigation measure. These discharges also must be evaluated for potential impacts related to changes in water temperature in this creek.
SA001a	SA001a-10	Hydrology & Water Quality / Geology	Potential impacts to San Antonio Creek from discharges include increases in erosion and sedimentation, with detrimental effects to riparian and aquatic habitats and to water column chemistry. EIR should include a geomorphic assessment using continuous flow modeling to assess these potential impacts.
SA001a	SA001a-11	Mitigation (Water Quality)	For site dewatering activities, water should be discharged first to a sanitary sewer if possible, or used for other onsite activities such as dust control (presuming minimal water contamination)
SA001a	SA001a-12	Permit Process	For dewatering discharges not able to be made to sanitary sewers, SFPUC should determine the appropriate permit to cover these discharges and file the requisite sampling, analysis, treatment plans, and Notices of Intent within the appropriate time frame (60 days for review and approval by RWQCB staff).
SA001a	SA001a-13	Mitigation (Water Quality)	If dewatering samples are tested and found to be clean (and there is no history of contamination on the site or adjacent sites, SFPUC should implement a sediment removal program as necessary to ensure the water is clean prior to discharge to storm drain or water body.

Table 5 Summary of Individual Comments, Sorted by Comment Source

Comment Document #	Comment #	Topic / Resource Area	Comment Received
SA001a	SA001a-14	Project Design	SFPUC should confirm that the discharge will not cause erosion, flooding, or other problems.
SA001a	SA001a-15	Permit Process	Project must be covered under the State NPDES General Permit for Discharges of Storm Water Associated with Construction Activities (General Construction Permit). This is done by filing an NOI with the State Water Resources Control Board (State Board) and completing the General Construction Permit (website provided). This also requires development, review and approval by the State Board (60 days), and implementation of a Stormwater Pollution Prevention Plan.
SA001b	SA001b-01	Hydrology & Water Quality	Follow-up email providing a suggested method for assessing and mitigating potential hydromodification impacts on San Antonio Creek.
SA002 – California Department of Fish and Game			
SA002	SA002-01	Biological Resources	CDFG recommends a complete assessment of the flora and fauna within and adjacent to the project area, with emphasis on identifying endangered, threatened, and locally unique species and sensitive habitats. Rare and, threatened and endangered species should include those that meet the CEQA Guideline Section 15380 definition. Rare plants and rare natural communities should be identified pursuant to CDFG Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities.
SA002	SA002-02	Reg. Process/Pub. Involvement	The project may be required to obtain a California Endangered Species Act Permit, and Streambed Alteration Agreement. Early consultation is encouraged for CESA permit. The EIR should identify potential impacts to the stream or riparian resources and provide avoidance, mitigation, monitoring, and reporting commitments.

Table 5 Summary of Individual Comments, Sorted by Comment Source

Comment Document #	Comment #	Topic / Resource Area	Comment Received
SA002	SA002-03	Biological Resources	Disclose impact to special status species such as, California tiger salamander (<i>Ambystoma californiense</i>), California red-legged frog (<i>Rana draytonii</i>), and Central Coast ESU steelhead (<i>Oncorhynchus mykiss iridieus</i>).
SA002	SA002-04	Biological Resources (Fish)	Consider the possible operational impact to steelhead as they will gain access to San Antonio Creek in the foreseeable future.
SA002	SA002-05	Biological Resources / Water Quality	The EIR should address potential effects of sudden changes to water quality in San Antonio Creek on fish and wildlife.
SA002	SA002-06	Mitigation (Biological Resources)	Propose mitigation measures that would avoid, minimize, or compensate for impacts and/or take of special status species due to construction of the project or its operation.
SA002	SA002-07	Project Design	Substitute bioengineering techniques for rip-rap.
SA002	SA002-08	Project Design	Position cone valve parallel to San Antonio Creek to reduce erosion.
SA002	SA002-09	Alternatives	Include a discussion of potentially discharging water into San Antonio Reservoir, or other alternatives where water would be returned to the system.
SA003 – California Department of Transportation			
SA003	SA003-01	Mitigation (General)	The project's fair share contribution, financing, scheduling, implementation, and lead agency monitoring responsibilities for all mitigation measures should be fully dis-cussed in the DEIR.
SA003	SA003-02	Reg. Process/Pub. Involvement	An encroachment permit will be required for any work in the State right of way (ROW).

Table 5 Summary of Individual Comments, Sorted by Comment Source

Comment Document #	Comment #	Topic / Resource Area	Comment Received
SA003	SA003-03	Cultural Resources	The project's environmental analysis section must include documentation of a current archaeological records search from the Northwest Information Center (NIC) of the California Historic Resources Information System (CHRIS) for all work in the state ROW.
SA003	SA003-04	Mailing List	Send a copy of the DEIR to: Lisa Carboni, Mail Stop #10D, PO Box 23660, Oakland, CA 94623-0660
SA003	SA003-05	Reg. Process/Pub. Involvement	To apply for an encroachment permit submit a permit application, environmental documentation, and five (5) sets of plans to Michael Condie, Mail Stop #5E, PO Box 23660, Oakland, CA 94623-0660

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Table 6 Summary of Individual Comments, Sorted by Comment Topic

Document #	Comment #	Topic / Resource Area	Comment Received
Alternatives			
SA001a	SA001a-06	Alternatives	The LEDPA analysis in the EIR should evaluate alternatives that would (1) avoid impacts to waters, (2) modify project to minimize impacts to waters, and (3) mitigate, once impacts have been fully minimized, to compensate for unavoidable impacts.
SA001a	SA001a-08	Alternatives	Project also should evaluate alternatives that avoid discharges into San Antonio Creek by retaining water with SFPUC's water supply system.
SA002	SA002-09	Alternatives	Include a discussion of potentially discharging water into San Antonio Reservoir, or other alternatives where water would be returned to the system.
Biological Resources (combined)			
LA004a	LA004a-08	Biological Resources	The DEIR should evaluate how diminished water quality and habitat loss resulting from project construction and operations would affect the recovery of anadromous fish in Alameda Creek. Mitigation measures for impacts on biological resources should include measurable, performance-based standards.
NP001	NP001-07	Biological Resources	The DEIR should discuss the potential for occurrence of special status species in the vicinity of the proposed project and potential impacts to species or their habitat.
SA002	SA002-01	Biological Resources	CDFG recommends a complete assessment of the flora and fauna within and adjacent to the project area, with emphasis on identifying endangered, threatened, and locally unique species and sensitive habitats. Rare and, threatened and endangered species should include those that meet the CEQA Guideline Section 15380 definition. Rare plants and rare natural communities should be identified pursuant to CDFG Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities.
SA002	SA002-03	Biological Resources	Disclose impact to special status species such as, California tiger salamander (<i>Ambystoma californiense</i>), California red-legged frog (<i>Rana draytonii</i>), and Central Coast ESU steelhead (<i>Oncorhynchus mykiss iridieus</i>).
LA001	LA001-02	Biological Resources (Fish)	Potential impact from armoring creek bottoms -- may create barriers to fish passage.

Table 6 Summary of Individual Comments, Sorted by Comment Topic

Document #	Comment #	Topic / Resource Area	Comment Received
NP001	NP001-02	Biological Resources (Fish)	The EIR should address potential for restoration of steelhead and other native fishes below Turner Dam and the stream flows required to accomplish this. The proposed cone valve should be sized to allow future low-flow water releases to San Antonio Creek for this purpose.
SA002	SA002-04	Biological Resources (Fish)	Consider the possible operational impact to steelhead as they will gain access to San Antonio Creek in the foreseeable future.
LA001	LA001-04	Biological Resources (TES)	Effects on: red legged frog, San Joaquin kit fox, California tiger salamander, steelhead, Alameda whipsnakes, rare plants, and wetlands.
SA002	SA002-05	Biological Resources / Water Quality	The EIR should address potential effects of sudden changes to water quality in San Antonio Creek on fish and wildlife.
Cultural Resources			
LA001	LA001-06	Cultural Resources	Potential impacts on cultural resources.
SA003	SA003-03	Cultural Resources	The project's environmental analysis section must include documentation of a current archaeological records search from the Northwest Information Center (NIC) of the California Historic Resources Information System (CHRIS) for all work in the state ROW.
Hazardous Materials			
NP001	NP001-05	Hazardous Materials	In May 2002 SFPUC had discharged contaminated water from the SVWTP. The SABPL project must include fail-safe measures to prevent any further chemical spills.
LA002	LA002-06	Hazardous Materials	What measures will be employed for chemical spills at the chemical storage facility?
LA003	LA003-05	Hazardous Materials	DEIR also should evaluate potential impacts due to potential spills during chemical handling and storage.
Hydrology & Water Quality (combined)			
LA001	LA001-03	Hydrology & Water Quality	Potential impacts on flood control channel/creek and road crossings.
LA001	LA001-05	Hydrology & Water Quality	Potential impacts of flow diversions on downstream segment of Alameda Creek.

Table 6 Summary of Individual Comments, Sorted by Comment Topic

Document #	Comment #	Topic / Resource Area	Comment Received
LA004b	LA004b-01	Hydrology & Water Quality	The DEIR should evaluate surface water resource impacts from changes in water system operations, changes in primary versus secondary watershed status, changes in existing drainage patterns, increased erosion or deposition of sediments, and impacts on riparian vegetation, fisheries, and wildlife habitat.
LA003	LA003-01	Hydrology & Water Quality	DEIR should fully evaluate all potential downstream impacts to water quality from site activities, including discharge of contaminants to receiving waters, dewatering of pipeline trench, and erosion as a result of grading and other activities.
SA001a	SA001a-07	Hydrology & Water Quality	Potential impacts from discharging water into San Antonio and Alameda creeks must be identified. Include the potential cumulative and indirect impacts include deposition of sediments; erosion of substratum; additional water (flooding); and creating a condition of pollution.
LA003	LA003-03	Hydrology & Water Quality	DEIR should evaluate potential impacts on water quality, hydrology, and water supplies during releases/discharges of high flows from the backup pipeline.
LA004a	LA004a-07	Hydrology & Water Quality	The DEIR should address how the project would alter flows of San Antonio and Alameda Creeks.
SA001a	SA001a-01	Hydrology & Water Quality	Consideration must be given in the EIR to the Beneficial Uses of both Alameda Creek and of San Antonio Creek as a tributary to Alameda Creek.
SA001a	SA001a-04	Hydrology & Water Quality	CWA Section 404 (b)(1) "...prohibit all discharge of fill material into regulated waters of the United States, unless a discharge, as proposed, constitutes the least environmentally damaging practicable alternative that will achieve the basic project purpose."
SA001b	SA001b-01	Hydrology & Water Quality	Follow-up email providing a suggested method for assessing and mitigating potential hydromodification impacts on San Antonio Creek.
SA001a	SA001a-10	Hydrology & Water Quality / Geology	Potential impacts to San Antonio Creek from discharges include increases in erosion and sedimentation, with detrimental effects to riparian and aquatic habitats and to water column chemistry. EIR should include a geomorphic assessment using continuous flow modeling to assess these potential impacts.
Land Use			
LA004d	LA004d-14	Land Use	Refer to the existing recreation area management plans for additional guidance on land use in those areas.

Table 6 Summary of Individual Comments, Sorted by Comment Topic

Document #	Comment #	Topic / Resource Area	Comment Received
Mailing List			
CO001	CO001-01	Mailing List	Requests a copy of plans and drawings associated with the project.
LA004a	LA004a-10	Mailing List	Request 1 hard copy and 1 CD copy of DEIR
PC001	PC001-01	Mailing List	Please delete Mr. Garcia's mother (Mrs. Rosie Garcia) from the SFPUC mail list as she has been deceased for about 14 years.
SA003	SA003-04	Mailing List	Send a copy of the DEIR to: Lisa Carboni, Mail Stop #10D, PO Box 23660, Oakland, CA 94623-0660
LA004d	LA004d-05	Mailing List (Document Review Request)	Provide EBRPD with opportunity to review the proposed traffic control plans associated with this project.
LA004d	LA004d-10	Mailing List (Document Review Request)	Please provide the EBRPD and the Alameda Creek Fisheries Restoration Workgroup opportunity to review the draft EIR and mitigation monitoring and reporting plans.
Mitigation Measures (combined)			
LA004d	LA004d-12	Mitigation (Biological Resources - Habitat Restoration)	Use fee purchase of mitigation lands instead of conservation easements to compensate for loss of habitat and to reduce problems associated with enforcement of land use restrictions, maintaining public access to areas, and assuring long-term management occurs.
LA004d	LA004d-11	Mitigation (Biological Resources - Riparian Habitat)	Use of existing SFPUC watershed preserve land for mitigation of project impacts may be considered inadequate under CEQA unless the mitigation were to rehabilitate or enhance disturbed or marginal habitat areas with the watershed.
SA002	SA002-06	Mitigation (Biological Resources)	Propose mitigation measures that would avoid, minimize, or compensate for impacts and/or take of special status species due to construction of the project or its operation.
NP001	NP001-08	Mitigation (Biological Resources-General)	The project should emphasize avoidance of sensitive habitats and fully mitigate for any direct or indirect impacts to native wildlife.
LA004c	LA004c-07	Mitigation (Biological Resources-Vegetation)	The NOP state on page 5 that "habitat preservation would involve fencing, periodic weed control and managed grazing." Such measures would seem to be just good property management measures that SFPUC has already implemented and not necessarily mitigation for impacts.

Table 6 Summary of Individual Comments, Sorted by Comment Topic

Document #	Comment #	Topic / Resource Area	Comment Received
LA004c	LA004c-09	Mitigation (Biological Resources-Vegetation)	Provide management and monitoring provisions for the following: yellow starthistle, non-native animals, pond management, property management, public access, and habitat monitoring.
LA004a	LA004a-09	Mitigation (Biology-TES)	The DEIR should address how the use of SFPUC watershed lands for mitigation of habitat impacts would not result in a net loss of habitat for special status species.
LA004c	LA004c-01	Mitigation (General)	Agreement that the HRP's coordinated and consolidated approach to mitigations is a better approach.
LA004c	LA004c-02	Mitigation (General)	Why are the proposed program and the HCP being prepared separately?
LA004c	LA004c-08	Mitigation (General)	It is unclear what would be the added value of preserving watershed lands that have already been acquired by SFWD to protect water quality and associated natural resources (see LA004c-4).
SA003	SA003-01	Mitigation (General)	The project's fair share contribution, financing, scheduling, implementation, and lead agency monitoring responsibilities for all mitigation measures should be fully discussed in the DEIR.
LA003	LA003-06	Mitigation (Hazmat)	Provide for appropriate mitigation for potential chemical spills to prevent adverse impacts to downstream drinking water supplies, and that an appropriate notification plan is in place should such a spill occur.
NP001	NP001-06	Mitigation (Hazmat)	The DEIR must outline containment, spill response, and mitigation measures in case a chemical spill does occur.
LA004c	LA004c-04	Mitigation (Land Use)	The primary project impact would take place in watersheds that are already in conservancy. To mitigate the project would have to purchase additional lands in fee.
LA004c	LA004c-05	Mitigation (Land Use)	Fee purchase of lands for mitigation is preferred to purchasing conservation easements.
LA004c	LA004c-06	Mitigation (Land Use)	Acquisition of mitigation lands should be proximate to the project location.
LA004d	LA004d-04	Mitigation (Public Notification)	SFPUC should be the sole agency with responsibility to notify the public about any road closures from this project, including being responsible for providing proper signage, informational pamphlets and displays at nearby parks, and other needed outreach efforts.

Table 6 Summary of Individual Comments, Sorted by Comment Topic

Document #	Comment #	Topic / Resource Area	Comment Received
LA004d	LA004d-03	Mitigation (Recreation)	Traffic control plans should recognize peak demand hours for park use and minimize construction traffic volumes and road/lane closures to not overlap these hours. This may require that construction traffic is significantly restricted or prohibited during holidays and weekends.
LA004d	LA004d-07	Mitigation (Traffic)	Adopt a performance-based mitigation measure to determine/set deadlines for when affected roads are to re-open following construction of the proposed projects.
LA004d	LA004d-09	Mitigation (Traffic)	The project traffic control plan should include mandatory language clarifying traffic restrictions, signage, and public outreach regarding possible road closure (comment originally addressed to Calaveras Dam EIR)
LA003	LA003-02	Mitigation (Water Quality)	Provide complete mitigation to ensure there are no adverse impacts to ACWD's water supplies from the Alameda Creek Watershed, including providing a notification plan for events that could affect downstream water quality.
LA003	LA003-04	Mitigation (Water Quality)	Mitigation for the high flow discharges from the backup pipeline also should include a notification plan of these events.
NP001	NP001-04	Mitigation (Water Quality)	Armoring San Antonio Creek with rip-rap will require mitigation in the form of creek restoration or habitat enhancement downstream.
SA001a	SA001a-05	Mitigation (Water Quality)	Where impacts to water quality cannot be avoided the creation of adequate mitigation habitat to compensate for the loss of water body acreage, functions and values must be provided.
SA001a	SA001a-09	Mitigation (Water Quality)	Treatment of discharges to San Antonio Creek should be considered as a mitigation measure. These discharges also must be evaluated for potential impacts related to changes in water temperature in this creek.
SA001a	SA001a-11	Mitigation (Water Quality)	For site dewatering activities, water should be discharged first to a sanitary sewer if possible, or used for other onsite activities such as dust control (presuming minimal water contamination)
SA001a	SA001a-13	Mitigation (Water Quality)	If dewatering samples are tested and found to be clean (and there is no history of contamination on the site or adjacent sites, SFPUC should implement a sediment removal program as necessary to ensure the water is clean prior to discharge to storm drain or water body.

Table 6 Summary of Individual Comments, Sorted by Comment Topic

Document #	Comment #	Topic / Resource Area	Comment Received
Noise			
LA004d	LA004d-13	Noise	When evaluating noise impacts on users at nearby recreation areas, consider that an increase in 5dB CNEL over noise levels is considered a significant noise impact.
Permit Process			
SA001a	SA001a-03	Permit Process	Both CWA Section 401 water quality certification and Section 404 permit from the USACE will be necessary for fill impacts to San Antonio Creek. In addition, A Report of Waste Discharge also may be needed if the project may impacts waters of the State, even if such waters have been excluded from federal jurisdiction. A Streambed Alteration Agreement from the CDFG also may be necessary since the proposed project involves stream channels and riparian habitats.
SA001a	SA001a-12	Permit Process	For dewatering discharges not able to be made to sanitary sewers, SFPUC should determine the appropriate permit to cover these discharges and file the requisite sampling, analysis, treatment plans, and Notices of Intent within the appropriate time frame (60 days for review and approval by RWQCB staff).
SA001a	SA001a-15	Permit Process	Project must be covered under the State NPDES General Permit for Discharges of Storm Water Associated with Construction Activities (General Construction Permit). This is done by filing an NOI with the State Water Resources Control Board (State Board) and completing the General Constuction Permit (website provided). This also requires development, review and approval by the State Board (60 days), and implementation of a Stormwater Pollution Prevention Plan.
Project Description			
CO001	CO001-02	Project Description	Chevron has an active petroleum projects pipeline in the project vicinity.
LA002	LA002-03	Project Description	The EIR should address that the project would assist in flushing the Coast Range Tunnel of sediment after a seismic event.
LA002	LA002-04	Project Description	Provide further information on the operating limitations of the existing pipeline. Provide scenarios where the new pipeline would enhance operational flexibility.
NP001	NP001-03	Project Description	The EIR should quantify how much of the bank of San Antonio Creek would be armored with rip-rap to prevent erosion.
LA002	LA002-07	Project Description	Highlight the fact that a forest fire in the watershed caused the closure of the Hetch Hetchy delivery system for six weeks within the last 10 years.

Table 6 Summary of Individual Comments, Sorted by Comment Topic

Document #	Comment #	Topic / Resource Area	Comment Received
LA002	LA002-05	Project Description (Hazmat)	Please describe the holding time for the de-chlorinating agent that will be stored in liquid form at the site.
LA004d	LA004d-06	Project Description (Traffic)	Add information in the project description to define the time over which any roads or driveways will be closed or the number of available lanes will be reduced due to construction activities.
LA002	LA002-02	Project Description / Alternatives	The EIR should describe the change in project scope to eliminate certain modifications at Alameda East Portal.
Project Design			
NP001	NP001-01	Project Design	Design the new cone valve to release low and moderate flows to facilitate the return of native steelhead populations.
SA001a	SA001a-14	Project Design	SFPUC should confirm that the discharge will not cause erosion, flooding, or other problems.
SA002	SA002-07	Project Design	Substitute bioengineering techniques for rip-rap.
SA002	SA002-08	Project Design	Position cone valve parallel to San Antonio Creek to reduce erosion.
Public Services / Utilities			
LA004d	LA004d-15	Public Services / Utilities	Coordinate with EBRPD Fire Department re fire suppression planning and response, including traffic control plans.
Purpose and Need			
LA002	LA002-01	Purpose and Need	A better description of the project need should be added to the DEIR.
Recreation			
LA004a	LA004a-03	Recreation	Traffic analysis should include mitigation measures for loss of access to regional parks.
LA004b	LA004b-02	Recreation	SFPUC must fully assess and mitigate the potential impacts of the proposed pipeline construction on access to and use of existing and planned trails and recreation in watershed areas that may result due to trail closure or rerouting, dust, noise, visual impacts, and trail safety and convenience.

Table 6 Summary of Individual Comments, Sorted by Comment Topic

Document #	Comment #	Topic / Resource Area	Comment Received
LA004d	LA004d-01	Recreation (Indirect Impacts)	Any disruption of parks users experience may result in a significant environmental impact under CEQA. The WSIP PEIR analysis of impacts on recreation did not fully account for impacts on recreation resources from resource categories other than construction impacts and aesthetics. Recreation impacts also may occur indirectly as a result of impacts from traffic, noise, air quality, and biological resources. Please account for these indirect impacts also.
LA004d	LA004d-02	Recreation (Traffic)	Effects of road closures and increased vehicle trips (along Calaveras Road) should be evaluated in the project level analysis to determine potential impacts from increased traffic congestion and delays on access to recreational areas.
Regulatory Process / Public Involvement			
LA004c	LA004c-03	Reg. Process/Pub. Involvement	LA004c-2 could result in a segmentation violation under CEQA.
SA001a	SA001a-02	Reg. Process/Pub. Involvement	EIR should discuss the Regional Water Quality Control Board's jurisdiction (in addition to the CDFG and USFWS) with regard to special-status species as it relates to the beneficial uses of Alameda Creek and San Antonio Creek.
SA002	SA002-02	Reg. Process/Pub. Involvement	The project may be required to obtain a California Endangered Species Act Permit, and Streambed Alteration Agreement. Early consultation is encouraged for CESA permit. The EIR should identify potential impacts to the stream or riparian resources and provide avoidance, mitigation, monitoring, and reporting commitments.
SA003	SA003-02	Reg. Process/Pub. Involvement	An encroachment permit will be required for any work in the State right of way (ROW).
SA003	SA003-05	Reg. Process/Pub. Involvement	To apply for an encroachment permit submit a permit application, environmental documentation, and five (5) sets of plans to Michael Condie, Mail Stop #5E, PO Box 23660, Oakland, CA 94623-0660
Traffic			
LA001	LA001-01	Traffic	Define how the project will impact traffic in the project area.
LA004a	LA004a-01	Traffic	Identify road closures and provide methods to minimize effects.
LA004a	LA004a-02	Traffic	Account for increased use of Regional Parks during weekends and holidays in traffic impacts.

Table 6 Summary of Individual Comments, Sorted by Comment Topic

Document #	Comment #	Topic / Resource Area	Comment Received
LA004a	LA004a-04	Traffic	Disclose details of traffic control plan in DEIR or incorporate measurable performance standards into mitigation measures that reference traffic control plan. Develop traffic control plan in coordination with EBRPD. Traffic control plan should recognize peak recreational demand periods.
LA004a	LA004a-05	Traffic	The EIR should address how traffic delays, road hazards, and detours would be communicated to the public, including signage, pamphlets, displays at park kiosks, and media outreach.
LA004a	LA004a-06	Traffic	Project should be designed or mitigation measures provided to avoid or minimize deterioration of affected roads.
LA004d	LA004d-08	Traffic	Address how road surfaces will be maintained during and after construction of the SABPL projects.
PC001	PC001-02	Traffic	Please make sure that Mr. Garcia has access to his driveway as the new pipeline is installed.
PC001	PC001-03	Traffic	Please make sure traffic flows along Calaveras Road are maintained as pipeline is installed where it crosses from the east to the west side of the road.

APPENDIX A: NOTICE OF PREPARATION DOCUMENTS

The three documents included in this Appendix are:

- Notice of Preparation Cover Letter
- Notice of Preparation Notice (includes State Clearinghouse stamp showing date of receipt)
- Notice of Preparation Report



SAN FRANCISCO PLANNING DEPARTMENT

October 5, 2007

TO: Responsible Agencies, Trustee Agencies, and Interested Parties:

RE: CASE NO. 2007.0039E – SAN ANTONIO BACKUP PIPELINE PROJECT, NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT AND NOTICE OF PUBLIC SCOPING MEETING

1650 Mission St.
Suite 400
San Francisco,
CA 94103-2479

Reception:
415.558.6378

Fax:
415.558.6409

Planning
Information:
415.558.6377

A Notice of Preparation (NOP) of an environmental impact report (EIR) pursuant to the California Environmental Quality Act (CEQA) and a Notice of Public Scoping Meeting for the above referenced project (described below) has been issued by the San Francisco Planning Department. The NOP and Notice of Public Scoping Meeting is either attached or is available upon request from Chris Kern, whom you may reach by phone at (415) 575-9037, by fax at (415) 558-6409, by email at chris.kern@sfgov.org, or by mail at 1650 Mission Street, Suite 400, San Francisco, CA 94103-2479. The combined NOP/Notice of Public Scoping Meeting also is available online at: <http://www.sfgov.org/site/planning/mea>.

Project Description: The San Francisco Public Utilities Commission (SFPUC) proposes to implement four related upgrades to the water management system between the San Antonio Pump Station and the San Antonio Reservoir. The proposed project would be located between the Hetch Hetchy Alameda Siphons and San Antonio Reservoir in the Sunol Valley. This project area lies just south of the intersection of Highways 680 and 84 along Calaveras Road in Alameda County, California. The proposed project would include four components to upgrade this portion of the water supply system. The primary project would be the installation of a backup pipeline along the same route as the existing San Antonio pipeline that runs about two miles from the San Antonio Pump Station to the James Turner Dam. To accommodate the increased flows this backup pipeline would be able to handle, upgrades would be necessary at the San Antonio Creek Discharge Facilities at the base of the James Turner Dam at the San Antonio Reservoir, and at the San Antonio Pump Station dechlorination and pH adjustment facility. The last component would be to improve the security around the Alameda East Portal. The proposed construction or renovation activities at these locations are described in more detail below. The proposed project would perform two functions: 1) provide more reliable and efficient conveyance of emergency discharges from the Hetch Hetchy system when water quality parameters are exceeded, and 2) act as a backup pipeline for moving San Antonio Reservoir water into the Hetch Hetchy system when San Antonio Pipeline is out of service for maintenance or repair.

- (1) **San Antonio Backup Pipeline (SABPL).** The existing San Antonio Pipeline is a 60-inch pre-stressed concrete cylinder pipe that runs 11,300 feet from the San Antonio Pump Station (SAPS) adjacent to Calaveras Road to the base of James Turner Dam at the San Antonio Reservoir. The route of this pipeline is west along the access road from the dam to Calaveras Road. It cuts the corner at the intersection of the access road and Calaveras Road, and then proceeds south along the west side of Calaveras Road until tying into the SAPS. The existing pipeline is a two-way conduit. It may be used to transfer up to 160 million gallons per day (MGD) of stored water from San Antonio Reservoir to the Sunol Valley Water Treatment Plant or it can be used to move 160 MGD of Hetch Hetchy water into San Antonio Reservoir under controlled release scenarios. The 160 MGD flow rate is controlled by the pumping capacity of SAPS. The existing San Antonio Pipeline is also used as an emergency discharge pipeline

capable of diverting up to 230 MGD of Hetch Hetchy water out of the system and into San Antonio Creek when water quality parameters are exceeded. The 230 MGD flow rate is controlled by the size of SAPL and requires no pump assist. Failure of the San Antonio Pipeline, without the availability of the proposed SABPL, would limit water transmission and management options, and the reliability of these options in this area of the water system. The San Antonio Pipeline has failed before due to wire corrosion and breakage in the Pre-stressed Concrete Cylinder Pipe (PCCP).

The proposed SABPL would be a 66-inch pipe (material to be determined) installed alongside the existing San Antonio Pipeline. It would be designed to transfer up to 315 MGD of Hetch Hetchy water from Alameda Siphon No. 3 to the base of James Turner Dam at San Antonio Reservoir. This design capacity is based on anticipated future emergency discharge requirements. This water would be de-chlorinated and pH adjusted at the SAPS before entering the pipeline. Additional chemical storage and distribution facilities would be located adjacent to the existing SAPS (see description # 3, below). The 315 MGD discharge would occur through a new cone valve structure and then into San Antonio Creek. The creek banks in the immediate vicinity of the new and existing cone valves would be reinforced with riprap to protect against bank erosion (see description #2, below).

As the backup water pipeline to the existing San Antonio Pipeline, the SABPL would be configured with three air gap connections between the new and the existing pipeline. These air gaps would allow the existing San Antonio Pipeline to be taken off-line for repairs and still allow water to be transferred as needed to and from the SAPS and the San Antonio Reservoir.

- (2) ***San Antonio Creek Discharge Facility:*** The existing San Antonio Creek discharge facility is located at the end of the existing San Antonio Pipeline at the base of the James Turner Dam at the San Antonio Reservoir. It is the junction point for San Antonio Reservoir and Hetch Hetchy discharges.

This facility is used as necessary to allow for an emergency draw down of the San Antonio Reservoir by discharging the reservoir water into San Antonio Creek. It is also the existing San Antonio pipeline discharge point for quality impaired water diverted from the Alameda Siphon East Portal. Water is discharged to the creek through a flow control cone valve.

The existing discharge facility, which includes a 48-inch cone valve, is housed in a 20-foot long, 14-foot wide trapezoidal outlet structure. However, the existing structure is not adequate to prevent downstream erosion of the San Antonio Creek channel. The water jet discharging from the existing cone valve has damaged the banks of the creek immediately outside the structure and undermined a retaining wall along the south side of the creek.

The proposed project would include construction of a second discharge structure at the end of the SABPL and just west of the existing facility consisting of a 54-inch cone valve housed in a concrete outlet structure similar to the existing facility. The creek bed in the immediate vicinity of the discharge points of both the new and existing discharge facilities would be armored with riprap to protect against scouring during discharge events.

- (3) **San Antonio Pump Station Chemical Facility Upgrades:** The existing chemical facility is located on the north side of the SAPS compound. It houses the chemicals and feed system used to dechlorinate treated water before it is discharged either back to the San Antonio Reservoir or into San Antonio Creek. The equipment used for this includes two 2,000-gallon sodium bisulfite chemical storage tanks, four chemical feed pumps; and other auxiliary components. This facility has been used successfully when the existing 48-inch cone valve at the base of Turner Dam is tested annually. The estimated flow and treatment capacity during these annual tests is about 240 MGD.

The current facility would have to be expanded by approximately 50% to provide treatment for a full diversion of the 315 MGD of Hetch Hetchy water supply. The additional facilities that would be required to meet this demand include another chemical storage tank, two new chemical feed pumps, and the piping, valves, and controls required to convey the sodium bisulfite to the injection point on the proposed SABPL. This additional equipment would be housed in a new structure to be built just north of the existing dechlorination and pH adjustment facility.

- (4) **Alameda East Portal Improvements:** The proposed project includes several security improvements at the Alameda East Portal site. All the improvements except the new fence would occur within the existing site footprint and would include the following actions:

- (a) Replace the existing perimeter fence and access gates with new chain-link fence. Access gates would be relocated into the new fence line where it would cross the existing access road;
- (b) Construct new steel, concrete, and soil backfill enclosures around the portal structures and a moveable concrete wall in front of the portal access manifold; and
- (c) Relocate the existing overhead crane to allow it to reach both the new moveable concrete wall and the portal access manifold when access to the latter is required.

These improvements would involve grading and removal of trees and other vegetation.

The existing San Antonio Pipeline and the related existing and proposed facilities run along the active Calaveras Fault, which is part of the Hayward Fault complex (see Figure 4). All project components would be designed to accommodate seismic activity associated with this fault area.

Preparation of the EIR: The San Francisco Planning Department's Major Environmental Analysis Division (MEA) is preparing an EIR for consideration by decision makers prior to a final decision by the SFPUC regarding whether to approve and implement the project. The purpose of the EIR is to provide information about potentially significant adverse environmental effects of the proposed project, to identify possible ways to minimize those potentially significant adverse effects, and to describe and evaluate feasible alternatives to the proposed project. Preparation of an NOP or EIR does not indicate a decision by the City to approve or to disapprove the proposed project. However, prior to making any such decision, the decision makers must review and consider the information contained in the EIR.

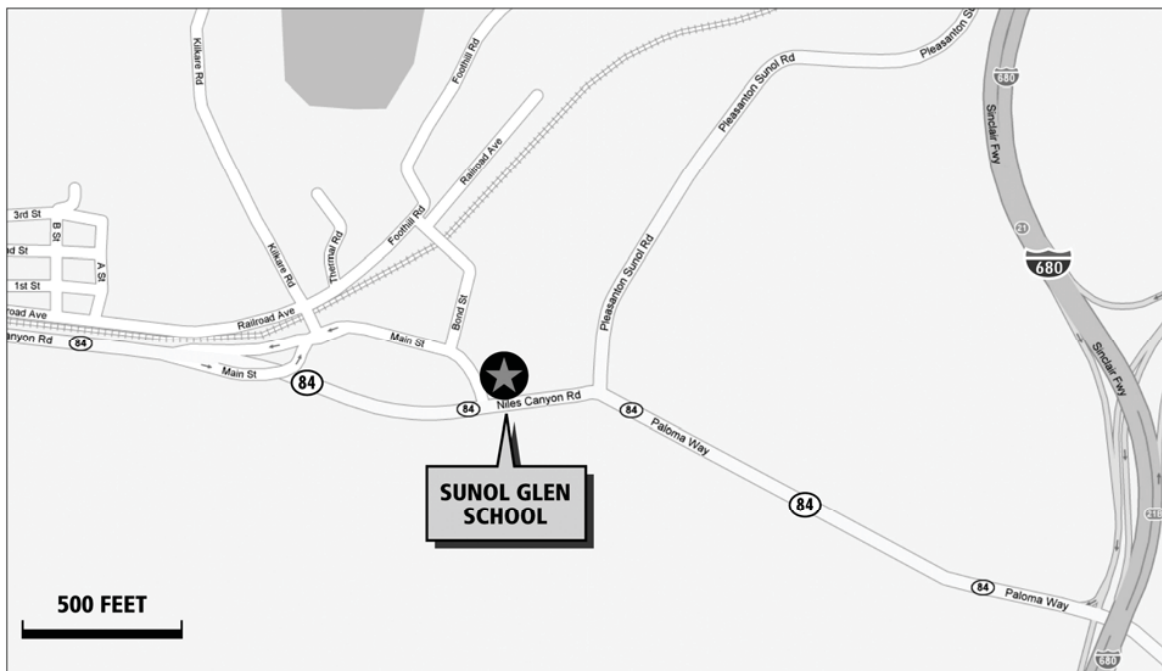
Public Scoping Meeting: The San Francisco Planning Department will hold a PUBLIC SCOPING MEETING at the location, date, and time shown below. The purpose of this meeting will be to receive oral comments that will assist the San Francisco Planning Department in

reviewing the scope and focus of the project's environmental impact analysis and information to be contained in the EIR. The public will have the opportunity to comment and offer testimony for consideration. The San Francisco Planning Department also will accept written comments at the meeting or by mail, email, or fax until the close of business on **November 5, 2007**. Written comments should be sent to the San Francisco Planning Department, Attn: Bill Wycko, Acting Environmental Review Officer, 1650 Mission Street, Suite 400, San Francisco, CA 94103-2479. Comments also may be sent by fax to (415) 558-6409, or by email to chris.kern@sfgov.org.

Public Scoping Meeting Location, Date, and Time:

Date: **Thursday, October 25, 2007**
6:30 PM to 8:30 PM

Location: **Sunol Glen School**
11601 Main St
Sunol, CA 94586



Responsible or Trustee Agency Responses: If you work for an agency that is a Responsible or Trustee Agency, we need to know the views of your agency as to the scope and content of the environmental information that is relevant to your agency's statutory responsibilities in connection with the proposed project. Your agency may need to use the EIR when considering a permit or other approval for this project. We also will need the name of the contact person for your agency. If you have any questions concerning environmental review of the proposed project under CEQA, please contact Chris Kern at (415) 575-9037.

RECEIVED

OCT 05 2007

STATE CLEARING HOUSE

**NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT
AND NOTICE OF PUBLIC SCOPING MEETING**

Date of this Notice:	October 5, 2007		
Lead Agency:	San Francisco Planning Department		
Contact Person:	Chris Kern	Telephone:	(415) 575-9037
Email:	chris.kern@sfgov.org	Facsimile:	(415) 558-6409
Project Title:	San Antonio Backup Pipeline Projects		
Project Sponsor:	San Francisco Public Utilities Commission		
Contact Person:	Kent Nelson	Telephone:	(415) 554-2473
Email:	KNelson@sfwater.org	Facsimile:	(415) 934-5750
Project Location:	The project is located in Sunol Valley just south of the intersection of Highways 680 and 84 along Calaveras Road.		
County:	Alameda County		
Assessor's Parcel Number:	Various		

Project Description: The San Francisco Public Utilities Commission (SFPUC) proposes to upgrade its water system between the San Antonio Reservoir and the San Antonio Pump Station in the Sunol Valley. This area lies just south of the intersection of Highways 680 and 84 along Calaveras Road in Alameda County, California. The proposed project includes four components. The primary component is the installation of a backup pipeline along the same route as the existing San Antonio Pipeline, which runs about two miles from the James Turner Dam at the San Antonio Reservoir to the San Antonio Pump Station. To accommodate increased flows through the proposed backup pipeline, the second and third project components include upgrades to the San Antonio Creek Discharge Facility at the base of the James Turner Dam and upgrades to the San Antonio Pump Station dechlorination and pH adjustment facility. The fourth component includes improvements to the security around the Alameda East Portal. The proposed construction and/or facility upgrade activities at these locations are described in more detail below.

- (1) **San Antonio Backup Pipeline (SABPL):** The existing San Antonio Pipeline is a 60-inch pre-stressed concrete cylinder pipe that runs 11,300 feet from the San Antonio Pump Station (SAPS) adjacent to Calaveras Road to the base of James Turner Dam at the San Antonio Reservoir. The route of this pipeline is west along the access road from the dam to Calaveras Road. It cuts the corner at the intersection of the access road and Calaveras Road, and then proceeds south along the west side of Calaveras Road until tying into the SAPS. The existing pipeline is a two-way conduit. It may be used to transfer up to 160 million gallons per day (MGD) of stored water from San Antonio Reservoir to the Sunol Valley Water Treatment Plant or it can be used to move 160 MGD of Hetch Hetchy water into San Antonio Reservoir under controlled release scenarios. The 160 MGD flow rate is controlled by the pumping capacity of SAPS. The existing San Antonio Pipeline is also used as an emergency discharge pipeline capable of diverting up to 230 MGD of Hetch Hetchy water out of the system and into San Antonio Creek when water quality parameters are exceeded. The 230 MGD flow rate is controlled by the size of SAPL and requires no pump assist. Failure of the San Antonio Pipeline, without the availability of the proposed SABPL, would limit water transmission and management options, and the reliability of these options in this area of the water system. The San Antonio Pipeline has failed before due to wire corrosion and breakage in the Pre-stressed Concrete Cylinder Pipe (PCCP).

The proposed SABPL would be a 66-inch pipe (material to be determined) installed alongside the existing San Antonio Pipeline. It would be designed to transfer up to 315 MGD of Hetch Hetchy water from Alameda Siphon No. 3 to the base of James Turner Dam at San Antonio Reservoir. This design capacity is based on anticipated future emergency discharge requirements. This water would be de-chlorinated and pH adjusted at the SAPS before entering the pipeline. Additional chemical storage and distribution facilities would be located adjacent to the existing SAPS (see description # 3, below). The 315 MGD discharge would occur through a new cone valve structure and then into San Antonio Creek. The creek banks in the immediate vicinity of the new and existing cone valves would be reinforced with riprap to protect against bank erosion (see description #2, below).

Three air gap connections would connect the proposed SABPL to the existing pipeline. These air gaps would allow the existing San Antonio Pipeline to be taken off-line for repairs and still allow water to be transferred as needed to and from the SAPS and the San Antonio Reservoir.

- (2) ***San Antonio Creek Discharge Facility:*** The existing San Antonio Creek Discharge Facility is located at the end of the existing San Antonio Pipeline at the base of the James Turner Dam at the San Antonio Reservoir. It is the junction point for San Antonio Reservoir and Hetch Hetchy discharges.

This facility is used as necessary to allow for an emergency draw down of the San Antonio Reservoir by discharging the reservoir water into San Antonio Creek. It is also the San Antonio Pipeline discharge point for quality impaired water diverted from the Alameda Siphon East Portal. Water is discharged to the creek through a flow control cone valve.

The existing discharge facility, which includes a 48-inch cone valve, is housed in a 20-foot long, 14-foot wide trapezoidal outlet structure. However, the existing structure is not adequate to prevent downstream erosion of the San Antonio Creek channel. The water jet discharging from the existing cone valve has damaged the banks of the creek immediately outside the structure and undermined a retaining wall along the south side of the creek.

The proposed project would include construction of a second discharge structure at the end of the SABPL and just west of the existing facility consisting of a 54-inch cone valve housed in a concrete outlet structure similar to the existing facility. The creek bed in the immediate vicinity of the discharge points of both the new and old discharge facilities would be armored with riprap to protect against scouring during discharge events.

- (3) ***San Antonio Pump Station Chemical Facility Upgrades:*** The existing chemical facility is located on the north side of the SAPS compound. It houses the chemicals and feed system used to dechlorinate treated water before it is discharged either back to the San Antonio Reservoir or into San Antonio Creek. The equipment used for this includes two 2,000-gallon sodium bisulfite chemical storage tanks, four chemical feed pumps; and other auxiliary components. This facility has been used successfully when the existing 48-inch cone valve at the base of James Turner Dam is tested annually. The estimated flow and treatment capacity during these annual tests is about 240 MGD.

The current facility would be expanded under the proposed project by approximately 50 percent to provide treatment for a full diversion of the 315 MGD of Hetch Hetchy water supply. The additional facilities that would be required to meet this project need include another chemical storage tank, two new chemical feed pumps, and the piping, valves, and controls required to convey the sodium bisulfite to the injection point on the proposed SABPL. This additional

equipment would be housed in a new structure to be built just north of the existing dechlorination and pH adjustment facility.

- (4) **Alameda East Portal Improvements:** The proposed project includes several security improvements at the Alameda East Portal site. All the improvements except the new fence would occur within the existing site footprint and would include the following actions:
- (a) Replace the existing perimeter fence and access gates with new chain-link fence. Access gates would be relocated into the new fence line where it would cross the existing access road;
 - (b) Construct new steel, concrete, and soil backfill enclosures around the portal structures and a moveable concrete wall in front of the portal access manifold; and
 - (c) Relocate the existing overhead crane to allow it to reach both the new moveable concrete wall and the portal access manifold when access to the latter is required.

These improvements would involve grading and removal of trees and other vegetation.

The existing San Antonio Pipeline and the related existing and proposed facilities run along the active Calaveras Fault, which is part of the Hayward Fault complex. All project components would be designed to accommodate seismic activity associated with this fault area.

Please see the attached report for more information about the proposed SABPL Project, the scope of the EIR, and the anticipated environmental issues.

THIS PROJECT MAY HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT. AN ENVIRONMENTAL IMPACT REPORT IS REQUIRED. This determination is based upon the criteria of the Guidelines of the State Secretary for Resources, Sections 15063 (Initial Study), 15064 (Determining Significant Effect), and 15065 (Mandatory Findings of Significance).

The San Francisco Planning Department will hold a **PUBLIC SCOPING MEETING** pursuant to the State of California Public Resources Code Section 21083.9 and California Environmental Quality Act Guidelines Section 15206 to receive oral comments concerning the scope of the EIR at the following location, date, and time:

Date: **Thursday, October 25, 2007**
 6:30 PM to 8:30 PM

Location: **Sunol Glen School**
 11601 Main St
 Sunol, CA 94586

The purpose of this meeting is to receive oral comments that will assist the San Francisco Planning Department in reviewing the scope and focus of the project's environmental impact analysis and information to be contained in the EIR. The public will have the opportunity to comment and offer testimony for consideration. The San Francisco Planning Department also will accept written comments on the scope of the EIR at the meeting or by mail, email, or fax until the close of business on November 5, 2007. Written comments may be submitted by mail to the San Francisco Planning Department, Attn:

Bill Wycko, Acting Environmental Review Officer, 1650 Mission Street, Suite 400, San Francisco, CA 94103-2479. They also may be submitted by fax to (415) 558-6409, or sent by email to chris.kern@sfgov.org.

Documents relating to the proposed project are available for review, by appointment, at the San Francisco Planning Department's Major Environmental Analysis (MEA) office at 1650 Mission Street, Suite 400. Please call Chris Kern at (415) 575-9037 to make an appointment. These documents also are available online at: <http://www.sfgov.org/planning>.

10/2/07
Date


Bill Wycko, Acting Environmental Review Officer

中文資料請電：558-6282

Para sa impormasyon sa Tagalog tumawag sa: 558-6251

Para información en Español llamar al: 558-6307

San Antonio Backup Pipeline Project

Case No. 2007.0039E

1.0 OVERVIEW AND BACKGROUND

The San Francisco Public Utilities Commission (SFPUC) is proposing to construct and operate the San Antonio Backup Pipeline (SABPL) Project. To meet California Environmental Quality Act (CEQA) requirements, the San Francisco Planning Department will prepare and distribute an Environmental Impact Report (EIR) describing and analyzing the environmental effects of the proposed project. This Notice of Preparation (NOP) provides a brief description of proposed project, and identifies some of the project's key potential environmental effects.

1.1 San Francisco Water System and the San Antonio Backup Pipeline System

The City and County of San Francisco, through the SFPUC, owns and operates a regional water system that extends from the Sierra Nevada mountain range to the San Francisco Bay Area (see Figure 1 at the end of this document). This regional water system serves 2.4 million people in San Francisco, San Mateo, Santa Clara, Alameda, and Tuolumne Counties. The basic network of major facilities in the regional system was built from the late 1880s through the 1930s. Expansion and improvements of the major facilities continued through the 1970s. The current San Antonio Pipeline, which transmits water in an emergency water outage event to maintain water delivery to the San Francisco Bay Area and transmits water from San Antonio Reservoir to the Sunol Valley Water Treatment Plant, was built in 1967 and is a part of the SFPUC's water system.

Aging facilities within the water system are in need of major repair, rehabilitation, upgrade, and/or replacement. Currently, whenever there are unexpected water quality problems in the upper Hetch Hetchy system near Yosemite National Park, such as turbidity spikes, water is diverted to the existing San Antonio Pipeline in the Sunol Valley. The existing 60-inch diameter San Antonio Pipeline is a pre-stressed concrete cylinder pipe and is therefore susceptible to failure when the pre-stressing wires corrode and break, thereby preventing the emergency discharge of water out of the water system.

In February 2005, the SFPUC developed a regional Water System Improvement Program (WSIP). The basic goals of the WSIP are to increase the reliability of the regional water system with respect to water quality, seismic response, water delivery, and water supply to meet water delivery needs in the service area through the year 2030. To accomplish these goals, the SFPUC proposes 22 facility improvement projects throughout the regional water system under the WSIP. The SABPL Project is one of the proposed WSIP facility improvement projects. In June 2007, the San Francisco Planning Department published a Draft Program EIR (PEIR) to address the potential environmental impacts of the WSIP on a programmatic level and evaluate regional water supply alternatives. The Draft PEIR is available on the San Francisco Planning Department website at www.sfgov.org/planning/mea.

1.2 Environmental Review Process

The San Francisco Planning Department will prepare a project-specific EIR to evaluate the environmental effects of the proposed SABPL Project. The EIR will be prepared in compliance with the CEQA Guidelines Section 15161 and will address project-specific construction and operational impacts.

The first step in the environmental review process is the formal public scoping process, for which this NOP has been prepared. Following the public scoping meeting, a Draft EIR will be prepared and circulated for a 45-day public review period. Public comments on the Draft EIR will be accepted in writing during the review period or orally at formal public hearings to be held by the San Francisco Planning Commission. The San Francisco Planning Department then will prepare written responses to comments on environmental issues raised during the public review period, and a Response to Comments document will be prepared. This document will be considered by the San Francisco Planning Commission, along with the Draft EIR and any revisions to the draft based on the responses to comments, for certification as a Final EIR.

1.3 Public Scoping Meeting

The San Francisco Planning Department will hold a public scoping meeting at the following location, date, and time:

Date: **Thursday, October 25, 2007**
 6:30 PM to 8:30 PM
 Sunol, CA 94586

Location: **Sunol Glen School**
 11601 Main St

The purpose of this meeting is to assist the San Francisco Planning Department with its review of the proposed scope and content of the EIR as summarized in this NOP. The public will have the opportunity to comment and offer testimony for consideration. The San Francisco Planning Department will also accept written comments at the meetings or by mail, e-mail, or fax until the close of business on **November 5, 2007**. Written comments should be sent to the San Francisco Planning Department, Attn: Bill Wycko, Acting Environmental Review Officer, 1650 Mission Street, Suite 400, San Francisco, CA 94103-2479, or be emailed to chris.kern@sfgov.org.

2.0 PROJECT DESCRIPTION

2.1 Existing Facilities and Proposed Project Components

The proposed project would be located between the San Antonio Pump Station and San Antonio Reservoir in the Sunol Valley in Alameda County, California. This project area lies just south of the intersection of Highways 680 and 84 along Calaveras Road (see Figure 2). There are four primary locations at which new construction and/or facility upgrades would occur, including: (1) along the alignment of the existing San Antonio Pipeline, which runs about two miles from the San Antonio Pump Station to the James Turner Dam, (2) the San Antonio Creek Discharge facilities at the base of the James Turner Dam at the San Antonio Reservoir, (3) the San Antonio Pump Station, and (4) the Alameda East Portal. The existing facilities and the proposed construction and/or facility upgrade activities at these locations are described below.

(1) ***San Antonio Backup Pipeline (SABPL).*** The existing San Antonio Pipeline is a 60-inch pre-stressed concrete cylinder pipe that runs 11,300 feet from the San Antonio Pump Station (SAPS) adjacent to Calaveras Road to the base of James Turner Dam at the San Antonio Reservoir. The route of this pipeline is west along the access road from the dam to Calaveras Road. It cuts the corner at the intersection of the access road and Calaveras Road, and then proceeds south along the west side of Calaveras Road until tying into the SAPS. The existing pipeline is a two-way conduit. It may be used to transfer up to 160 million gallons per day (MGD) of stored water from San Antonio Reservoir to the Sunol Valley Water Treatment Plant or it can be used to move 160 MGD of Hetch Hetchy water into San Antonio Reservoir under controlled release scenarios. The 160 MGD flow rate is controlled by the pumping capacity of SAPS. The existing San Antonio Pipeline is also used as an emergency discharge pipeline capable of diverting up to 230 MGD of Hetch Hetchy water out of the system and into San Antonio Creek when water quality parameters are exceeded. The 230 MGD flow rate is controlled by the size of SAPL and requires no pump assist. Failure of the San Antonio Pipeline, without the availability of the proposed SABPL, would limit water transmission and management options, and the reliability of these options in this area of the water system. The San Antonio Pipeline has failed before due to wire corrosion and breakage in the Pre-stressed Concrete Cylinder Pipe (PCCP).

The proposed SABPL would be a 66-inch pipe (material to be determined) installed alongside the existing San Antonio Pipeline. It would be designed to transfer up to 315 MGD of Hetch Hetchy water from Alameda Siphon No. 3 to the base of James Turner Dam at San Antonio Reservoir. This design capacity is based on anticipated future emergency discharge requirements. This water would be de-chlorinated and pH adjusted at the SAPS before entering the pipeline. Additional chemical storage and distribution facilities would be located adjacent to the existing SAPS (see description # 3, below). The 315 MGD discharge would occur through a new cone valve structure and then into San Antonio Creek. The creek banks in the immediate vicinity of the new and existing cone valves would be reinforced with riprap to protect against bank erosion (see description #2, below).

As the backup water pipeline to the existing San Antonio Pipeline, the SABPL would be configured with three air gap connections between the new and the existing pipeline. These air gaps would allow the existing San Antonio Pipeline to be taken off-line for repairs and still allow water to be transferred as needed to and from the SAPS and the San Antonio Reservoir.

- (2) ***San Antonio Creek Discharge Facility:*** The existing San Antonio Creek discharge facility is located at the end of the existing San Antonio Pipeline at the base of the James Turner Dam at the San Antonio Reservoir. It is the junction point for San Antonio Reservoir and Hetch Hetchy discharges.

This facility is used as necessary to allow for an emergency draw down of the San Antonio Reservoir by discharging the reservoir water into San Antonio Creek. It is also the San Antonio Pipeline discharge point for quality impaired water diverted from the water delivery system. Water is discharged into San Antonio Creek through a flow control cone valve.

The existing discharge facility includes a 48-inch cone valve housed in a 20-foot long, 14-foot wide trapezoidal outlet structure. However, the existing structure is not adequate to prevent downstream erosion of the San Antonio Creek channel. The water jet discharging from the existing cone valve has damaged the banks of the creek immediately outside the structure and undermined a retaining wall along the south side of the creek.

The proposed action would include construction of a second discharge structure at the end of the SABPL and just west of the existing facility. The new discharge facility would include a 54-inch cone valve housed in a concrete outlet structure similar to the existing facility, and the creek bed in the immediate vicinity of the discharge points of both the new and old discharge facilities would be armored with riprap to protect against scouring during discharge events. The new cone valve is designed to substantially reduce creek bank erosion.

- (3) ***San Antonio Pump Station Chemical Facility Upgrades:*** The existing chemical facility is located on the north side of the SAPS compound. It houses the chemicals and feed system used to dechlorinate treated water before it is discharged either back to the San Antonio Reservoir or into San Antonio Creek. The equipment used for this includes two 2,000-gallon sodium bisulfite chemical storage tanks, four chemical feed pumps; and other auxiliary components. These facilities have been used successfully when the existing 48-inch cone valve at the base of Turner Dam is tested annually. The estimated flow and treatment capacity during these annual tests is about 240 MGD.

The current facility would have to be expanded by approximately 50% to provide treatment for a full diversion of the 315 MGD of Hetch Hetchy water supply. The additional facilities that would be required to meet this demand include another chemical storage tank, two new chemical feed pumps, and the piping, valves, and controls required to convey the sodium bisulfite to the injection point on the proposed SABPL. This additional equipment would be housed in a new structure to be built just north of the existing chemical facility.

- (4) ***Alameda East Portal Improvements:*** The proposed project includes several security improvements at the Alameda East Portal site. All the improvements except the new fence would occur within the existing site footprint and would include the following actions:

- (a) Replace the existing perimeter fence and access gates with new chain-link fence. Access gates would be relocated into the new fence line where it would cross the existing access road;
- (b) Construct new steel, concrete, and soil backfill enclosures around the portal structures and a moveable concrete wall in front of the portal access manifold; and
- (c) Relocate the existing overhead crane to allow it to reach both the new moveable concrete wall and the portal access manifold when access to the latter is required.

These improvements would involve grading and removal of trees and other vegetation.

The existing San Antonio Pipeline and the related existing and proposed facilities run along the active Calaveras fault, which is part of the Hayward Fault complex (see Figure 4). All project components would be designed to accommodate seismic activity associated with this fault area.

2.2 Project Goals and Objectives

The overall objectives of the proposed project are to provide a more efficient and reliable conveyance option for emergency water diversion when Hetch Hetchy water cannot be conveyed through the Alameda West Portal and Irvington Tunnel, and to provide a redundant water transmission pipeline from San Antonio Reservoir to the Hetch Hetchy system if needed.

For the specific project components, the SABPL improvements are designed to meet the following goals and objectives:

- (1) **San Antonio Backup Pipeline:** The SABPL would give SFPUC greater flexibility in managing a potential emergency situation along the Hetch Hetchy system when water cannot be conveyed through the Alameda West Portal and on to water customers in the San Francisco Bay area. This could occur as a result of high turbidity in the Hetch Hetchy supply caused by erosion and ashes from a fire. This kind of event is unpredictable and rare, but serious when it occurs. The existing San Antonio Pipeline has limited conveyance capacity and has a history of failure due to wire corrosion and breakage in the Pre-stressed Concrete Cylinder Pipe (PCCP).

The SABPL also would serve as a backup water supply conveyance alternative from San Antonio Reservoir to the Hetch Hetchy system in the event the existing, aging, San Antonio Pipeline is out of service due to maintenance or failure.

- (2) **San Antonio Creek Discharge Facility:** Construction of the new discharge facility would be necessary to provide a safe and adequate method for discharging the emergency release of water from the SABPL. There are two reasons for this. First, the current discharge facility would not be able to handle the full 315 MGD flow capability of the proposed SABPL, necessitating the construction of an additional, larger capacity discharge facility. And second, due to the current alignment of the existing discharge facility and the proposed alignment of the SABPL, it is not possible to use the existing facility as a discharge point for the SABPL (the angle of the pipeline bend that would be necessary to match alignments between the SABPL and the existing discharge facility would exceed engineering parameters for the pressure and volume of flow in the pipe). Thus, a second discharge facility is proposed.

- (3) **San Antonio Pump Station Chemical Facility Upgrades:** As noted in Section 2.1, the upgrades to the chemical facility are proposed in order to allow for dechlorination of the full 315 MGD of treated water from the Hetch Hetchy supply should it need to be diverted to San Antonio Creek due to water quality issues.

- (4) **Alameda East Portal Improvements:** The purpose of the proposed improvements at the Alameda East Portal would be to improve the structural integrity and security of the portal facilities.

2.3 Schedule

Depending on the environmental review and permitting processes for the proposed project construction of the SABPL could begin as early as Fall 2009 and would be completed around Spring 2012.

3.0 ENVIRONMENTAL ANALYSIS

3.1 Key Environmental Issues to be Addressed in the EIR

The following paragraphs describe the key environmental issues that the EIR will address. The EIR will address both construction and operation activities, and will propose mitigation measures for impacts considered to be potentially significant.

Biological Resources – The proposed project would have potential temporary and long-term impacts on sensitive species, including California red-legged frog, California tiger salamander, Alameda whipsnake, and raptors. Construction of the proposed San Antonio Creek Discharge Facility would involve destruction of wetlands and riparian habitat at the base of the James Turner Dam. Operation of the SABPL for emergency discharges would impact riparian habitat along San Antonio Creek. Trees and other vegetation would be removed at the Alameda East Portal site, and oak woodlands and grasslands may be affected within the proposed alignment of the SABPL.

Cultural Resources – Sensitive cultural resources that could be affected by the proposed project include historical and prehistoric features. Resources, including archaeological sites and historical structures, have been documented in the proposed project area and impacts on these resources will be addressed in the EIR. Identified resources will be evaluated for their significance according to CEQA, the National Register of Historic Places and the California Register of Historic Resources. A cultural resources impact could occur during excavation if unidentified cultural resources are disturbed or if the value of a historic building is adversely affected. Impacts on paleontological resources could occur during excavation if unanticipated resources are uncovered and damaged.

Hydrology and Water Quality – Construction of the proposed backup pipeline could result in discharges of contaminants to receiving waters (either surface or groundwater). Dewatering of the pipeline trench may be required during construction, and the water would need to be discharged in accordance with regulatory standards. Erosion could occur during construction as a result of grading and other activities. Once the project is operational, managing an emergency along the regional water system may require that water be discharged from the proposed pipeline into San Antonio Creek. This could result in habitat destruction along the creek due to higher flows and degradation of the creek's water quality.

Geology, Soils, and Seismology – The proposed SABPL would cross active and potentially active faults that have potential to rupture the pipeline. Other potential geologic hazards to which the proposed project could be exposed include settlement, liquefaction, and landslides. Geologic hazards that the proposed project could potentially cause, including landslides, will also be evaluated in the EIR.

Traffic and Transportation - Construction of the facilities would generate additional vehicle traffic above baseline levels. Traffic would be generated by construction vehicles traveling to and from the work site and trucks transporting supplies and equipment. Pipeline installation could temporarily disrupt traffic at the road crossings. Upgrades to existing access roads off the SFPUC's right-of-way could potentially cause minor localized traffic disruption.

Other Environmental Issues

Other topics that will be addressed in detail in the EIR include potential impacts related to:

- **Mineral Resources**
- **Air Quality**
- **Land Use**
- **Agricultural Resources**
- **Recreation**
- **Noise**
- **Utilities and Public Service Systems**
- **Hazards/Hazardous Materials**
- **Growth-inducing Impacts**
- **Cumulative Impacts**

3.2 Project Alternatives

As required by CEQA, the EIR will describe and evaluate a reasonable range of alternatives to the proposed SABPL project. The alternatives would feasibly attain most of the proposed SABPL project's basic objectives while avoiding or substantially lessening any significant effects of the project. CEQA also requires evaluation of the 'No Project' alternative. The No Project Alternative will compare the potential impacts of the proposed project with the impacts that would be expected to occur if the SABPL project is not implemented.

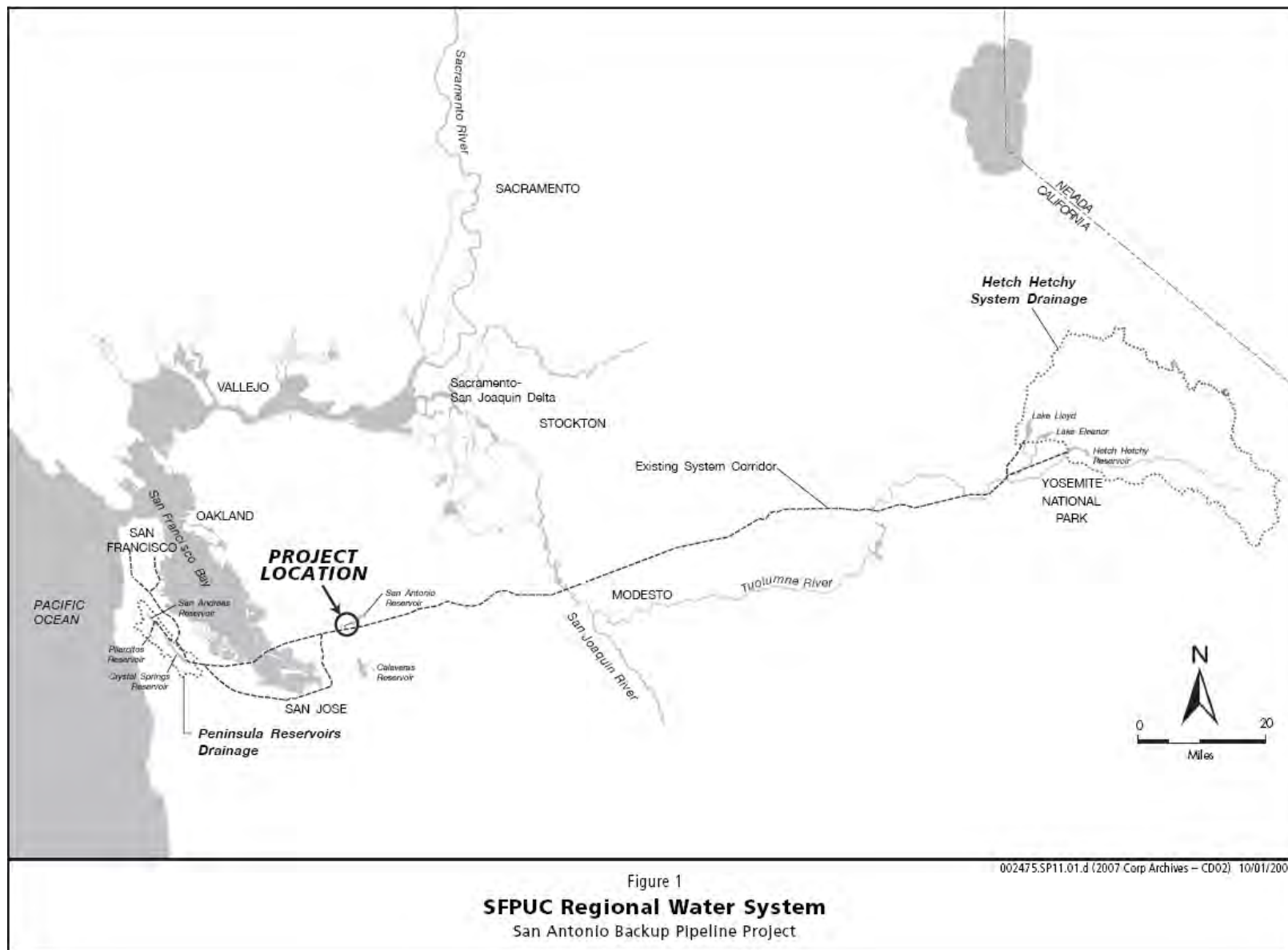
Attachments:

Figure 1: SFPUC Regional Water System

Figure 2: SFPUC SABPL Project Area

Figure 3: SABPL Project Site

Figure 4: Proposed San Antonio Creek Discharge Facility



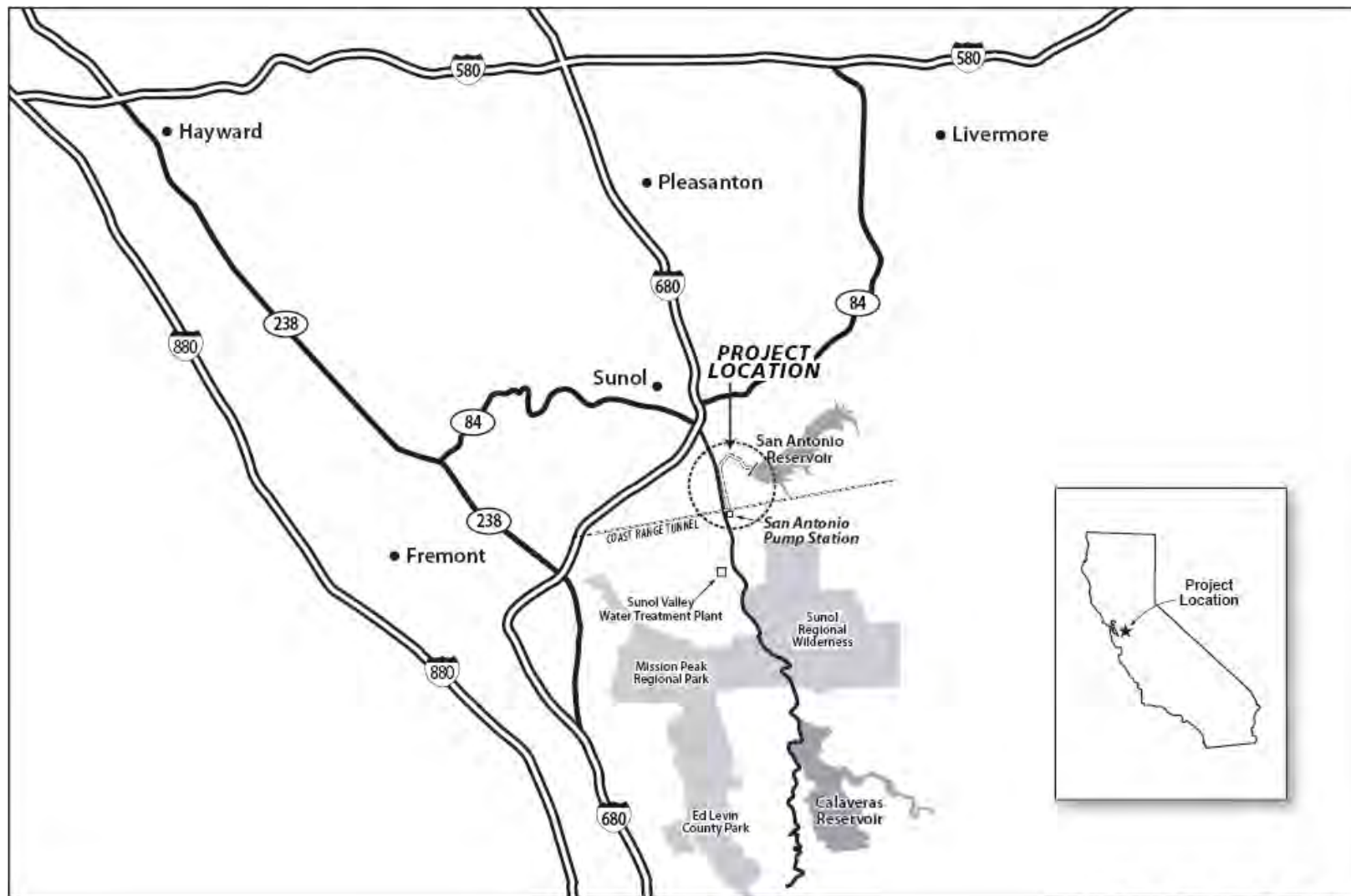
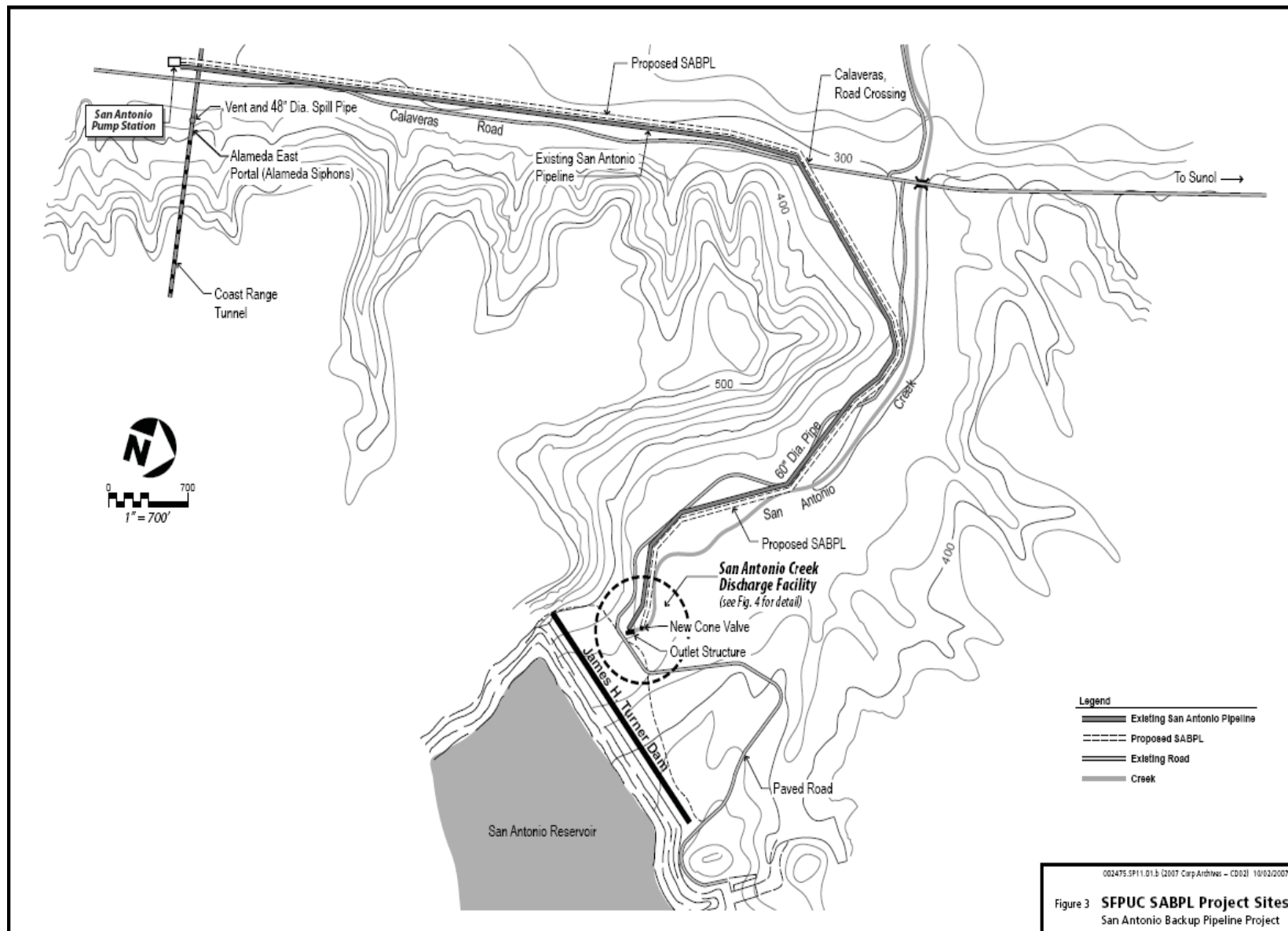
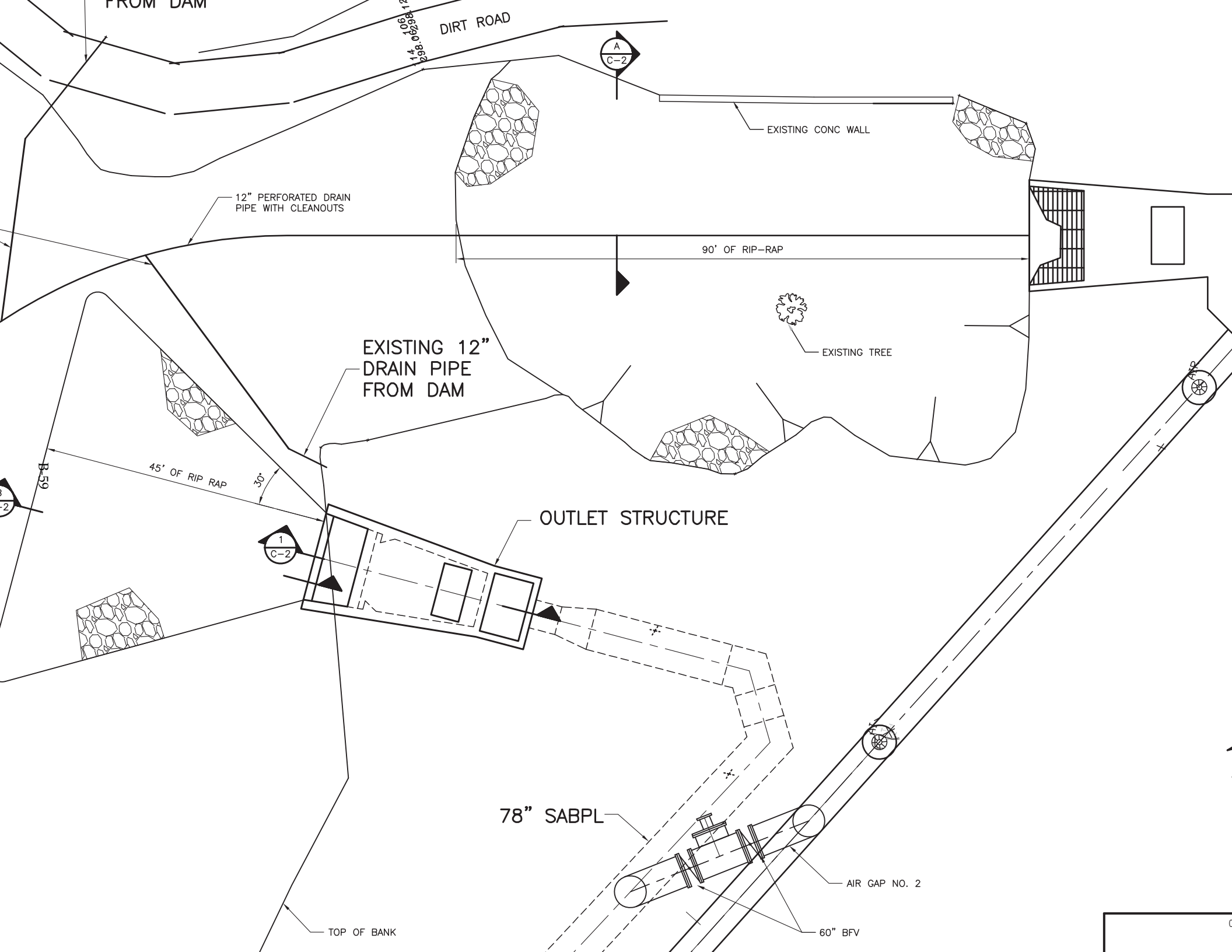


Figure 2
SFPUC SABPL Project Area
 San Antonio Backup Pipeline Project

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APPENDIX B: NEWSPAPER LISTINGS

Includes the following proofs of publication:

- *Argus* (Fremont, CA)
- *The Examiner* (San Francisco, CA)
- *The Valley Times* (Pleasanton, CA)

Argus

c/o ANG Newspapers
39737 Paseo Padre Parkway
Fremont, CA 94538
Legal Advertising
(800) 595-9595 opt.4

ECOLOGY & ENVIRONMENT, INC.
ATTN: ACCTS PAYABLE, 130 BATTERY ST., #400
San Francisco CA 94111

PROOF OF PUBLICATION

FILE NO. SABPL NOP 100207

In the matter of

San Antonio Backup Pipeline Project

The Argus

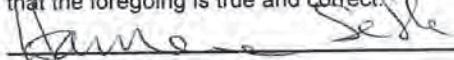
I am a citizen of the United States; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the Legal Advertising Clerk of the printer and publisher of The Argus, a newspaper published in the English language in the County of Alameda, State of California.

I declare that the Argus is a newspaper of general circulation as defined by the laws of the State of California as determined by this court's order, dated June 12, 1961, in the action entitled In the Matter of the Ascertainment and Establishment of the Standing of The Argus as a Newspaper of General Circulation, Case Number 314854, and as amended, April 25, 1967. Said order, as amended, states "'The Argus' has been established, printed and published in the County of Alameda, State of California; [] That it is a newspaper published daily for the dissemination of local and telegraphic news and intelligence of a general character and has a bona fide subscription list of paying subscribers; and ... THEREFORE, IT IS ORDERED, ADJUDGED AND DECREED: ... That 'The Argus' is a newspaper of general circulation for the County of Alameda, California." Said order as amended, has not been revoked.

I declare that the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

10/6/2007

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.



Public Notice Advertising Clerk

Legal No.

0000815054

SAN FRANCISCO PLANNING DEPARTMENT NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT AND NOTICE OF PUBLIC SCOPING MEETING FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT.

Initial evaluation conducted by the San Francisco Planning Department determined that the San Francisco Public Utilities Commission's proposed San Antonio Backup Pipeline Project may have a significant effect on the environment. The San Francisco Planning Department will prepare an Environmental Impact Report (EIR) to assess the project's environmental effects. The San Francisco Planning Department issued a Notice of Preparation for the EIR on October 5, 2007.

Project	Description	(Case No.)
2007.0039E)		

The proposed project would be located between the San Antonio Pump Station and San Antonio Reservoir in the Sunol Valley in Alameda County, California. This project area lies just south of the intersection of Highways 680 and 84 along Calaveras Road. The proposed project includes four components. The primary component is the installation of a backup pipeline along the same route as the existing San Antonio Pipeline, which runs about two miles from the James Turner Dam at the San Antonio Reservoir to the San Antonio Pump Station. To accommodate increased flows through the proposed backup pipeline, the second and third project components include upgrades to the San Antonio Creek Discharge Facility at the base of the James Turner Dam and upgrades to the San Antonio Pump Station dechlorination and pH adjustment facility. The fourth component includes improvements to the security around the Alameda East Portal. The existing San Antonio Pipeline and the related existing and proposed facilities run along the active Calaveras Fault, which is part of the Hayward Fault complex. All project components would be designed to accommodate seismic activity associated with this fault area. In February 2005, the SFPUC developed a regional Water System Improvement Program (WSIP). The basic goals of the WSIP are to increase the reliability of the regional water system with respect to water quality, seismic response, water delivery, and water supply to meet water delivery needs in the service area through the year 2030. To accomplish these goals, the SFPUC proposes 22 facility improvement projects throughout the regional water system under the WSIP. The SABPL Project is one of the proposed WSIP facility improvement projects.

Public Scoping Meeting and Public Comments

The purpose of the EIR is to provide information about potentially significant adverse effects of the project. The public is invited to attend an upcoming scoping meeting to help identify the range of issues and the type of information that should be considered by the San Francisco Planning Department in the EIR. The public scoping meeting is scheduled as follows:

Sunol: Thursday, October 25, 2007

6:30 p.m. - 8:30 p.m.
Sunol Glen School
11601 Main Street
Sunol, CA 94586

How to Comment During Scoping

The public will have the opportunity to comment on the scope and focus of the EIR at the scoping meeting. The San Francisco Planning Department will also accept written public comments on the scope and focus of the EIR through the close of business on September 5, 2007. Written comments should be sent to the San Francisco Planning Department, Attn: Bill Wycko, Acting Environmental Review Officer, 1650 Mission Street, Suite 400, San Francisco, CA 94103-2479, by fax to (415) 558-6409, or by email to chris.kern@sfgov.org.

The Argus, #815054
October 6, 2007

PROOF OF PUBLICATION

(2015.5 C.C.P.)

THE EXAMINER

1224 Fairfax Avenue, San Francisco, CA 94124
Phone 415-359-2723; Fax 415-359-2659

**STATE OF CALIFORNIA
County of San Francisco**

Walter Weinthal

deposes and says that all times herein mentioned he was and is a citizen of the United States, and a resident of the County aforesaid, over the age of eighteen years, and not a party to or interested in the above-entitled matter; and is and was during and at all said times, the Principal Clerk of the Printer and Publisher of THE EXAMINER, a newspaper of general circulation, printed and published in the County of San Francisco, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of San Francisco, State of California, under the date of October 18, 1951, Case Number 410667; that the notice, of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

October 6

all in the year(s) 2007

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated at San Francisco, San Francisco County, California,

10/6/2007

Signature: *Walter Weinthal*

**SAN FRANCISCO PLANNING DEPARTMENT
San Antonio Backup Pipeline Project**

**GOVERNMENT
SAN FRANCISCO PLANNING DEPARTMENT NOTICE
OF PREPARATION OF AN ENVIRONMENTAL IMPACT
REPORT AND NOTICE OF PUBLIC SCOPING MEETING
FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT.**
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Sunol: Thursday, October 25, 2007
8:30 p.m. - 8:30 p.m.
Sunol Glen School
11601 Main Street
Sunol, CA 94596

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THE VALLEY TIMES
(Incorporating The Pleasanton Times)
P.O. Box 607 – Pleasanton, Calif.
94566

AFFIDAVIT OF PUBLICATION

The undersigned declares and says:

That he is and was during all the times herein mentioned a citizen of the United States, over the age of 21 years, and neither party to nor in any way interested in the matter of action herein set forth, and is and was competent to be a witness in said matter of action.

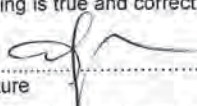
That he is now and was at all times mentioned the Publisher/Legal Clerk/Legal Coordinator of THE VALLEY TIMES, incorporating the Pleasanton Times and is now, and was all the times therein mentioned a newspaper of general circulation printed and published in the City of Pleasanton, Township of Pleasanton, County of Alameda, State of California, and as such has now at all times had charge of all legal notices and advertisements in said newspaper; and that said THE VALLEY TIMES, incorporating The Pleasanton Times is now and was at all times herein mentioned a newspaper of general circulation as that term is defined by Section 6040.5 of the Government code, and as provided by said Section is published for dissemination of local and telegraphic news and intelligence of general character, having a bonafide subscription list of paying subscribers, and is not devoted to the interests or published for the entertainment or instruction of a particular class, profession, trade, calling, race or denomination, or for any number of such classes, professions, trades, callings races, or denominations; that all of said times said newspaper has been established, printed, and published at regular intervals in said township, county, and state, for more than a year preceding the date of the first publication of the notice mentioned; the said notice was set in type not smaller than nonpareil, and was preceded with words in blackface type not smaller than nonpareil, describing or expressing in general terms the purport and character of the notice intended to be given.

That the Public Notice a copy of which is attached hereto, was published in said newspaper, The Valley Times (incorporating The Pleasanton Times) on the

October 6,

all in the year of 2007

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Signature 

Executed at Walnut Creek, California.
Date: October 9, 2007

**San Antonio Backup Pipeline Project
Legal Ad
To Run on Saturday 6,
2007**

SAN FRANCISCO PLANNING DEPARTMENT NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT AND NOTICE OF PUBLIC SCOPING MEETING FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT.

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Sunol, CA 94586

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Publish October 6, 2007

APPENDIX C: SCOPING MEETING MATERIALS

Includes the following items:

- Meeting Agenda
- Scoping Meeting Sign-in Sheet (copy of actual sign-in sheet)
- SABPL Project Fact Sheet
- Scoping Meeting Presentation
- Speaker Registration Cards (blank)
- Comments Form (blank)



SAN FRANCISCO PLANNING DEPARTMENT

Public Scoping Meeting

San Antonio Backup Pipeline Project

Sunol, CA – October 25, 2007

AGENDA

Starting promptly at 6:30 PM

Introductions – Michele Liapes, San Francisco Public Utilities Commission

Presentation:

- Environmental Review Process Overview – Chris Kern, San Francisco Planning Department
- Project Overview – Vivian Chow, San Francisco Public Utilities Commission

Public Comment

Closing Remarks

Glossary	SFPUC: San Francisco Public Utilities Commission
	MEA: Major Environmental Analysis Division, San Francisco Planning Department
	CEQA: California Environmental Quality Act
	WSIP: Water System Improvement Program
	EIR: Environmental Impact Report
	SABPL: San Antonio Backup Pipeline
	SWTPIP: Sunol Valley Water Treatment Plant Improvement Project
Documents Currently Available	All documents available at www.sfwater.org or by calling (415) 554-3237
	- Project Notice of Preparation
	- SWWTP Improvement Project Fact Sheet
	- SFPUC Water System Improvement Program Description
	- SFPUC Wholesale Customer Water Demand Projections, November 2004
	- SFPUC Wholesale Customer Conservation Potential, December 2004
	- SFPUC 2030 Purchase Estimates, December 2004
	- San Francisco Retail Water Demands and Conservation Potential, November 2004
	- SFPUC Water Supply Master Plan, April 2000
For More Information	SFPUC Web Site: www.sfwater.org
	For Project: Michele Liapes at SFPUC, (415) 554-3211 or mliapas@sfwater.org
	For EIR: Chris Kern at SF Planning, (415) 575-9037 or chris.kern@sfgov.org

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SAN FRANCISCO PLANNING DEPARTMENT

Public Scoping Meeting

San Antonio Backup Pipeline Project

Sunol, CA – October 25, 2007

SIGN-IN SHEET

(PLEASE PRINT)

NAME	AFFILIATION	ADDRESS	PHONE	EMAIL
JUAN GARCIA	S-C RANCHOS	PO Box 43	925 5960252	

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San Francisco Public Utilities Commission

water system improvements

1155 Market Street, Eleventh Floor

San Francisco CA 94103

Ph: 415.554.3289 Fax 415.554.3282

www.sfwater.org

San Antonio Backup Pipeline Project

The San Francisco Public Utilities Commission (SFPUC) proposes the construction of a new San Antonio Backup Pipeline inside the SFPUC-owned Alameda Watershed in the Sunol Valley, between the San Antonio Pump Station off Calaveras Road and the San Antonio Reservoir, which stores local runoff as well as Hetch Hetchy water. The new 66-inch-diameter pipeline would extend approximately 2 miles, parallel to the existing 60-inch-diameter San Antonio Pipeline between the two sites.

The existing San Antonio Pipeline is able to perform three functions: 1) convey surplus Hetch Hetchy water from the Alameda Siphons to San Antonio Reservoir under controlled release conditions; 2) convey water stored in San Antonio Reservoir to San Antonio Pump Station where it is then pushed through Sunol Valley Water Treatment Plant and into the Hetchy system; and 3) convey the full Hetch Hetchy flow into San Antonio Creek when emergency conditions, such as sudden water quality problems, occur. The existing prestressed concrete cylinder San Antonio Pipeline, built in 1967, is susceptible to failures whenever the prestressing wires corrode and break.

The proposed project would transfer the full Hetch Hetchy flow more reliably and efficiently. It would also serve as backup to the existing pipeline whenever it needed to be taken out of service for maintenance or repairs.

Proposed Project Elements

San Antonio Backup Pipeline. This 66-inch-diameter water pipeline would extend approximately 2 miles parallel to the existing San Antonio Pipeline between the San Antonio Pump Station and Turner Dam at San Antonio Reservoir. The backup pipeline would be equipped with three air gap systems

connecting to the existing pipeline. These would allow water transfer between the pump station and the reservoir whenever the existing pipeline had to be taken out of service for repairs or maintenance.

The proposed project also calls for the following additional elements:

Discharge Facilities. An existing discharge facility, a 48-inch cone valve at the end of the current San Antonio Pipeline at the base of Turner Dam, allows for the discharge of reservoir water into San Antonio Creek. It also allows Hetch Hetchy water to be diverted to San Antonio Creek if the water supply cannot be conveyed through the Irvington Tunnel because of inadequate water quality. The proposed new discharge facility would be a 54-inch cone valve housed in a concrete outlet structure, similar to the one housing the cone valve of the existing discharge facility. Since the operation of the existing cone valve has damaged creek banks and undermined a retaining wall along the creek's south side, the scope of work also calls for repair of the retaining wall and erosion control of the creek bank.

Upgrades to the San Antonio Pump Station Chemical System. The current system, located on the north side of the San Antonio Pump Station, consists of chemical storage and feed facilities used for dechlorination and pH adjustment before the water is conveyed to the San Antonio Reservoir or to San Antonio Creek. This system would be replaced with new equipment and a new building in order to provide the necessary treatment for a full diversion of Hetch Hetchy water.

Alameda East Portal Improvements: A recent site review showed the need to improve the structural integrity of some of the structures at this site. Work would include upgrading the perimeter fence and

access gates, reinforcing the portal, the portal head wall and support structures, and moving the overhead crane. All these improvements would occur within the existing footprint of the facilities on this site.

Proposed Construction Activities

San Antonio Back-Up Pipeline. Construction of the San Antonio Backup Pipeline would occur along the alignment paralleling the present pipeline between the San Antonio Pump Station and Turner Dam, which impounds the San Antonio Reservoir. The project calls for one crossing of Calaveras Road. Activity would also take place at the current San Antonio Creek discharge facilities at Turner Dam, and the San Antonio Pump Station.

Installation would be in a trench on the west side of Calaveras Road. Thirty to fifty feet on either side of the trench would be temporarily used for construction equipment, materials and temporary spoils piles.

Spoils from the trenching would amount to approximately 15,000 cubic yards, and would be removed to a long-term spoils management site within the SFPUC-owned watershed along the west side of Calaveras Road near San Antonio Creek Road.

Work would normally be limited to daylight hours, Monday through Friday, though occasional situations could arise that would require work outside those times. Minor traffic delays can be expected during construction of the segment across Calaveras Road.

San Antonio Creek Discharge Facility. The construction site for this facility would be at the base of the dam and would include fortifying the stream banks with rip rap immediately downstream of the existing facility, and 80 to 100 feet north-northwest of that facility. Construction staging would be along the existing road and parking area just west of the existing discharge facility.

San Antonio Pump Station Chemical System. The new system would extend just north of the existing one. All construction would occur on previously disturbed areas.

Environmental Review

The San Francisco Planning Department's Major Environmental Analysis (MEA) Division is

conducting the environmental review of the project in accordance with the California Environmental Quality Act (CEQA). CEQA requires that the SFPUC and the public be informed about the significant environmental effects of a project and ways to avoid or reduce these effects before a project is approved. MEA has decided that an Environmental Impact Report (EIR) is the appropriate level of environmental review for the San Antonio Backup Pipeline Project.

Anticipated Project Schedule

Environmental Review process began: July 2007
Anticipated construction period: March 2010 through June 2012

The SFPUC Water System Improvement Program

The San Antonio Backup Pipeline Project is part of the SFPUC's comprehensive \$4.3 billion SFPUC Water System Improvement Program (WSIP) to repair, replace, and seismically upgrade the Hetch Hetchy system's aging pipelines, tunnels, reservoirs and dams.

Other proposed projects in the Sunol Valley region include the New Irvington Tunnel, Alameda Siphon 4, the Calaveras Dam Replacement, the San Antonio Pump Station Upgrade, the Sunol Valley Water Treatment Plant Improvement Project, and the installation of two portable generators for standby power. Also a selection of pipe sections and fittings are now stored at Sunol Yard as part of the regional Pipeline Repair and Readiness Improvement Project. For further information on these and other WSIP projects, please see sfwater.org/Water/SystemImprovements.

Questions? Comments?

For questions on the environmental review process, contact Chris Kern, San Francisco Department of Planning, Major Environmental Analysis Division, 415-575-9037, chris.kern@sfgov.org

For questions about the San Antonio Backup Pipeline Project, contact Michele Liapes, SFPUC Communications, 415-554-3211, mliapes@sfwater.org.

Public Scoping Meeting

San Francisco Planning Department
Major Environmental Analysis Division

SCOPING MEETING

SAN ANTONIO BACKUP
PIPELINE PROJECT
Environmental Impact Report

October 25, 2007



**Tonight's San Antonio Backup Pipeline
Project Scoping Meeting**

Please:

- Sign in at the table near the entrance.
- Pick up copies of meeting materials.
- Fill out a speaker card if you would like to provide a comment tonight.
- Pick up comment cards to make written comments.

Drop off at the end of the meeting

Mail or fax later

- Hold all comments until the end of the presentation.

Project Team Introductions

San Francisco Planning Department
Chris Kern, EIR Coordinator

San Francisco Public Utilities Commission
(SFPUC)
Vivian Chow, Project Manager
Kent Nelson, Environmental Project Manager
Michele Liapes, Communications

Meeting Agenda

- Presentation
 - Overview of Environmental Review Process*
 - Overview of San Antonio Backup Pipeline Project*
- Public Comments
- Closing Remarks

California Environmental Quality Act

Projects require environmental review under the California Environmental Quality Act (CEQA) before they can be considered for approval

For SFPUC projects, CEQA is implemented by the San Francisco Planning Department, **the CEQA Lead Agency**.

CEQA Objectives

- Present environmental impacts of proposed projects
- Identify ways to avoid or reduce environmental impacts
- Inform the agency decision-making process
- Encourage public participation
- Enhance interagency coordination

CEQA: Program and Project EIRs

- A **Program** EIR has been developed for the SFPUC WSIP.
- The proposed SABPL is one of the 22 **Projects** analyzed as part of the WSIP **Program** EIR.
- This effort is a more detailed, **project-specific** CEQA review compared to that presented in the WSIP Program EIR.

What will the EIR do?

- Provide a detailed description of the project and the existing environment
- Identify potential environmental effects
- Identify ways to avoid or reduce significant environmental effects through mitigation or alternatives to the proposed project

Environmental Review Schedule

- Scoping Period Ends – November 5, 2007
- Public Review of Draft EIR – Fall 2008
- Release of Final EIR – Spring 2009
- Certification of Final EIR – Spring 2009

PROPOSED SAN ANTONIO BACKUP PIPELINE PROJECT (SABPL)

SABPL: Project Goals and Objectives

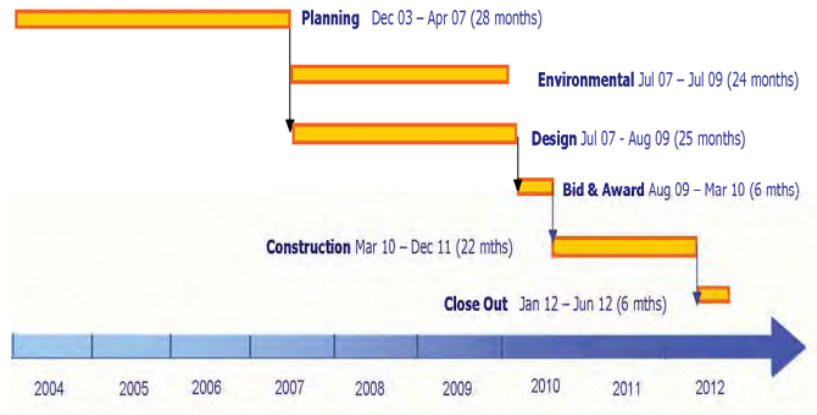
The purpose of the San Antonio Backup Pipeline project is twofold:

- To discharge the full HH flow into San Antonio Creek during an emergency outage scenario
- To replace the existing San Antonio Pipeline if the existing pipeline is out of service due to planned or emergency event
- To improve the structural integrity and security of the Alameda East Portal.

SABPL: Project Location



SABPL: Project Timeline



Public Comment

- Hear your comments on the proposed scope of environmental review of the San Antonio Backup Pipeline Project
- Help identify the following to be analyzed in depth:
 - Range of alternatives*
 - Environmental effects*
 - Methods of assessment*
 - Mitigation measures*

Comment Session Ground Rules

Please:

- Submit speaker cards to speak
- Wait until your name is called
- State your name & speak clearly
- Limit comments to 3 minutes
- Use comment forms for more extensive input

Where to Send Comments

- Scoping comments accepted through:
November 5, 2007
- Send by email to: chris.kern@sfgov.org
- Send by fax to: (415) 558-6409
- Send by U.S. mail to:
San Francisco Planning Department
Attn: Environmental Review Officer
1650 Mission Street, Suite 400
San Francisco, Ca 94103-2479
- CEQA Information is available online at:
www.sfgov.org/planning/mea
- For Project information, contact:
Michele Liapes (415) 554-3211, mliapes@sfgov.org

SABPL: Project Location



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SAN FRANCISCO PLANNING DEPARTMENT

Public Scoping Meeting
San Antonio Backup Pipeline Project
Sunol, CA – October 25, 2007

SPEAKER CARD

CONTACT INFORMATION

Name:

Affiliation:

Street Address:

City, State, Zip:

Phone:

Email:



SAN FRANCISCO PLANNING DEPARTMENT

Public Scoping Meeting
San Antonio Backup Pipeline Project
Sunol, CA – October 25, 2007

SPEAKER CARD

CONTACT INFORMATION

Name:

Affiliation:

Street Address:

City, State, Zip:

Phone:

Email:

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SAN FRANCISCO PLANNING DEPARTMENT

Public Scoping Meeting
San Antonio Backup Pipeline Project
Sunol, CA – October 25, 2007

COMMENTS

Thank you for participating in tonight's Public Scoping Meeting on the SFPUC's San Antonio Backup Pipeline Project.
Your comments on the scope and focus of the environmental review are encouraged.

Name (please print): _____

Affiliation (if applicable): _____

Phone: _____ Email: _____

Address: _____

City, State, Zip: _____

COMMENTS

Mail comments to: Chris Kern, San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103-2479

Fax: (415) 558-6409 Email: chris.kern@sfgov.org

For more information on the SFPUC's San Antonio Backup Pipeline Project, Contact:

Michele Liapes, SFPUC Communications Division

Phone: (415) 554-3211 Email: mliapes@sfgov.org

[illegible]

APPENDIX D: SCOPING MEETING TRANSCRIPT

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In the Matter of:)
)
San Antonio Backup Pipeline)
Project)
)
_____)

THURSDAY, OCTOBER 25, 2007

6:30 P.M.

B-91

APPEARANCES

Chris Kern, San Francisco Planning Department

Vivian Chow, San Francisco Public Utilities Commission

Michele Liapes, San Francisco Public Utilities Commission

Steve Shaw, San Francisco Public Utilities Commission

Cheryl Karpowicz, Ecology & Environment, Inc.

Erec DeVest, Ecology & Environment, Inc.

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Mr. Garcia	8
Adjournment	13
Certificate of Reporter	14

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1 PROCEEDINGS

2 MR. KERN: Let's get started. I hope you
3 appreciate all the effort that we've made for you,
4 Mr. Garcia. I know that you're veteran of these meetings
5 so we're probably -- I'm going to alter our presentation a
6 little bit and focus more on, I think, making sure that
7 you have information about the project at this point and
8 that we hear from you what your comments are on the
9 scoping of this EIR, because I know that you understand
10 the process pretty well, but with that said, I'm going to
11 run through our slide presentation.

12 So as you know, tonight we're here to talk about
13 the scoping for the environmental review for the
14 San Antonio Backup Pipeline Project, which is part of the
15 San Francisco PUC's Water System Improvement Program.

16 Next slide, please.

17 You've already signed in, and if you would like
18 to speak, we won't make you fill out a speaker card. And
19 if you have other comments that you want to offer or more
20 detailed comments after tonight, you can do that in
21 writing by mail, by fax, by email. We've got comment
22 cards here that you can use.

23 My name is Chris Kern, and I am with the Planning
24 Department, and I'm coordinating the environmental review
25 for this project and a few other of the projects here in

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1 the Sunol Valley.

2 And Vivian Chow is the project manager for this
3 project with the San Francisco PUC. And I think you've
4 met Michele Liapes before, who is with PUC Communications.
5 Steve Shaw I've just met tonight. I think you two know
6 each other. And so that's the group -- oh, Kent Nelson is
7 the PUC environmental project manager, but he's not here
8 with us tonight, he's on vacation, but he's another
9 contact on this project.

10 MR. GARCIA: I met him at the last meeting, I
11 think.

12 MR. KERN: Right, yes. Okay. So tonight, like
13 all these scoping meetings, we're going to do a brief
14 review, even briefer maybe than normal, of the
15 environmental review process, then Vivian's going to
16 present some information about the project. And then we'd
17 like to hear any comments that you might have on the scope
18 and content of the environmental review for this project.

19 Next, please.

20 So projects in California are required to --
21 under the California Environmental Quality Act, or CEQA,
22 to go through an environmental review process, which the
23 purpose of which is really to provide information to the
24 public and to decision-makers, permitting agencies, on the
25 environmental effects of the project. And the lead agency

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1 responsible for implementing these requirements for the
2 San Francisco PUC's project is my department, the
3 San Francisco Planning Department.

4 Next, please.

5 So as I said, the purpose and objectives of CEQA
6 are to disclose the potential environmental effects of a
7 project on the environment, to identify project
8 alternatives and mitigation measures that could lessen or
9 avoid significant environmental effects, to provide that
10 information to the public and decision-makers to aid the
11 decision-making process and permitting processes and to
12 encourage public participation in those processes and
13 improve and enhance agency coordination.

14 As I believe you're aware, there is a program,
15 Environmental Impact Report, that has been out for review
16 since June of this year on the overall Water System
17 Improvement Program, and this Environmental Impact Report
18 that we're preparing for the San Antonio Backup Pipeline
19 Project is going to be a project-specific EIR. So it will
20 go into greater detail about this particular project.

21 MR. GARCIA: That's the one I didn't make, I
22 missed that.

23 MR. KERN: The big one.

24 MR. GARCIA: Yeah.

25 MR. KERN: Well, there's going to be 22 more, so

1 you'll have your chance.

2 Next, please.

3 So as I said, this is going to a project EIR, so
4 it's going to provide more specific information, more
5 detailed information about this specific project and more
6 information about the potential environmental effects of
7 this specific project than the programmatic document was
8 able to do.

9 Next, please.

10 And this is our schedule for the environmental
11 review at this point. We are in the third week now of our
12 public scoping period. We mailed out a Notice of
13 Preparation at the beginning of October. There will be a
14 public review of the Draft EIR -- well, the Draft EIR we
15 anticipate releasing next fall, and then that will be out
16 for public review. Then you'll have another opportunity
17 to provide comments on the Draft Environmental Impact
18 Report. We will then prepare a formal and written
19 response to those comments, and all of that will then go
20 to the San Francisco Planning Commission and it will be up
21 to them to decide whether or not to certify the EIR as,
22 you know, sufficient to meet the requirements of the CEQA.

23 So now I'd like to hand the presentation over to
24 Vivian, and she can tell us more about the project.

25 MS. CHOW: Okay. I'm Vivian Chow, San Francisco

1 PUC project manager for this project. Tonight I'm happy
2 to be here to briefing the project objective and goals and
3 the components of the project.

4 The project mainly is can fully discharge the
5 Hetcy flow if the water quality does not meet the
6 standard. And another purpose is to replace the existing
7 60-inch San Antonio pipe. If the pipe has the emergency
8 take out for the surfaces or is emergency, cannot be used,
9 so you can move the water back and forth --

10 MR. GARCIA: They've had a couple of leaks in the
11 last few years.

12 MS. CHOW: That's right.

13 And also we have another goal, is at the Alameda
14 East Portal area we are going to be improving the
15 structural integrity there and doing the security fence
16 around the area. So in this slide we're showing the four
17 major components of the project. The upper portion is the
18 pipe, the new San Antonio Backup Pipeline is along with
19 the existing, so the red one is the new pipe, the yellow
20 is existing. The existing is 60 inches, and the new pipe
21 is 66 inches. The pipe is running about two miles, the
22 same alignment. And the lower left-hand side, the box is
23 showing the San Antonio Pump Station area. That is the
24 area we tie the new pipe to the existing pipe and the
25 discharge from the siphon free; that's the location we tie

1 the project. And also in that location we will build a
2 new chemical treat system because we cannot just directly
3 discharge the water, we need to treat the water, chemical
4 treat the water for dechlorination and also pH adjustment.

5 MR. GARCIA: That's at the trailer and that
6 little building is near my driveway?

7 MS. CHOW: No, just the little one just for this
8 discharge, not the chlorination new building, it's the new
9 facility.

10 MR. GARCIA: No, no, the little -- when you go in
11 my driveway, there's a little building and a trailer
12 alongside of it.

13 MS. CHOW: No, no.

14 MR. GARCIA: I think that's --

15 MS. CHOW: No, we have existing -- just north
16 side of the pump station.

17 MR. GARCIA: Yeah. That's my driveway.

18 MS. CHOW: That's your driveway?

19 MR. GARCIA: The driveway that goes down, then
20 there's a gate there to go into that.

21 MR. SHAW: Next to where you see the trailer,
22 you're right, there is a little building there, yeah,
23 that's no longer to be. We're going to build a new --

24 MS. CHOW: But next to the new one.

25 MR. SHAW: That's existing, yes, we're going to

1 replace that.

2 MR. GARCIA: And it's going to be right in the
3 same place.

4 MR. SHAW: Not quite the same place. Close.
5 Close.

6 MS. CHOW: It's very close, just north side of
7 that building. The north side of that building. So we'll
8 build a new one and then T off -- demolate (sic) the old
9 one.

10 So the middle part is the Alameda East Portal,
11 the lower middle slide is the area we need to build the
12 new fence around the facility and do the portal possession
13 there. That is the middle part. That slide.

14 MR. GARCIA: You're going to do something with a
15 crane, that overhead crane --

16 MS. CHOW: Yeah.

17 MR. GARCIA: -- and takes the end of the pipe
18 off.

19 MS. CHOW: Yes. And then the right-hand side,
20 the little slide is the discharge point. At that place we
21 have existing cone valve house, we're going to be building
22 a new discharge cone valve there and restore the area and
23 do the creek bed protection, riprap the creek bed,
24 whatever the corroded area, we're going to be -- improve
25 the area, discharge area.

1 So this is the four major component of the
2 project.

3 This slide tells you the whole project timeframe.
4 Right now, we're in the beginning of the environmental and
5 design. The project going to be finished in about middle
6 of 2009. From there we're going to be -- take a -- put a
7 big package together and award a contract, the
8 construction going to be projected to start our
9 construction in spring of 2010. Takes about 22 months to
10 finish the project and close up. The project will be done
11 by June 2012.

12 MR. KERN: Okay. So now is it's your turn to
13 provide us any comments that you might have at this point
14 on the scope or content of the EIR.

15 MR. GARCIA: Environmentally, all you're going to
16 have is a little bit of dust, and that's taken care of
17 with a little water wagon. And no matter what your fine
18 residents say, you're going to dig a ditch, put a pipe in
19 it, probably put sand under it, put a pipe in it, you'll
20 have native soil back on top. Within a year you're going
21 to have the same bugs, the same grass, everything's going
22 to be the same as it was before you started.

23 MR. SHAW: Pretty much got it there, Stan.

24 MR. GARCIA: That's just how it is. You listen
25 to the environmentalists, no, you're going to wipe

1 everything out.

2 MR. SHAW: Yeah, it will come back.

3 MR. GARCIA: Everything will come back. I watch
4 the other two, the last two run across when I was a kid.
5 Everything is back just like it was. And it's -- any pipe
6 you put in, it's going to be like that as long as you put
7 native soil back on top. The first year you're going to
8 have grasses, weeds and bugs, snakes. As far as your whip
9 snake and stuff like that, even if they're around, it's
10 not going to bother them, they're going to get out of the
11 way. When you're done, they'll come back.

12 MR. KERN: Okay.

13 MR. GARCIA: Plain and simple. What are you going
14 to do with my driveway? Going to put a bridge over the
15 pipe when they come back and forth?

16 MR. SHAW: That's another project, but it is
17 being looked at, that's being addressed. Just to let you
18 know.

19 MR. GARCIA: How about the driveway while they're
20 building the pipe?

21 MR. SHAW: Oh, that's another issue, yeah, and I
22 think that's something you would be concerned about when
23 they cross a road --

24 MR. GARCIA: When they cross a road there
25 might --

1 MR. SHAW: Is access.

2 MR. GARCIA: Just on the north side

3 MR. SHAW: That's right.

4 MS. CHOW: Yeah, we cross Calaveras Road

5 MR. SHAW: No, not Calaveras. The entrance road
6 where he accesses his property.

7 MR. GARCIA: I access my property from that same
8 one that goes into that new -- where you're going to put
9 that new little building.

10 MS. CHOW: Yes.

11 MR. SHAW: In that area.

12 MR. GARCIA: Right there is where. But I'm not
13 worried about it, because I know you're going to put some
14 plates or something I'll be able to drive over. Got to be
15 heavy enough to take a truck across it.

16 MR. SHAW: Well, not only that, but the
17 Department needs to be able to access Alameda West and
18 those areas as well. So it's not just you, but also the
19 rest of us and the Hanson, or whoever it is, what's that
20 company there?

21 MR. GARCIA: Gunite.

22 MR. SHAW: Gunite, yeah, whatever it is, I
23 forget.

24 So that's going to have to be taken into
25 consideration.

1 MR. GARCIA: They're supposed to have like 20
2 round trips, and you get about 50.

3 MR. SHAW: Is that right.

4 MR. KERN: Okay.

5 MR. GARCIA: Other than that, that's all well and
6 good. I need to cross Calaveras Road.

7 MR. KERN: Proposing to go under it, right.

8 MS. CHOW: Yeah --

9 MR. GARCIA: You're going to bore under it?

10 MS. CHOW: Yeah.

11 MR. GARCIA: No disruption of traffic and all.

12 MS. CHOW: Yeah, we needed to design for that.
13 Design for that, yeah, one crossing.

14 MR. GARCIA: That's easy enough right where that
15 pipe crosses. You can go around it if you had to.

16 MR. KERN: And, you know, I forgot to ask you
17 before you began your comments to state your name for the
18 record.

19 MR. GARCIA: Stanley Garcia.

20 That's 6501 Calaveras Road

21 MR. KERN: Okay then. Well, then that concludes
22 our scoping meeting.

23 Can we get the next slide?

24 MS. CHOW: That's the last one.

25 MR. KERN: You probably already have this, but in

1 case not, here's our contact information, and I can give
2 you a business card as well. You, I know, are on our
3 mailing list already. And so you'll continue to receive
4 notices.

5 MR. GARCIA: I wanted to make that one, that big
6 environmental meeting. I got four notices.

7 MR. KERN: For the hearing?

8 MR. GARCIA: One to my mother; she's been dead
9 for 14 years. Three to me under different names. One was
10 a different address; one of them put my on Wells Creek
11 Road.

12 Don't take them off, I may not get them, you take
13 too many off --

14 MR. KERN: We'd like to get it right.

15 MR. GARCIA: My mother got one, and she's been
16 gone for 14, 15 years now.

17 MS. LIAPES: What is the first name of your
18 mother, Mr. Garcia?

19 MR. GARCIA: Rosie.

20 MS. LIAPES: okay. I'll look into that too.

21 MR. GARCIA: I still get her and wife's father,
22 mother; they're all dead, and I still get mail for them.

23 MR. KERN: Is it because it's the same address,
24 is that the reason you think?

25 MR. GARCIA: Well, they changed all their -- her

1 folks ended up, when they went in a rest home, put their
2 mail coming to our house.

3 MR. KERN: Oh, I see.

4 MR. GARCIA: So I get all their mail.

5 MR. KERN: That's interesting.

6 (Thereupon, the October 25, 2007,
7 San Antonio Backup Pipeline Project
8 Scoping Meeting
9 was adjourned at 6:35 p.m.)

10 --oOo--

11 *****

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CERTIFICATE OF REPORTER

I, RICHARD FRIANT, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing public scoping meeting; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said business meeting, nor in any way interested in outcome of said matter

IN WITNESS WHEREOF, I have hereunto set my hand this 30th day of October, 2007.

Richard Friant

PETERS SHORTHAND REPORTING CORPORATION (916) 362-2345

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APPENDIX E: COMMENTS RECEIVED DURING SABPL SCOPING PROCESS

The Public Scoping comments presented in this appendix are listed below. The comment received from Mr. Stanley Garcia (# PC001) may be found in the public scoping meeting transcript in Appendix D.

Comment #: Source:

CO001	Jeremy Gross, Chevron Corp. (copy of email)
LA001	Arthur Valderamma, P.E., County of Alameda Public Works Agency
LA002	Nicole Sandkulla, P.E., Bay Area Water Supply & Conservation Agency
LA003	Paul Piraino, Alameda County Water District
LA004a	Chris Barton, East Bay Regional Park District
LA004b	Brad Olson, East Bay Regional Park District
LA004c	Brad Olson, East Bay Regional Park District
LA004d	Chris Barton, East Bay Regional Park District
NP001	Jeff Miller, Alameda Creek Alliance
SA001a	Keith H. Lichten, P.E., California Regional Water Quality Control Board, San Francisco Bay Region
SA001b	Philip Williams & Associates, Ltd Technical Memo (received from Xavier Fernandez at California Regional Water Quality Control Board)
SA002	Charles Armor, California Department of Fish and Game, Bay Delta Region
SA003	Timothy C. Sable, California Department of Transportation

Corzilius, David

From: Chris Kern [Chris.Kern@sfgov.org]
Sent: Monday, October 22, 2007 1:31 PM
To: Corzilius, David
Cc: KNelson@sfgov.org
Subject: Fw: Case No. 2006-0137E

David,
I'll forward comments in response to the NOP for the SABPL project that I receive by email to you as they come in. I'll also scan and email to you letters that I receive. So far, I have only one letter (from the RWQCB).
Chris

Chris Kern, Environmental Planner
San Francisco Planning Department
Major Environmental Analysis Division
1650 Mission Street, Suite 400
San Francisco, CA 94103
ph: (415) 575-9037 fax: (415) 558-6409
chris.kern@sfgov.org

----- Forwarded by Chris Kern/CTYPLN/SFGOV on 10/22/2007 01:22 PM -----

"Jeremy Gross"
<jgross.chevronpl
@gmail.com>

10/18/2007 10:02
AM

To
"Chris Kern" <chris.kern@sfgov.org>
cc

Case No. 2006-0137E

Subject

Hello Chris,

Chevron Pipe Line Company has received your letter regarding the Sunol Valley Water Treatment Plant Improvement Project. We would like to be placed on any mailing lists you have regarding this project. We do have an active Petroleum Products pipeline in the vicinity of your project. If you could forward us any plans or drawings you may have or come in contact with of the project, it would be greatly appreciated.

Regards, Jeremy

--
Jeremy Gross
Contract ROW/ Conflict Inquiry Specialist Chevron Pipe Line Company Los Medanos 2360
Buchanan Rd.
Pittsburg, CA 94565
jgross.chevronpl@gmail.com

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COUNTY OF ALAMEDA
PUBLIC WORKS AGENCY
DEVELOPMENT SERVICES DEPARTMENT
951 Turner Court, Room 100
Hayward, CA 94545-2698
(510) 670-6601
FAX (510) 670-5269

November 5, 2007

San Francisco Planning Department
Attn: Bill Wycko, Acting Environmental Review Officer
1650 Mission Street Suite 400,
San Francisco Ca 94103-2479
Fax: 415:558-609
Email: Chris Kern: chris.kern@sfgov.org

Subject : Comments on Notice of Notice of an Environmental Impact Report and Notice of Public Scoping Meeting

Project Title: *San Antonio Backup Pipeline Projects*

The Alameda County Public Works Agency has received and reviewed your *Notice of Preparation of an Environmental Impact Report and Notice of Public Scoping Meeting* and offer the following potential impact areas within Alameda County have to be addressed in the draft EIR:

1. Potential traffic impacts
2. Potential impacts of armoring of creek bottoms – barriers to fish passage
3. Potential impacts on flood control channel/creek and road crossings
4. Project Potential effects on biological resources at various locations i.e.; red legged frog; San Joaquin kit fox; California tiger salamander; steelhead; Alameda whipsnakes; and several species of plants; wetlands etc.
5. Potential effects of flow diversions on downstream segment of Alameda Creek
6. Potential impacts on cultural resources

It is requested that you please include the Alameda County Public Works Agency on your mail list to receive copies of your draft EIR.

Should you have any questions, you may contact Fernando Gonzales of this office at (510) 670-5267.

Very truly yours,


Arthur Valderrama, P.E.
Supervising Civil Engineer
Development Services Department

TO SERVE AND PRESERVE OUR COMMUNITY

DOCUMENT#:

LA002

Diana

11-2-07
Carol



Bay Area Water Supply & Conservation Agency

October 29, 2007

RECEIVED

NOV 02 2007

CITY & COUNTY OF S.F.
PLANNING DEPARTMENT
M&A

Mr. Bill Wycko
Acting Environmental Review Officer
1650 Mission Blvd., Suite 400
San Francisco, CA 94103-2479

Subject: Case No. 2007.0039E-San Antonio Backup Pipeline, Notice of Preparation of an Environmental Impact Report and Notice of Public Scoping Meeting

Dear Mr. Wycko,

Thank you for the opportunity to provide the following comments from the Bay Area Water Supply & Conservation Agency (BAWSCA). BAWSCA represents the interests the 25 cities and water districts and two private utilities that purchase water on a wholesale basis from the San Francisco Regional Water System. These entities in turn provide water to 1.7 million people, businesses and community organizations in Alameda, Santa Clara and San Mateo counties. BAWSCA member agencies are highly dependent on the SFPUC Regional Water System to provide potable drinking water critical to the health and safety of consumers in the region. All but one of BAWSCA's member agencies purchase more than 50% of their supply from the San Francisco Regional Water System.

These comments are in response to the Notice of Preparation (NOP) of an Environmental Impact Report (EIR) dated March 28, 2007 for the San Antonio Backup Pipeline Project which is an individual project in the SFPUC's Water System Improvement Program.

Key Comments

1. **Overall, the need for the project should be better emphasized in the EIR.** The existing San Antonio Pipeline plays a critical role in the overall water supply operations in the Sunol Valley and it is subject to a high probability of failure during a seismic or other event. Reliability of the infrastructure in this location is critical to the overall supply reliability of the Regional Water System. For example, this facility is the final point where upstream water quality deviations can be rejected from the water system in order to prevent a boil water or other public notice to the Regional Water Customers, including City of San Francisco. The EIR should better explain the possible consequences of this type of event and how the proposed project would remove the potential for those situations to occur.
2. **The project description presented in the NOP does not include a project component -- modifications at Alameda East to upsize the capacity to spill to Alameda Creek during an emergency event -- that was part of the project description and scope in prior engineering reports.** The EIR should address this

scope change, the resulting impact to the neighboring environment during an emergency condition, and the overall impact on the project's ability to meet the reliability goals set forth for the project and the WSIP.

Specific Comments

Project Description

1. The EIR should add that the new pipeline will assist in clearing and flushing the Coast Range Tunnel after a seismic event which can stir up the sediment and cause water quality problems.
2. The description of the inter-connections between the existing and new pipelines should provide further information on the current operational limitations of the pipeline and how the addition of the backup pipeline will provide necessary operational flexibility. For example the existing pipeline will only allow water to flow in one direction while much greater operational flexibility is possible with the ability to flow water in two directions with the two pipelines. Scenarios regarding this important advantage should be provided in the EIR.
3. Please describe the holding time for the de-chlorinating agent that will be stored in liquid form at the site?
4. What measures will be employed for chemical spills at the chemical storage facility?

Section 2.2

1. The NOP states that fires in the watershed are rare occurrences with significant impacts. The EIR needs to highlight that while rare, this event did occur within the past 10 years, causing Hetch Hetchy to be shut down for six weeks with significant impacts to water supply reliability.

Thank you for the opportunity to review the NOP for the EIR for the San Antonio Backup Pipeline Project. If you have any questions, please call me at (650) 349-3000.

Sincerely,



Nicole M. Sandkulla, P. E.
Senior Water Resources Engineer

cc: A. Jensen, BAWSCA
Deirdre Appel, SFPUC-Project Management Bureau
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rec'd via email 11/13/07

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October 25, 2007

Mr. Bill Wycko
Acting Environmental Review Officer
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103-2414

Dear Mr. Wycko:

Subject: Case No. 2007.00039E – San Antonio Backup Pipeline

The Alameda County Water District (ACWD) appreciates this opportunity to comment on the Notice of Preparation of an Environmental Impact Report and Notice of Public Scoping Meeting for the San Antonio Backup Pipeline Project.

ACWD supplies water to a population of over 320,000 in the cities of Fremont, Newark and Union City. ACWD was formed in 1914 by an act of the California Legislature for the purpose of protecting the water in the Niles Cone Groundwater Basin and conserving the water of the Alameda Creek Watershed. Local runoff along with imported water is percolated into the Niles Cone Groundwater Basin through recharge in Alameda Creek itself and through recharge ponds within the Quarry Lakes Regional Recreational Area and adjacent areas. The water is subsequently recovered through groundwater production wells and provided as potable supply to ACWD's customers. A key objective for ACWD is to ensure the protection of the groundwater basin that constitutes this important source of water supply.

As one of the SFPUC's larger wholesale customers outside of the City of San Francisco, ACWD has a vested interest in seeing the SFPUC successfully execute its multi-billion dollar Water Supply Improvement Program (WSIP). We share in the same desire for high quality water supply and a reliable storage and conveyance system that will serve the present and future needs of the San Francisco Bay Area at a reasonable cost.

Comments for Notice of Preparation of an EIR and Notice of Public Scoping Meeting

ACWD has reviewed the Notice of Preparation of an EIR and Notice of Public Scoping Meeting and would appreciate SFPUC's consideration of the following comments:

1. Construction Impacts: As described in the NOP, construction of the backup pipeline may significantly impact surface water and groundwater quality in the vicinity of the project area, which may also impact water downstream in Alameda Creek. Specific impacts may occur as a result of:
 - a. Discharges of contaminants to receiving waters;
 - b. Dewatering of the pipeline trench; and
 - c. Erosion as a result of grading and other activities

The DEIR should fully evaluate all potential downstream impacts to water quality as a result of project construction, and provide complete mitigation to ensure that there are no adverse impacts to ACWD's water supplies from the Alameda Creek Watershed. A notification plan for events that could affect downstream water quality should be included in the planned mitigation.

2. Operational Impacts: The NOP also describes potential water quality and hydrology impacts as a result of the long-term operations of the project. Specifically, the NOP indicates that downstream water quality may be degraded as a result of the discharge of high flows from the backup pipeline. The DEIR should evaluate the potential impacts on water quality, hydrology and water supplies during these releases, and provide complete mitigation for any impacts. High flows released to San Antonio Creek have the potential to affect operation of ACWD's inflatable dams downstream in Alameda Creek, so notification of release events and spills are important to consider in planning mitigation. The DEIR should also evaluate the potential for adverse impacts due to potential spills during chemical handling and storage, and provide mitigation to ensure that: 1) there would be no adverse impacts to downstream drinking water supplies in the event of an accidental spill, and 2) an appropriate notification plan is put in place.

We look forward to responses to these comments and continuing to work with the SFPUC throughout the WSIP implementation process. If you have questions, please contact Laura Hidas, Water Supply Supervisor, at (510) 668-6516.

Sincerely,



Paul Piraino
General Manager



East Bay
Regional Park District

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October 30, 2007

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CITY & COUNTY OF S.F.
PLANNING DEPARTMENT

San Francisco Planning Department
Attn: Bill Wycko, Acting Environmental Review Officer
1650 Mission Street, Suite 400
San Francisco, CA 94103-2479

**RE: EAST BAY REGIONAL PARK DISTRICT (EBRPD) COMMENTS ON SFPUC's
NOTICE OF PREPARATION (NOP) FOR THE PROPOSED SAN ANTONIO
BACKUP PIPELINE PROJECT (SABPL)**

Dear Mr. Wycko:

Thank you for providing East Bay Regional Park District (the "District") with a copy of San Francisco Public Utility Commission's (SFPUC) Notice of Preparation for the proposed San Antonio Backup Pipeline project. We own or manage several parks that abut San Francisco Water District (SFWD) watershed lands and lease 3,812 acres of land from SFPUC as part of the Sunol and Ohlone Regional Wilderness parks. Impacts associated with the proposed project may affect our ability to carry out our mission to provide parks and trails for public recreation and enjoyment.

Any aspect of the SABPL project that would impact the recovery of anadromous fish in Alameda Creek or impair safe, convenient public access to our parks particularly concern us – the project should be designed to avoid or minimize these potential impacts. The EIR should fully evaluate how these potential impacts will be avoided or minimized. Any proposed mitigation measures should have measurable performance-based standards incorporated into their design to ensure a predictable outcome will result when implemented.

Scoping comments were previously submitted to SFPUC by the District for the following projects that are directly or indirectly related to the SABPL Project:

- October 12, 2005 – Scoping comments for SFPUC Water System Improvement Program.
- August 16, 2007 - Scoping comments for SFPUC Habitat Reserve Program

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We also provided comments on the Draft Program Environmental Impact Report (DPEIR) for SFPUC's Water System Improvement Project (WSIP) on October 1, 2007. These documents are incorporated herein by reference and are attached. The District's scoping comments under the California Environmental Quality Act for SFPUC's consideration in preparing the DEIR for the project are as follows:

1. Traffic - Analysis of traffic impacts associated with the proposed pipeline installation across Calaveras Road and increased truck traffic from construction activity should take into consideration the following:
 - a. Road/Lane Closures – Provide details and analysis of any proposed partial or full road closures (such as when, where and anticipated time delays and reduction in speed) and how these disruptions will be avoided or minimized to eliminate or reduce travel delays.
 - b. Impaired Access to Recreation - Peak park usage to Sunol and Ohlone Regional Parks is typically highest on weekends and holidays. The DEIR should analyze traffic impacts in the context of how traffic delays and hazards could discourage park users from accessing recreational opportunities at these parks. Mitigation measures should be developed to minimize these impacts.
 - c. Traffic Control Plan – Details of any proposed traffic control plan should be disclosed in the DEIR. If sufficient information is not available to complete the traffic control plan, measurable performance standards should be incorporated into any mitigation measures that reference the traffic control plan as mitigation for impacts. We encourage SFPUC to consult with us to evaluate the vehicle/visitor demand to Sunol and Ohlone Regional Wilderness and incorporate these findings into the traffic control plan for this project. The traffic control plan should recognize peak demand hours for park use and minimize its traffic volumes to not overlap with these hours. This may require that construction traffic be significantly restricted or prohibited during holidays and weekends.
 - d. Public Notification/Information – Confusion among motorists about altered traffic flows and detours may result in traffic and circulation hazards. The EIR should analyze how traffic delays, road hazards and alternate routes will be communicated to the public. This may include proper signage at appropriate locations, informational pamphlets and displays for park users at informational kiosks and other outreach efforts (newspaper, radio and television press releases).
 - e. Roadway Deterioration/Hazards – Increased truck traffic volumes will accelerate the wear of roads which could cause roadway hazards from potholes, fallen debris, cracks, etc. The project should be designed and/or

mitigation should be incorporated that eliminates or minimizes this potential impact.

2. Biological Resources – The DEIR should provide a clear understanding of how the proposed facility may alter flows to San Antonio Creek and its receiving waters (i.e. Alameda Creek). The impacts of diminished water quality and habitat loss associated with dewatering during construction and emergency discharges from operation of the facility should be evaluated in the DEIR for how the recovery of anadromous fish in Alameda Creek could be impaired by the project. Appropriate measurable, performance-based standards should be included with any proposed mitigation for impacts to biological resources.

The DEIR should examine how project impacts resulting in a loss of habitat supporting special-status species will be mitigated to not result in a net loss of resources if SFPUC watershed lands that are not in need of rehabilitation or enhancement are proposed to be used as habitat mitigation lands. The DEIR should explain how the use of these lands to mitigate for project impacts on biological resources will not result in a net loss of resources given that these lands were already acquired for watershed protection.

We hope that these comments help SFPUC in its design and implementation of the project and provide guidance on the scope of the DEIR and look forward to continuing our long established cooperative working relationship with the SFPUC in managing open space and watershed lands in the East Bay. We request a copy of the DEIR when it becomes available (one hard copy and CD are preferred). Thank you for the opportunity to provide input on the scope and content of the information to be included in the DEIR and the SFPUC's consideration of our comments. If you have any questions or comments, please contact me at (510) 544-2627.

Sincerely,



Chris Barton
Senior Planner
Environmental Review Department

cc: Tim Ramirez

Attachments:

1. EBRPD scoping comments for SFPUC Water System Improvement Program, October 12, 2005
2. EBRPD scoping comments for SFPUC Habitat Reserve Program, August 16, 2007
3. EBRPD comments on WSIP Draft PEIR, October 1, 2007

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October 12, 2005

Mr. Paul Maltzer
San Francisco Planning Department
30 Van Ness Suite 4150
San Francisco, CA 94103

Subject: Scoping Comments for SFPUC Water System Improvement Program
Sunol/Ohlone Regional Wilderness

Dear Mr. Maltzer,

Thank you for providing the East Bay Regional Park District ("District") with a copy of the Notice of Preparation (NOP) for a Draft Environmental Impact Report (DEIR) for SFPUC's Water System Improvement Program. The following are the District's scoping comments for your consideration in preparing the DEIR.

The District has a long established cooperative working relationship with the SFPUC on joint management of open space and watershed lands in the East Bay. We are also working with SFPUC and other agencies on watershed planning studies that include restoration of fisheries in Alameda Creek and public access in Niles Canyon.

The District leases 3812 acres of land from SFPUC as part of Sunol and Ohlone Regional Wilderness parks. These leases place a number of restrictions upon these lands, including no water-contact recreation, no bicycles and limitations on dogs and livestock grazing. The proposed project may create expand use restrictions on District-leased watershed lands. We are concerned about our ability to effectively implement such restrictions given current budget constraints and other competing interests. The proposed project description also includes replacement of the Calaveras Dam, which has the potential for significant effects to Sunol Regional Wilderness and other regional parks.

Regional Parks

The District owns or manages 31,462 acres of open space within the middle and upper portions of Alameda Creek Watershed. These include the following regional parks:

• Sunol Regional Wilderness	6858 acres
• Ohlone Regional Wilderness	9736 acres
• Camp Ohlone	(included above)
• Del Valle State Recreation Area	4315 acres
• Mission Peak Regional Preserve	2998 acres
• Vargas Plateau Regional Preserve	1030 acres
• Pleasanton Ridge Regional Park	4742 acres
• Brushy Peak Regional Preserve	1783 acres

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The DEIR should evaluate potential effects to all of these regional parks and provide appropriate mitigation for such effects. These effects could include:

1. ***Surface water resource impacts*** from changes in water system operations, changes in primary versus secondary watershed status, changes in existing drainage patterns, increased erosion or deposition of sediments, impacts to riparian vegetation, fisheries and wildlife habitats. The DEIR must identify and fully mitigate such significant effects.
2. ***Calaveras Dam replacement*** has the potential for a number of adverse effects to Sunol Regional Wilderness, including impacts to fisheries, plants and wildlife, special-status species, water and air quality, noise, esthetics, recreation, traffic and circulation, and public safety. Potential closure of Calaveras Road, Geary Road or other unpaved access roads or trails to Sunol Regional Wilderness may adversely affect park users and police and fire services. The DEIR must identify and fully mitigate such significant effects.
3. ***Water conveyance upgrades***, such as replacement or construction of new pipelines, maintenance facilities, treatment facilities, and collection and discharge facilities may adversely affect existing and planned trails and recreation in watershed areas. This would include the Ohlone Wilderness Trail, Bay Ridge Trail, Niles Canyon Trail and other regional and locally operated trails. Such impacts could include closure or rerouting of trails, noise, dust and visual impacts, and trail safety and convenience. The DEIR must identify and fully mitigate such significant effects.
4. ***Watershed protection*** measures currently prohibit water contact recreation and bicycle usage, and restrict dogs and livestock grazing in District-leased portions of Sunol Regional Wilderness. The DEIR must fully consider the effects of new watershed protection measures on these and other District land uses. It is the District's goal to maintain existing uses within these areas and to not have expanded or new use restrictions as a result of this project. We share SFPUC's goal to protect water quality and Alameda Creek Watershed. However, it is also important that SFPUC address the multiple uses for which District parklands have been acquired and to cooperatively work with the District in maintaining these uses within the Watershed.

Please call me if you have any questions regarding our scoping letter. I can be reached at (510) 544-2622. Please include my name on any future mailings regarding this project.

Sincerely,



Brad Olson
Environmental Programs Manager



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DOCUMENT #:

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August 16, 2007

Paul Maltzer
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 84193-2479

Subject: Scoping Comments for Habitat Reserve Program - Case #2006.1505E
Sunol Regional Wilderness

Dear Mr. Maltzer,

Thank you for providing the East Bay Regional Park District ("District") with a copy of the Notice of Preparation (NOP) for an Environmental Impact Report (EIR) for the proposed Habitat Reserve Program ("Program").

There are several District-operated regional parks that abut San Francisco Water District (SFWD) watershed lands. These include Sunol Regional Wilderness, Ohlone Regional Wilderness, Del Valle Regional Park and Vargas Plateau. Management changes and mitigation acquisitions adjacent to District parklands will affect our management of these lands. The following are the District's scoping comments for consideration in preparing the DEIR and Program.

Mitigation Goals

As described in the NOP, "a coordinated and consolidated approach" to natural resource impact mitigation can be effective in conserving and restoring large areas. The historic mitigation practice of many agencies has been a piece-meal approach where the long-term sustainability and real benefits of mitigation are not certain. As a result, many mitigation projects have failed and the resource impacts have effectively been unmitigated. A coordinated program is clearly a better approach to mitigation.

The NOP does not describe the relationship between the proposed Program and SFWD's Habitat Conservation Plan (HCP). The HCP is simultaneously being prepared by SFWD for maintenance and operational impacts to its watershed lands. The proposed Program and the HCP will likely be mitigating for impacts to the same special-status species, wetlands, riparian areas and other sensitive plant and animal habitats. It would follow that both of these projects will be considering the same areas to mitigate for impacts to special-status species. As described in the NOP, the goal of the Program is to establish a "coordinated and consolidated" approach to mitigation. Why then are the proposed Program and HCP being prepared separately? Under CEQA, this would also appear to be an improper segmentation of one project into two separate projects.

Mitigation Land Acquisition

The proposed impact mitigation in Alameda and Santa Clara Counties would “primarily” take place on existing watershed lands. We believe these watershed lands were already conserved when they were acquired. These same lands should not be counted twice as mitigation for new capital projects. Instead, we suggest that additional lands be acquired in fee where natural resource impact mitigation can occur.

The benefits of acquiring conservation easements over private land are not clear. SFWD and/or the conservation easement holder would have great difficulty enforcing land use restrictions and ensuring that the long-term management is properly implemented by the present and future private-property owners. By contrast, fee purchase of mitigation lands will ensure that there are no problems enforcing land use restrictions and assuring that long-term management will actually occur. Furthermore, purchase of conservation easements on private lands runs the risk of being a gift of public funds with no public benefit, such public access to protected lands.

Mitigation Land Management

Acquisition of mitigation land should occur adjacent to or nearby the impacted areas. This will assure that impacted species will have suitable replacement habitat in areas that are accessible to wildlife through linkages and migration corridors. There should also be provisions in the Program to conserve mitigation lands in perpetuity through conservation easements or deed restrictions. Non-wasting endowments should be established for the perpetual management and monitoring of mitigation lands.

In the Sunol Watershed, the NOP describes about 1,100 acres of existing SFWD lands that would be preserved as mitigation for development impacts. The NOP states on page 5 that “habitat preservation would involve fencing, periodic weed control and managed grazing”. Such measures would seem to be just good property management measures that SFWD has already implemented and not necessarily mitigation for impacts. It is unclear what would be the added value of “preserving” watershed lands that have already been acquired by SFWD to protect water quality and associated natural resources.

Preserve lands that are acquired for mitigation need monitoring and management prescriptions set forth in a Long-term Management Plan (LTMP) which provides contingencies and dedicated funding for property management. The following are some example management and monitoring provisions that should be included in the LTMP:

- Non-native plants: Yellow starthistle is rapidly invading grasslands in California and displacing other native plants and animals. Prescribed fire, herbicides, such as Transline, and properly timed livestock grazing can be very effective in controlling this species. However, this requires a long-term commitment for successfully control. Grazing alone is typically insufficient to control this weed. Prescribed fire and/or herbicide may be necessary to make the control effective.

Fire and herbicides are considerably more expensive than grazing and will require substantial funding to implement in the mitigation areas.

- Non-native animals: Feral pigs root within wetlands, riparian and restoration areas. Extensive "hog" fencing and/or trapping may be required to control pigs and assure the long-term viability of mitigation lands, especially areas where restoration has occurred. Similar control measures will also need to be implemented for control of bullfrogs, bass, red fox, etc. Without management of such species, there is considerable doubt that mitigation would be successful in the long-term.
- Pond management: Existing and constructed stock ponds and other potential breeding areas for special-status amphibians, such as red-legged frog, will require long-term management within mitigation areas. For example, drainage of ponds may be periodically required to remove non-native animal species, such as bullfrogs and fish. Rehabilitation and maintenance of pond berms, spillways and drainage devices will be required to prevent pond failure and significant shoreline erosion during storm events or from wave fetch.
- Property management: Maintenance of site security, police and fire services, replacement of fences and gates, etc. should all be included in the LTMP. There should be funding provided for these purposes.
- Public access: The LTMP should provide for appropriate public access in areas where the public can enjoy passive recreational activities, such as hiking, equestrian access, wildlife and plant study, interpretive programs, views of scenic open space, etc.
- Habitat monitoring: While many mitigation lands may have relatively undisturbed habitats at the time of acquisition, many natural and human-induced factors may degrade habitat values over the long-term. These include spread of non-native species, changes in watershed hydrology and sedimentation, grazing management changes, etc. Monitoring should be conducted to determine the effects of these changes on the biological resources for which the property was initially conserved.

The District has considerable experience with developing, implementing and managing mitigation and restoration projects. We look forward to coordinating with SFWD as the Program and DEIR are developed. Please provide us with copies (CD preferred) of any technical studies, plans and the DEIR when available. Please call me should you have any questions regarding this letter. I can be reached at (510) 544-2622.

Sincerely,



Brad Olson
Environmental Programs Manager

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East Bay
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October 1, 2007

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San Francisco Planning Department
Attn: Paul Maltzer, Environmental Review Officer
WSIP PEIR
1650 Mission Street, Suite 400
San Francisco, CA 94103

CITY & COUNTY OF S.F.
PLANNING DEPARTMENT

Sent Via E-Mail on 10.01.07
(wsip.peir.comments@gmail.com)

**RE: EAST BAY REGIONAL PARK DISTRICT (EBRPD) COMMENTS ON SFPUC
WATER SYSTEM IMPROVEMENT PROGRAM (WSIP) DRAFT PEIR**

Dear Mr. Maltzer:

Thank you for providing East Bay Regional Park District ("District") with a copy of the Draft Program Environmental Impact Report (DPEIR) for San Francisco Public Utilities Commission's (SFPUC) WSIP Project. The District owns or manages several parks that abut San Francisco Water District (SFWD) watershed lands and leases 3,812 acres of land from SFPUC as part of the Sunol and Ohlone Regional Wilderness parks. Scoping comments were previously submitted to SFPUC by the District for the following projects that are directly or indirectly related to the WSIP Project:

- October 12, 2005 – Scoping comments for SFPUC Water System Improvement Program.
- November 9, 2005 – Scoping comments for SFPUC Calaveras Dam Replacement.
- August 16, 2007 - Scoping comments for SFPUC Habitat Reserve Program.
- September 4, 2007 – Scoping comments for Sunol valley Water Treatment Plant.

The District's Master Plan establishes its commitment to preserve natural and cultural resources, open space, parks and trails for enjoyment and recreation for generations to come. Changes to management practices or construction of new facilities within the watershed could affect the resources the District manages in and around SFWD's

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watershed lands. Based on the project description, analysis and maps provided in the DPEIR (“PEIR”), WSIP projects associated with the Sunol Valley Region and projects contributing to biological and water quality impacts to Alameda Creek are of particular concern to the District for managing resources in the following regional parks:

1. Sunol Regional Wilderness	6,858 acres
2. Ohlone Regional Wilderness (including camp Ohlone)	9,736 acres
3. Mission Peak Regional Preserve	2,998 acres
4. Vargas Plateau Regional Preserve	1,030 acres
5. Quarry Lakes Regional Recreation Area	538 acres
6. Coyote Hills Regional Park	978 acres
(Total: 22,138)	

The District has extensive experience in managing and enhancing natural and cultural resources and open space on more than 97,000 acres of land and 1,100 miles of trails in Alameda and Contra Costa County. We recognize the SFPUC’s commitment to provide a reliable water supply to its customers and the challenges it faces in constructing and operating the infrastructure needed to meet this demand in a fashion that minimizes impacts on the environment. In continuing with its cooperative relationship with SFPUC in managing open space and watershed lands, we provide the following comments for consideration under the California Environmental Quality Act for the Water Supply Improvement Program:

I. Recreation:

The PEIR establishes significance standards related to recreation and considers that implementation of the proposed program would have a recreational impact if it were to cause environmental impacts (such as air quality or noise effects) that would indirectly result in deterioration in the quality of the recreational experience (PEIR, P. 4.12-17). In determining whether project impacts may deteriorate the quality of the recreational experience it is necessary to understand the types of activities that are associated with the “recreational experience”. Our Master Plan describes recreational activities that its park users experience while enjoying the lands it manages - these activities include nature appreciation, hiking, biking, equestrian use, camping, picnicking, photography, painting, and birding. Any disruption or deterioration of park users experience while engaging in these activities is of concern to the District and may result in a significant environmental impact under CEQA.

The PEIR does not recognize that there are several impact categories, such as traffic, air quality, visual/aesthetics, biological resources and noise that could disrupt or deteriorate the experience of park users as a result of the project. Other than a brief discussion of construction impacts in Volume 2 (PEIR, p. 4.12-18) and combined recreational and visual/recreational impacts in Volume 3 (PEIR, PP. 5.4.7-1 and 5.4.7-5), in determining the potential effects on recreational resources, the PEIR relies on the conclusions of impact findings from sections of the report that do not specifically evaluate the project’s impacts on recreational resources. The PEIR’s analysis of recreational impacts could be improved to help the public better understand and evaluate potential indirect environmental impacts

the project may have on recreational resources. The District offers the following comments regarding the projects potential impacts on recreational resources:

1. Traffic -

- a. Temporary closure of Calaveras Road between Geary Road and Felter Road to through traffic during construction of the Calaveras Dam project could impact recreational resources as follows:
 - i. Park visitors currently enjoy a scenic drive when they come to visit Sunol Regional Wilderness with little or no congestion or delay. The proposed road closure would block access to the park from Santa Clara County and eliminate this secondary access route to the park. This alternate route is also a desirable route for nature viewing.
 - ii. Closure of this secondary access route coupled with an increase in traffic volumes with up to 50 -190 worker vehicle trips (PEIR, P. 4.8-18) and up to 180 a.m. and p.m. peak hour truck trips would present a formidable obstacle to park users attempting to access the park. This considerable increase in traffic volume could discourage park users from visiting Sunol and Ohlone Regional Parks because of congestion, delay and associated road hazards. The impact of the road closure and increased vehicle trips on park users should be evaluated in the PEIR at a programmatic level for collective and cumulative impacts and at the project level in subsequent CEQA analysis.
 - iii. The PEIR may not provide enough programmatic information to establish performance standards from which future project specific CEQA analysis can draw from. A range of mitigation measures should be identified at the program level to minimize these impacts to park visitors. Some of these measures should include:
 1. Consulting with EBRPD to evaluate the vehicle/visitor demand to Sunol Regional Wilderness and incorporate these findings into the traffic control plan for each project utilizing Calaveras Road for construction. The traffic control plan should recognize peak demand hours for park use and minimize its traffic volumes to not overlap with these hours. This may require that construction traffic be significantly restricted or prohibited during holidays and weekends.
 2. Prohibit or restrict construction traffic for the Calaveras Dam Replacement project (SV-2) from using Calaveras Road from the north.
 3. Requirement that SFPUC be the sole agency responsible for notifying the public of the proposed closure of Calaveras Road.

SFPUC should provide proper signage at appropriate locations, informational pamphlets and displays for park users at informational kiosks and other outreach efforts (newspaper, radio and television press releases).

4. SFPUC should provide us with an opportunity to review and comment on the traffic control plan for each project impacting this area and coordinate public outreach and information/ notification of road closures with us well in advance of closures. Public notification efforts should also identify the specific locations, durations and alternatives means of access to public trails.
 - iv. Most of the construction related traffic impacts related to this road closure are concluded to have a less than significant impact with mitigation because of the temporary nature of the impact. It is unclear from the PEIR if the closure will be for two to three (PEIR, P. 4.8-12; P. 4.3-15) years or two years (PEIR, P. 4.8-22). In order to ensure certainty as to the temporary nature of this closure, a performance based mitigation measure should be adopted for when the road must re-open. Without such standard, insufficient information is provided on the temporary nature of these impacts.
 - v. It is unclear which trails will be restricted due to the closure of Calaveras Road (PEIR, P. 4.8-22) – more information should be provided in the PEIR for trail users to better evaluate and understand how the project will restrict trail use and how this impact will be mitigated to a less than significant level.
 - b. The increase in traffic volumes from construction activities, especially truck trips on County roads and local streets, could rapidly accelerate the deterioration of roadway surfaces along haul routes. The PEIR should address how these roadway surfaces will be maintained in good condition during and after the project is completed.
 - c. Mitigation Measure 4.16-6c does not provide a level of certainty that traffic impacts could be mitigated with the implementation of a traffic control plan because it provides too much flexibility for whether or not identified standards for the plan are required or optional (PEIR, P. 6-33). The measure says that these standards “could” include. The words “shall include but not be limited to” would result in a more predictable outcome of successfully implementing this mitigation measure.
2. Air Quality – Levels of fugitive dust and criteria pollutants will drastically exceed BAAQMD significance thresholds (PEIR, P. 4.9-24) as a result of the project. The District recognizes that for the purpose of the PEIR sensitive receptors are generally associated with certain land uses (schools, day-care centers, hospitals & convalescent homes). However, because of the close proximity of the construction

and associated vehicle traffic to Sunol and Ohlone parks, sensitive receptor consideration should be given to park visitors such as children, the elderly and active persons engaged in strenuous exercise that use the parks. Poor air quality and associated health risks may diminish the recreational experience of park users. The PEIR should analyze this potential impact at a programmatic level and provide mitigation for this potential impact in order for park users (especially young families, the elderly and joggers/cyclists) to better understand and evaluate the air quality impacts of the WSIP.

3. Visual/Aesthetics - Park visitors are attracted to the natural beauty and views they enjoy and experience in the parks and surrounding areas. Any actions that may diminish this experience may have a significant impact on recreational resources. The PEIR recognizes that distant views of SFPUC facilities may be available from public trails in the Sunol Regional Wilderness (PEIR, 4.3-2). However, it does not recognize these views as visual resources in its impact analysis (PEIR, P 4.3-8). Given the broad range of projects that could alter views from the Sunol and Ohlone parks, the PEIR and subsequent project level CEQA review should recognize views from these parks as visual resources and minimize project impacts to these resources.

Using the Alameda Watershed Management Plan (WMP) design guidelines may not sufficiently mitigate for visual/aesthetic impacts resulting from the WSIP because the WMP serves as guideline document without any clear substantive requirements for preserving visual resources – the goals and policies section of the WMP do not provide any guidance on how to apply its subjective design guidelines in a fashion that would result in the protection or preservation of visual/aesthetic resources. Where known visual impacts will occur but the exact location and design has not yet been established, such as with the Calaveras Dam Replacement project (including the borrow site & haul road), the PEIR should establish citing criteria or designate generally acceptable locations for siting/placement of these projects.

Policy WA-9 of the WMP requires that if new facilities require additional new locations that view shed studies be conducted to minimize, eliminate or conceal the violation of scenic values. The PEIR evaluates the applicability of this policy on page 5.4.7-4 and concludes that since no new facilities are required for the project that view shed studies are not required. This conclusion may be true for most of the WSIP, however, for the Calaveras Dam replacement project, construction impacts will result in the permanent loss of riparian natural communities in the vicinity of the new dam and associated roads, staging areas and borrow site (PEIR, P. 4.6-55). Although not technically a new facility location, the impact area necessary for the construction of this project is well beyond the original facility location and should require a view shed study as called for by WMA, Policy WA-9. EBRPD should be consulted to assist in determining the locations from which this view shed analysis should be conducted for views from District managed lands.

4. Biological Resources – In its effort to maintain the recreational experience of its park users, we are actively involved in management activities aimed to preserve existing plant life and fish and wildlife habitat in the parks we manage and

surrounding watersheds. Reduced flows in Alameda Creek as a result of the project (PEIR, P. 5.4.7-5) is of particular concern to us because we operate and manage several parks that feature Alameda Creek as a focal recreational feature (Sunol, Coyote Hills, Quarry Lakes and Vargas Plateau). Maintaining flows in Alameda Creek to maximize benefits to amphibians and anadromous fish species in Alameda Creek is a priority for the District. The adopted Land Use Plan for Sunol and Ohlone Wilderness Regional Preserves calls for the District to coordinate the timing of water releases for the Calaveras Dam with the SFPUC to maximize the benefits to these species. In addition to considering the recommendations of the Alameda Creek Fisheries Restoration Workgroup, as part of mitigation measure 5.4.5-3a, the SFPUC should consider giving us an opportunity to review and comment on the operation plan for establishing minimum flows for resident trout in Alameda Creek. This cooperative effort will ensure that the resource management efforts of the District and SFPUC are coordinated in a fashion that best preserves and enhances these resources.

The PEIR concludes that the project would result in permanent loss of sensitive riparian natural communities (PEIR, P. 4.6-55) and that implementation of mitigation measures for these impacts would compensate for these impacts. The SFPUC's Habitat Reserve Program was identified as an option for implementing offsite habitat compensation (PEIR, P. 4.6-56). We would like to reiterate our concern over the use of lands already conserved and managed for watershed protection for use as habitat mitigation lands for new capital projects (also see the August 16, 2007 EBRPD Notice of Preparation comment letter for the Habitat Reserve Program). Preservation can be a feasible means for reducing the impact of lost habitat; however, using already protected watershed lands that are already effectively managed for habitat protection (as a result of watershed and water quality management objectives) would result in a net loss of the resource. Therefore, any proposed use of existing SFPUC watershed preserve land for mitigation for project impacts may be considered inadequate under CEQA unless the mitigation were to rehabilitate or enhance disturbed or marginal habitat areas within the watershed.

The effectiveness of conservation easements over private lands may be insufficient for ensuring long-term management and enhancement of habitat due to the difficulty associated with enforcing land use restrictions on present and future property owners. In addition, public access is generally not allowed on such lands, even when acquired with public funds. Fee purchase of mitigation lands will ensure that there are no problems enforcing land use restrictions and assuring that long-term management can occur.

5. Noise - An increase in 5dB CNEL over existing noise levels is generally considered a significant noise impact. The PEIR should evaluate noise impacts to park users in this context. Construction activities and increased traffic volumes should be evaluated for noise impacts to park users where haul roads or construction activities will be audible from parks.

II. General Comments:

1. The PEIR should recognize that regional parks have land use plans that guide the management of our parks.
2. The PEIR should address if some of the WSIP projects would need an encroachment permit from EBRPD where access is needed to District owned properties and trails (lands that are not leased by EBRPD from SFPUC) - it is unclear from the maps provided if any WSIP project will encroach onto District property (also see comment II.3 below).
3. The PEIR states that the Irvington Tunnel (SV-4) would tunnel below a portion of Mission Peak Regional Park (PEIR, P. 4.12-23), however, the maps provided indicate that this project is nearly a mile north of Mission Peak Regional Park. This statement should be clarified in the PEIR and sufficient mapping detail should be provided to show where the tunnel will cross under Mission Peak Regional Park. Providing this information will help the District evaluate the potential impacts of this crossing and determine the ownership of this portion of the park and types of approvals that may be needed.
4. Mitigation measure 4.5-4b is intended to prevent potential flooding impacts associated with the Alameda Creek Fishery Enhancement (SV-1). It is unclear from the project description what the project will actually involve or where it could be located. As a result, there is insufficient project detail in the PEIR to demonstrate that project impacts associated with SV-1 can be mitigated with the proposed mitigation measures. Construction of a diversion dam or concrete weir could alter the drainage of surface flows in Alameda Creek, causing flooding or siltation (PEIR, P. 4.5-39) – this impact cannot be evaluated without basic essential information such as the location of the proposed project. This deficiency may be augmented by including in the project description or as an additional mitigation measure siting criteria or generally acceptable sites that could accommodate the project without causing flooding or siltation.
5. Our public safety division provides fire and law enforcement/police services district wide - the Public Services and Utilities chapter of the PEIR should recognize this and include EBRPD Fire Department in the list of agencies SFPUC will coordinate with for fire suppression planning and response for construction activities, including the review and approval of traffic control plans (Mitigation Measure 4.8-1).
6. Based on the information provided in the PEIR, it appears that the borrow and spoils area will be located at the south end of the Calaveras Reservoir on north and east facing slopes. The PEIR should use this information to more accurately disclose the Calaveras Dam project's programmatic impacts to biological and visual/aesthetic resources. This conclusion is based on information provided in the PEIR where the location of the borrow area is identified as being at the south end of the Calaveras Reservoir (PEIR, P. 4.10-19) and north and east facing slopes in the immediate vicinity of the dam (PEIR, P4.3-38).

III. Clarifications/Corrections:

1. Reference to the WSIP Habitat Reserve Program (HRP) appears to be incorrect on page 6-55. Section 3.11 (Proposed Construction Schedule) is referenced for the WSIP – the correct reference is Section 3.12.3 (Page 3-84).
2. Page 5.4.7-1, “Alameda Creek Recreation and Visual Quality” – the PEIR does not disclose that Alameda Creek is adjacent to Vargas Plateau Regional Preserve, Quarry Lakes Regional Recreation Area and Coyote Hills Regional Park. These parks should be considered in the impact analysis.

We look forward to continuing our long established cooperative working relationship with the SFPUC in managing open space and watershed lands in the East Bay. We requests a copy of the FEIR when it becomes available (one hard copy and CD are preferred). Thank you for the opportunity to comment on the Water System Improvement Program Draft PEIR and the SFPUC’s consideration of our comments. If you have any questions or comments, please contact me at (510) 544-2627.

Sincerely,

A handwritten signature in black ink, appearing to read 'Chris Barton', with a long horizontal flourish extending to the right.

Chris Barton
Senior Planner
Environmental Review/GIS Department



Alameda Creek Alliance

PO Box 192 • Canyon, CA • 94516 • (510) 499-9185
e-mail: alamedacreek@hotmail.com
web site: <http://www.alamedacreek.org>

November 5, 2007

Chris Kern or Bill Wycko
Acting Environmental Review Officer
SFPUC San Antonio Backup Pipeline Projects
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103

Re: Scoping Comments on the SFPUC San Antonio Backup Pipeline Projects

Dear Bill Wycko:

These are the scoping comments of the Alameda Creek Alliance on the San Francisco Public Utilities Commission's (SFPUC) proposed San Antonio Backup Pipeline Projects.

The Alameda Creek Alliance (ACA) is a community watershed group dedicated to the protection and restoration of the natural ecosystems of the Alameda Creek watershed. The ACA has over 1,450 members that live in or near the watershed. The ACA has been working to restore steelhead trout and protect endangered species in the Alameda Creek watershed, and specifically in the Sunol Valley, since 1997.

The Notice of Preparation for the project discusses the proposed route of the backup pipeline, the location of proposed additional chemical storage and treatment facilities, and installation of a new cone release valve for San Antonio Reservoir.

The new cone valve proposed for a second discharge structure at the base of Turner Dam should be sized to permit release of low and moderate flows to San Antonio Creek to allow for future restoration of steelhead trout and survival of other native fishes in San Antonio Creek and Alameda Creek below the dam.

The San Francisco Public Utilities Commission (SFPUC) currently operates San Antonio Reservoir and Turner Dam with no minimum bypass flows to keep native fish downstream in San Antonio Creek or in Alameda Creek in the reach below the confluence with San Antonio Creek in good condition, in violation of California Fish and Game Code §5937. California Fish and Game Code §5937 requires that the owner of a dam allow sufficient water to pass through a fishway or dam, to keep in "good condition" any fish that may be planted or exist below the dam. The law applies to any dam regardless of when it was built.

The Environmental Impact Report (EIR) for the project should discuss the potential for restoration of steelhead trout and other native fishes below Turner Dam, and the potential stream flows that could be required to maintain fish. The new cone valve must be sized to allow for future low-flow water releases to San Antonio Creek below the dam for this purpose.

Last winter, up to two dozen or more landlocked steelhead trout from San Antonio Reservoir spilled over Turner Dam and were trapped below the discharge facility for over 6 months. Most of these fish likely died, a significant loss of the San Antonio trout population, which was

estimated at only 460 adult trout in 2003 (see SFPUC Technical Memorandum No. 2-04-006, 31 October 2005, Population Size Estimates for Adult Rainbow Trout (*Oncorhynchus mykiss*) in San Antonio and Calaveras Reservoirs). These trout represent the native steelhead gene pool for restoring steelhead below the dam. The EIR should discuss the potential for future spills of landlocked trout over the dam and should evaluate how to either ensure these trout can survive in San Antonio Creek below the dam, or include a plan to rescue trout and move them back up into the reservoir.

The pipeline project proposes armoring San Antonio Creek below the dam with rip-rap to protect against scouring due to discharges from the cone valve(s). The EIR should quantify how much of the creek bed will be armored. If armoring of the creek is necessary, the project should include full mitigation in the form of creek restoration or habitat enhancement downstream.

The EIR for the project should discuss the potential for chemical spills from the proposed chemical storage and treatment facilities and what fail-safe containment and spill response program will be used. The SFPUC had a disastrous chlorine spill at the Sunol Valley Water Treatment Plant (SVWTP) in April of 2002, which killed all fish and aquatic life in Alameda Creek within a reach extending downstream of the SVWTP about 1,000 yards, including an estimated 24-36 lampreys and several frogs of an undetermined species. In May 2002 the SFPUC had another discharge of chlorinated water from the SVWTP. No restoration or mitigation was ever done by the SFPUC to remediate the impacts of these chemical spills.

The San Antonio pipeline project includes installation of 2,000-gallon chemical storage tanks, chemical pump feeds and control valves. The environmental review for the project must discuss what fail-safe measures the SFPUC will implement at the San Antonio Pump Station to ensure there is never another chemical spill into Alameda Creek. The environmental review must also spell out what containment, spill response, and mitigation measures will be in place if a chemical spill does occur.

Special status species, such as the state and federally listed California tiger salamander, may occur in the vicinity of proposed construction for this project. The EIR should discuss the potential for occurrence of special status species and potential impacts to species or their habitat. The project should emphasize avoidance of sensitive habitats and should fully mitigate for any direct or indirect impacts to native wildlife.

Thank you for the opportunity to comment on this project.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jeff Miller', with a stylized flourish at the end.

Jeff Miller, Executive Director

cc: Tim Ramirez, SFPUC
Josh Milstein, S.F. City Attorney
Suzanne Gautier, SFPUC
U.S. Fish and Wildlife Service
California Department of Fish and Game



California Regional Water Quality Control Board

San Francisco Bay Region



Linda S. Adams
Secretary for
Environmental Protection

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www.waterboards.ca.gov/sanfranciscobay

Arnold Schwarzenegger
Governor

Date: OCT 16 2007
File No. 2198.09 (XF)

RECEIVED

OCT 18 2007

CITY & COUNTY OF S.F.
PLANNING DEPARTMENT
M E A

San Francisco Planning Department
Attn.: Mr. Wycko
Acting Environmental Review Officer
1650 Mission Street, Suite 400
San Francisco, CA 94103-2479

**Subject: Comments on Notice of Preparation of an Environmental Impact Report for the
San Antonio Backup Pipeline Project
SCH No. 2007102030**

Dear Mr. Wycko:

We have reviewed the Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the San Antonio Backup Pipeline (SABPL) Project. The project consists of the following:

- Constructing and operating a backup pipeline about 2 miles in length along the alignment of the existing San Antonio Pipeline;
- Upgrading the San Antonio Creek Discharge Facility at the base of Turner Dam (San Antonio Reservoir) to allow for a discharge rate of 315 million gallons per day (MGD);
- Upgrading the dechlorination and pH treatment facility at the San Antonio Pump Station to allow for dechlorination and pH adjustment of 315 MGD; and,
- Improvements to security around the Alameda East Portal.

Based on the information provided in the NOP, we offer the following comments. These comments are intended to advise the San Francisco Planning Department and San Francisco Public Utilities Commission (SFPUC) of our concerns, so they may be incorporated into the planning and design process at an early date.

California Environmental Protection Agency



Comments on Beneficial Uses

The NOP discloses potential impacts to San Antonio Creek and provides information suggesting potential impacts to Alameda Creek. San Antonio Creek is a tributary to Alameda Creek, and both need to be protected for the Beneficial Uses they offer. Under the Basin Plan, Beneficial Uses of a significant water body, such as Alameda Creek, generally apply to its tributaries. As a result, Beneficial Uses of San Antonio Creek should be considered the same as Alameda Creek unless shown to be otherwise. These Beneficial Uses include agricultural supply, groundwater recharge, cold freshwater habitat, fish migration, fish spawning, warm freshwater habitat, wildlife habitat, water contact recreation, and non-contact water recreation.

Comments on Special Status Species

The NOP discloses potential impacts to special-status plant and animal species. Although the Water Board often defers to the U.S. Fish and Wildlife Service and California Department of Fish and Game when they are involved in the permitting, the EIR should include a discussion of the Water Board's jurisdiction in this area. The Water Board's jurisdiction in this area includes the beneficial uses of Alameda and San Antonio Creeks that relate to special-status species (e.g. cold freshwater habitat, fish migration, fish spawning, warm freshwater habitat, and wildlife habitat).

Comments on Aquatic Resources

The proposed project described in the NOP includes impacts to aquatic resources including wetlands, riparian habitat, streams or tributaries, or other waters of the State. Specifically, the project proposes to (1) fill riparian habitat adjacent to San Antonio Creek by building a new discharge facility in the riparian corridor with an outfall into San Antonio Creek; (2) fill the creek bed with rip rap in the vicinity of the new discharge facility; and (3) discharge potable water to San Antonio Creek as part of operations following project completion.

Fill Impacts

Both a Clean Water Act (CWA) Section 401 water quality certification and a CWA Section 404 Permit from the U.S. Army Corps of Engineers will be necessary for fill impacts to waters of the U.S. Additionally, the project proponent may need to file a Report of Waste Discharge if the project may impact waters of the State, even if such waters have been excluded from federal jurisdiction (e.g., isolated wetlands, ephemeral streams without a significant nexus, or stream banks above the ordinary high water mark). A Stream Bed Alteration Agreement from the California Department of Fish and Game may also be necessary since the proposed project involves stream channels and riparian habitat.

The Water Board adopted U.S. EPA's Section 404(b)(1), "Guidelines for Specification of Disposal Sites for Dredge or Fill Material," dated December 24, 1980, in its Basin Plan for

The Water Board adopted U.S. EPA's Section 404(b)(1), "Guidelines for Specification of Disposal Sites for Dredge or Fill Material," dated December 24, 1980, in its Basin Plan for determining the circumstance under which filling of wetlands, streams or other waters of the State may be permitted. Section 404(b)(1) Guidelines prohibit all discharges of fill material into regulated waters of the United States, unless a discharge, as proposed, constitutes the least environmentally damaging practicable alternative (LEDPA) that will achieve the basic project purpose.

The Guidelines sequence the order in which proposals should be approached: 1) Avoid - avoid impacts to waters; 2) Minimize - modify project to minimize impacts to waters; and, 3) Mitigate - once impacts have been fully minimized, compensate for unavoidable impacts to waters. When it is not possible to avoid impacts to water bodies, disturbance should be minimized. Mitigation for lost water body acreage and functions through restoration or creation should only be considered after disturbance has been minimized. Where impacts cannot be avoided, the creation of adequate mitigation habitat to compensate for the loss of water body acreage, functions and values must be provided.

The EIR should include an analysis that identifies the LEDPA by evaluating alternatives that first, avoid impacts; second, minimize impacts; and lastly, compensate for unavoidable impacts. This LEDPA analysis should include alternatives with measures or combinations of measures that prevent erosion without using rip rap or with minimal use of rip rap, such as controlling the discharge flow rates, bioengineering techniques to stabilize creek bed and banks, aligning the cone valve so that the water is discharged in the direction of stream flow, and retaining water within the SFPUC's transmission or storage systems. Retaining water within the SFPUC's transmission or storage systems has the added benefit of conserving water for municipal supply, and may include alternatives, such as diverting water to the Sunol Valley Water Treatment Facility for treatment and return to SFPUC's system, or discharging water into San Antonio Reservoir after dechlorination and pH adjustment.

Operational Discharges

The proposed project will also result in additional discharges of potable water to San Antonio Creek. Discharges of chlorinated water to a surface water are prohibited by the CWA, California Water Code, and Water Board's Basin Plan. Discharges of potable water may directly impact San Antonio and Alameda Creeks by altering pH, changing water temperature, and/or releasing toxic substances, such as chlorine/chloramine. Potential cumulative and indirect impacts may also occur as a result of potable water discharges to San Antonio Creek and the subsequent flows in Alameda Creek. Potential cumulative and indirect impacts include deposition of sediments; erosion of substratum; additional water (flooding); and creating a condition of pollution.

Water Board staff acknowledge and appreciate the inclusion of treatment to adjust pH and dechlorinate/dechloramine water prior to discharge. However, the EIR should also evaluate alternatives that avoid discharges to San Antonio Creek by retaining water within SFPUC's water

supply system. If discharges into the creek can not be avoided, the EIR should include treatment as mitigation measure. In addition, the EIR should evaluate whether discharges could result in changes in water temperature that lead to potentially significant impacts. If potentially significant impacts may occur as a result of changes in water temperature, the EIR should provide mitigation measures to prevent these impacts.

The EIR should also include an evaluation of potential impacts related to changes in stream flows (hydromodification) as a result of discharges from the new San Antonio Pipeline. Potential impacts from hydromodification include increases erosion and sedimentation that result in detrimental effects to riparian and aquatic habitat, and water column chemistry. The NOP indicates that bank erosion has occurred in the past as a result of discharges of 230 MGD, or about 356 cubic feet per second (cfs), to San Antonio Creek. The NOP also indicates that after construction of the new pipeline, the SFPUC will be able to discharge 315 MGD (487 cfs) to San Antonio Creek. Water Board staff are concerned that these discharges will not only increase erosion at the discharge location, but will also increase erosion and sedimentation downstream of the discharge. To address these concerns, the EIR should include a geomorphic assessment using continuous flow modeling to assess potential impacts to San Antonio and Alameda Creeks from increased erosion and sedimentation.

Comments on Groundwater Dewatering

For any site dewatering activity, whether or not there is known soil contamination at the site, dewatering discharges may be contaminated. As a first choice, water should be discharged to the sanitary sewer, assuming approval can be obtained from the sanitary sewer agency. If approval to discharge to the sanitary sewer cannot be obtained and the water cannot be otherwise disposed of (e.g., as dust control for water that has minimal contamination), then the SFPUC should determine whether the discharge can be covered under any of the Water Board's General National Pollutant Discharge Elimination System (NPDES) dewatering permits, and should prepare the requisite sampling, analysis, and treatment plans, file a Notice of Intent (NOI), etc. These general permits are available at http://www.waterboards.ca.gov/sanfranciscobay/npdes_gen_permit.htm. To be covered under any of these permits, the SFPUC will need to prepare the requisite monitoring and treatment plans, and file a Notice of Intent (NOI), and should allow 60 days for Water Board staff to review and accept these plans and the NOI before beginning a project.

If the water is tested and found to be clean, and if there is no history of contamination on the site or on adjacent sites, the SFPUC should implement a sediment removal program as necessary to ensure that the water is clean prior to discharge to a storm drain or water body. In addition, the SFPUC should confirm that the discharge will not cause erosion, flooding or other problems.

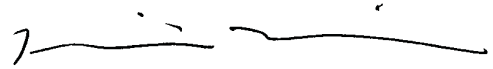
project must be covered under the State NPDES General Permit for Discharges of Storm Water Associated with Construction Activity (General Construction Permit). This can be accomplished by filing a NOI with the State Water Resources Control Board (State Board). The General Construction Permit is available at <http://www.waterboards.ca.gov/stormwtr/construction.html>. The General Construction Permit also requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) to prevent impacts from storm water runoff. The SFPUC should allow the Water Board 60 days to review and accept the SWPPP.

Please note that General Construction Permit is currently being revised. Information on the status of the revised General Construction Permit can be obtained from the State Board's website at <http://www.waterboards.ca.gov/stormwtr/constpermits.html>.

Closing

Please contact Xavier Fernandez at 510-622-5685 or xafernandez@waterboards.ca.gov with any questions or comments.

Sincerely,



Keith H. Lichten, P.E.
Senior Engineer

cc: State Clearinghouse

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DRAFT TECHNICAL MEMORANDUM

Date: May 9, 2006
To: John Schroeter
Organization: East Bay Municipal Utilities District
From: PWA (Andrew Collison, Christie Beeman and Setenay Bozkurt Frucht)
PWA Project #: P06-120
PWA Project Name: EBMUD Reservoir Releases
Subject: Draft approach for assessing erosion potential of reservoir releases
Copy(ies) To: File

Based on our previous meeting and discussions we understand that EBMUD needs to develop a method of substantiating that proposed reservoir discharges will not cause erosion and bank destabilization of the receiving creek channels. This draft memo outlines our proposed methodology. We have slightly modified the approach based on additional analysis and thought since our last meeting.

Background

We envisage a phased approach with a graduated response so that straight forward cases where erosion is highly unlikely require little analysis while more complex or borderline cases are assessed in progressively greater detail. Our proposal is based on the geomorphic principal of 'dominant' or 'channel-forming' discharge. The concept of dominant discharge is based on the observation that over a long period of time (decades) most sediment is moved by events that occur approximately once every 1-2 years. In most stream channels the majority of flows are small, and do not exceed the particle entrainment threshold. As flows exceed this threshold, exponentially more sediment is eroded and transported, but these events become less frequent and thus cumulatively do less work. Thus, most sediment is moved by flows above the entrainment threshold that occur moderately frequently, and that carry moderately large amounts of sediment (Figure 1). We can calculate the effectiveness of flows by determining the flow frequency curve and combining this with a sediment rating curve (flow v. sediment load). Studies of the dominant discharge in different environments have frequently found it to coincide with flows around the 2 year recurrence interval, though ranges from 1.0 - 2.5 years are very common and wider ranges have been found in some environments.

Dominant discharge in East Bay creeks

We have performed a preliminary analysis of dominant discharge for creeks and rivers in the East Bay using suspended sediment records. This analysis requires a reasonably long flow record (minimum 10 years) and enough simultaneous measurements of sediment load and flow to develop a good rating curve. This analysis should be made using bedload as well as suspended load, though since bedload is measured

much less frequently than suspended load studies often assume that bedload is a relatively fixed percentage of total load. There are only three East Bay creeks that meet the necessary data requirements for an analysis based on suspended sediment (Alameda Creek at Niles, San Lorenzo Creek above Don Castro Reservoir and Cull Creek above Cull Creek Reservoir). PWA carried out a dominant discharge analysis based on suspended sediment load for all three creeks to determine the range of flow during which most erosion occurs. The example from Alameda Creek is shown in Figure 2. We should note that a more comprehensive assessment using bedload would be necessary to confirm our initial findings, and we do not currently know whether such data are available for these three gages. For all three creeks the dominant discharge coincided with the flows close to the 2-year flood (plus or minus 0.5-year). Given the prevalence of 1.5 – 2 year flows as dominant discharges in other studies, and the consistency of the relationship for three creeks of greatly varying size (6, 18 and 229 square mile watersheds) it appears reasonable to assume that most East Bay creeks have similar dominant discharge characteristics.

Relationship between dominant discharge, erosion threshold and reservoir release criteria

The most conservative approach to reservoir releases would be to only release water so that total stream discharge was below the erosion threshold for the bed and bank materials. However, identifying the allowable release rate using this approach would be very costly to implement in every discharge scenario, since channel entrainment thresholds vary greatly along channels and calculating applied shear stress would require the development of a hydraulic model for every creek that EBMUD proposes to discharge to. In addition, measurement of entrainment threshold in cohesive sediments is very time consuming and subject to variability compared with measurements of non-cohesive sediment.

It appears from an initial review of EBMUD's past and proposed releases that many releases are likely to be below the erosion threshold or at a level where the additional erosion is statistically insignificant. A practical approach is to ensure that flows remain below the level at which small increases in channel flow start to produce larger increases in erosion (inflection point in Figure 1). This can be estimated by calculating dominant discharge relationships for creeks in the EBMUD area and selecting a threshold based on the percentage of dominant discharge. Since the dominant discharge can be related to a flow recurrence interval (e.g. the two year flow, Q_2), the threshold could potentially be defined as a proportion of this flow.

Proposed methodology

As starting point for discussions and refinement we propose the following methodology to assess and prevent potential creek erosion impacts from flow releases:

Step 0 (Prior to assessment)

1. PWA will calculate dominant discharge for those East Bay creeks that have sufficient data to conduct the analysis.

2. PWA will work with EBMUD and the RWQCB to agree upon a threshold value (e.g. a proportion of Q_2 , tQ_2) below which erosion is likely to be insignificant.
3. For releases that exceed the threshold value we will work to develop an acceptable amount of sediment discharge as a proportion of the mean annual sediment load of the creek (e.g. discharge will contribute less than the equivalent of one week's average sediment load).
4. For releases that exceed the acceptable sediment load we will work to establish acceptable boundary shear stress tolerances.

Step 1. EBMUD staff locates reservoir discharge point in the natural creek system (e.g. culvert outfall) and provide GPS coordinates.

Step 2. Is flow discharging into a channel that is hardened on both banks and bed between the discharge point and the tidal limit of the San Francisco Bay? If yes, grant exemption from permit requirements.

Data availability: we have been informed by representatives from Contra Costa and Alameda Counties that this information is available for creeks in their county as a GIS layer. We propose that the GPS coordinates of the discharge point are overlaid onto the stream channel materials layer to allow an assessment of hardening to be made.

If flow discharges to a non hardened channel, go to Step 3.

Step 3. Calculate the proposed discharge as a percentage of the dominant discharge at the point where the reservoir discharges into the creek. Take dominant discharge from flow recurrence interval estimated in Step 0. Calculate the corresponding flow for the creek in question using either existing data where it exits or generate a new estimate of flow based on regional regressions (e.g. Waananen and Crippen, 1977). Compare the discharge with the threshold (tQ_2) agreed with RWQCB in Step 0.

If flow input $< tQ_2$ – grant exemption

If flow input $> tQ_2$ – go to Step 4.

Step 4. Conduct a brief geomorphic assessment of erosion vulnerability in the receiving channel and a basic hydraulic assessment (measure two cross sections, channel slope, Manning's n , calculate flow depth and shear stress at Q_2 and for proposed discharge level). Estimate the amount of sediment load associated with the proposed discharge by the following method:

1. Estimate mean annual sediment load for the watershed at the discharge point using regional sediment yield regression (PWA and SFEI, 2006).
2. Estimate sediment load associated with the proposed discharge by either use of a sediment transport model parameterized from data collected in geomorphic assessment, or by extrapolating a sediment rating curve from a similar creek for which data are available.

3. If increased sediment load is less than threshold agreed in Step 0, grant exemption.
4. If increased sediment load is more than threshold agreed in Step 0, go to Step 5.

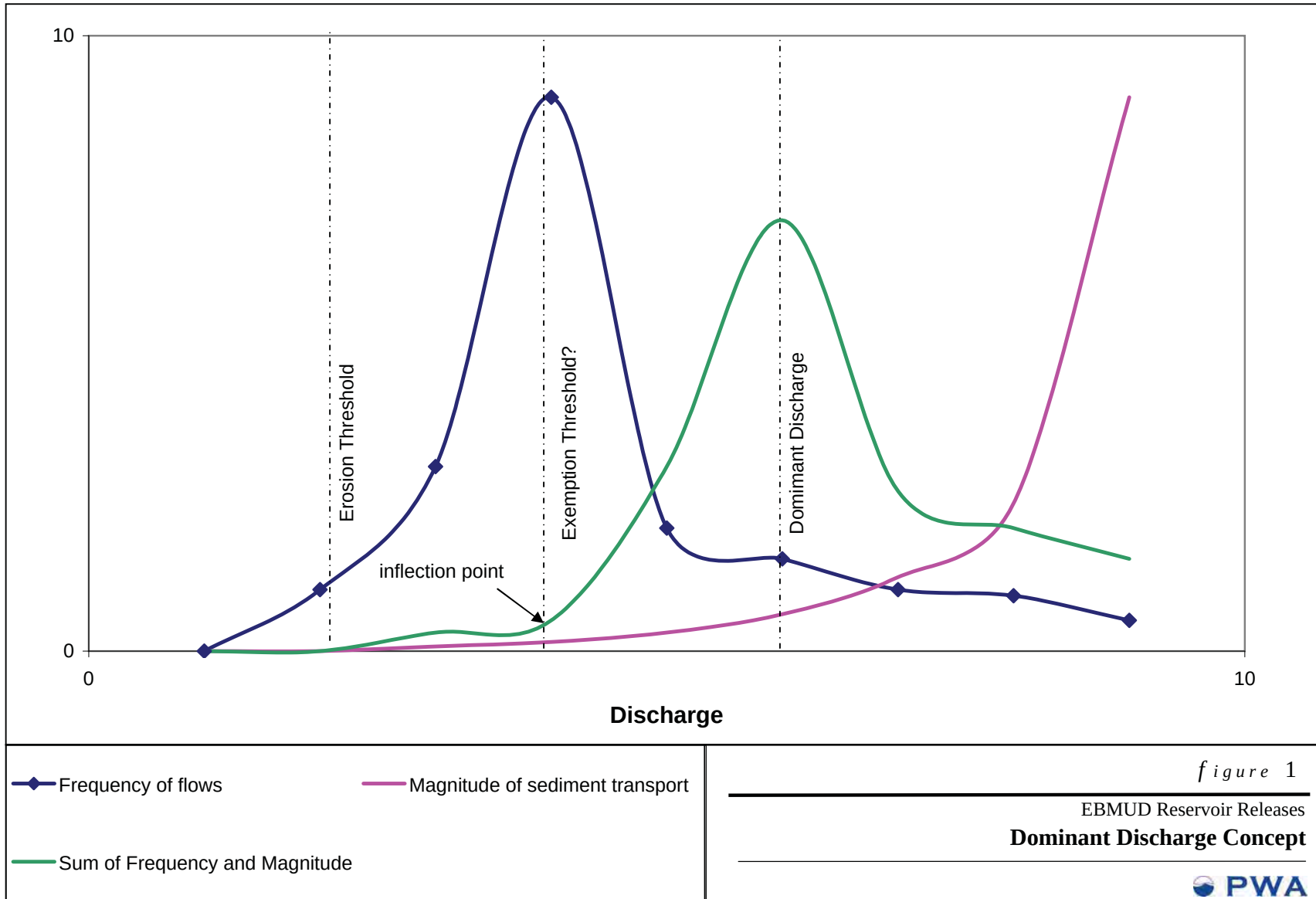
Step 5. Calculate critical shear stress for receiving channel and banks and compare with boundary shear stress of applied flows, e.g. using methods outlined in Fishchenich, 2001. If shear stresses are significantly below critical shear stresses for bank materials (sediment and vegetation cover) then grant exemption (“significant” to be determined in this study and in collaboration with RWQCB, e.g. 50%). If shear stresses are not significantly below critical shear stresses either regulate flows to keep them below threshold or apply for permit.

Validation of approach

We anticipate that many discharges will fall under the exemption at Step 3. For those situations that require Steps 4 and 5 we recommend a validation exercise whereby in a subset of creeks we measure turbidity before, during and after stepped releases from reservoirs, to determine the thresholds at which erosion occurs. This may then allow us to refine the thresholds used at each step.

Next steps

We recommend that all the steps of the proposed methodology be applied in a test case on Baxter Creek, or another upcoming release. Although based on discussions with EBMUD it appears that the proposed flow releases for Baxter Creek will fall below the threshold of dominant discharge it would be a valuable exercise to apply all steps for a range of hypothetical releases to determine the practicality and cost, and where necessary to refine the methodology.



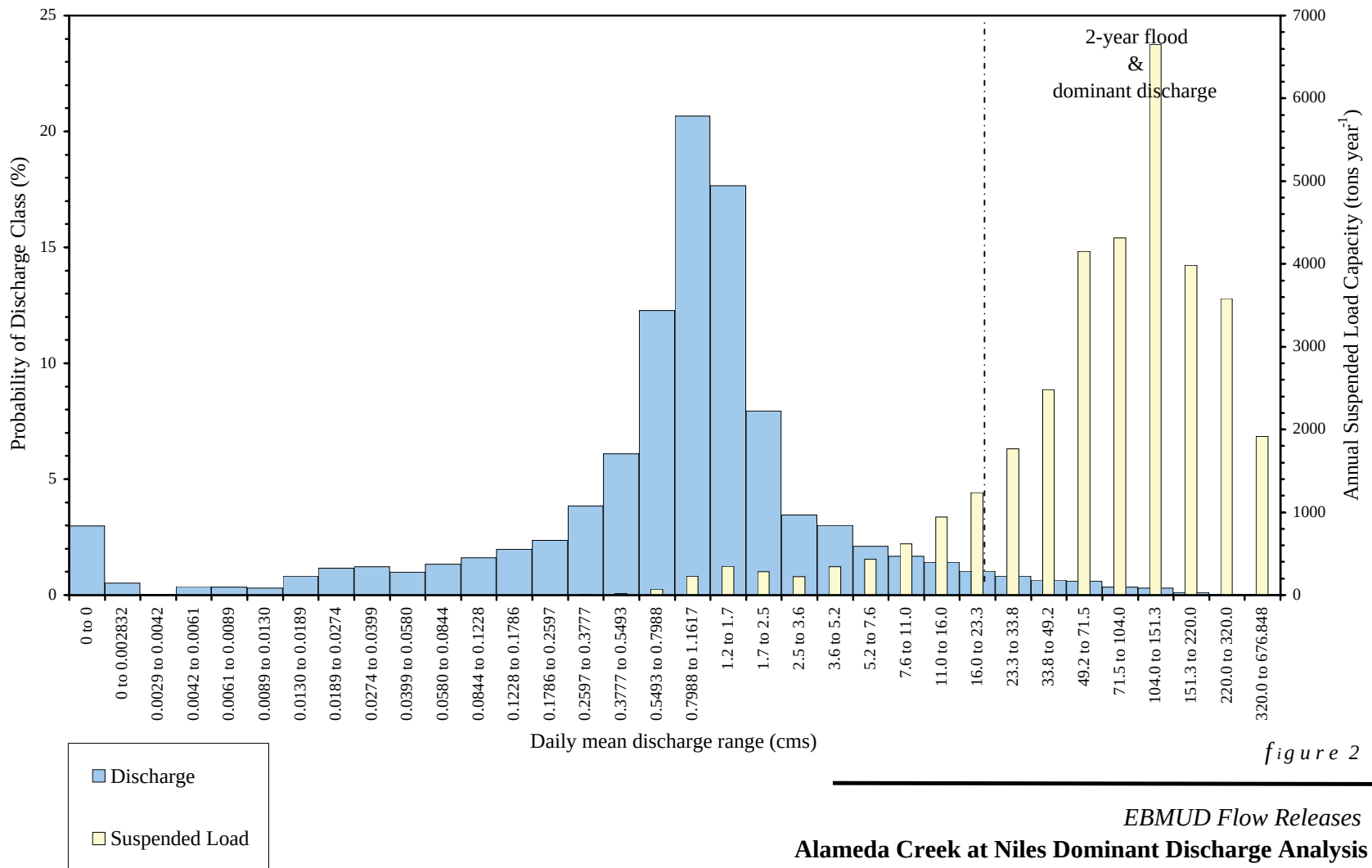


figure 2

EBMUD Flow Releases
Alameda Creek at Niles Dominant Discharge Analysis





State of California – The Resources Agency
DEPARTMENT OF FISH AND GAME
<http://www.dfg.ca.gov>

ARNOLD SCHWARZENEGGER, Governor



POST OFFICE BOX 47
YOUNTVILLE, CALIFORNIA 94599
(707) 944-5500

October 19, 2007

Mr. Bill Wycko
Acting Environmental Review Officer
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103-2479

Dear Mr. Wycko:

Subject: Case No. 2007.0039E – San Antonio Backup Pipeline Project, Notice of Preparation of an Environmental Impact Report and Notice of Public Scoping Meeting

The California Department of Fish and Game (DFG) has reviewed the Notice of Preparation (NOP) of an Environmental Impact Review (EIR) for the San Antonio Backup Pipeline Project (proposed project). The San Francisco Public Utilities Commission (SFPUC) proposes to implement four related upgrades to the water management system between the San Antonio Pump Station and the San Antonio Reservoir.

The proposed project would be located between the Hetch Hetchy Alameda Siphons and San Antonio Reservoir in the Sunol Valley. The project area lies just south of the intersection of Highways 680 and 84 along Calaveras Road in Alameda County. The proposed project would include four components to upgrade this portion of the water supply system. The primary project would be the installation of a backup pipeline along the same route as the existing San Antonio pipeline that runs about two miles from the San Antonio Pump Station to the James Turner Dam. To accommodate the increased flows this backup pipeline would be able to handle, upgrades would be necessary at the San Antonio Creek Discharge Facilities at the base of the James Turner Dam at the San Antonio Reservoir, and at the San Antonio Pump Station dechlorination and pH adjustment facility. The proposed project would perform two functions: 1) provide a more reliable and efficient conveyance of emergency discharges from the Hetch Hetchy system when water quality parameters are exceeded; and 2) act as a backup pipeline for moving San Antonio Reservoir water into the Hetch Hetchy system when the San Antonio Pipeline is out of service for maintenance or repair.

DFG recommends a complete assessment of the flora and fauna within and adjacent to the project area, with particular emphasis upon identifying endangered, threatened, and locally unique species and sensitive habitats, should be provided to account for and protect special status species and habitat. Rare, threatened and endangered species to

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be addressed should include all those which meet the California Environmental Quality Act (CEQA) definition (see CEQA Guidelines, Section 15380). The assessment should identify any rare plants and rare natural communities, following DFG's Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities (revised May 8, 2000). The Guidelines are available at www.dfg.ca.gov/whdab/pdfs/guideplnt.pdf.

Please be advised that a California Endangered Species Act (CESA) Permit must be obtained if the project has the potential to result in take of species of plants or animals listed under CESA, either during construction or over the life of the project. Issuance of a CESA Permit is subject to CEQA documentation; therefore, the CEQA document must specify impacts, mitigation measures, and a mitigation monitoring and reporting program. If the project will impact CESA listed species, early consultation is encouraged, as significant modification to the project and mitigation measures may be required in order to obtain a CESA Permit.

Please be advised that for any activity that will divert or obstruct the natural flow, or change the bed, channel, or bank (which may include associated riparian resources) of a river or stream, or use material from a streambed, DFG may require a Streambed Alteration Agreement (SAA), pursuant to Section 1600 et seq. of the Fish and Game Code, with the applicant. Issuance of SAAs is subject to CEQA. DFG, as a responsible agency under CEQA, will consider the CEQA document for the project. The CEQA document should fully identify the potential impacts to the stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for completion of the agreement. To obtain information about the SAA notification process, please access our website at www.dfg.ca.gov/1600; or to request a notification package, contact the Streambed Alteration Program at (707) 944-5520.

The NOP states the proposed project would install a 66-inch pipe (material to be determined) alongside the existing San Antonio Pipeline. It would be designed to transfer up to 315 MGD (487cfs) of Hetch Hetchy water from Alameda Siphon No. 3 to the base of James Turner Dam at San Antonio Reservoir. This design capacity is based on anticipated future emergency discharge requirements. This water would be de-chlorinated and pH adjusted at the San Antonio Pump Station (SAPS) before entering the pipeline. Additional chemical storage and distribution facilities would be located adjacent to the existing SAPS. The 487cfs discharge would occur through a new cone valve structure and then into San Antonio Creek. The creek banks in the immediate vicinity of the new and existing cone valves would be reinforced with riprap to protect against bank erosion.

The EIR should disclose impacts to special status species such as federally threatened California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*), and Central Coast ESU steelhead (*Oncorhynchus mykiss iridieus*). Although we recognize that, at this time, there are barriers in Alameda Creek that preclude

steelhead migration to San Antonio Creek, these barriers are in the process of being remediated. Steelhead will likely gain access to San Antonio Creek in the reasonably foreseeable future, and therefore the EIR should disclose the future operational impacts to steelhead (CCR Title 14, section 15064 [(d)(1-3)]). California red-legged frog and California tiger salamander could be breeding in the ponds at the base of Turner Dam. Discharging 487cfs into these ponds thence to San Antonio Creek would have significant impacts on these populations. The EIR should propose mitigation measures that would avoid, minimize, or compensate for the potential impacts and/or take of these special status species due to the construction and future operations of the project.

The EIR should include mitigation measures that treat waters before being discharged into San Antonio creek in order to comply with Fish and Game Code 5650 which states "it is unlawful to deposit in, permit to pass into, or place where it can pass into the waters of this state...any substance or material deleterious to fish, plant life, mammals, or bird life." Sudden changes in water quality could be deleterious to fish and wildlife in San Antonio Creek and therefore should be considered in the EIR.

The SPFUC proposes to install erosion control methods (e.g., riprap) within and along the banks of San Antonio Creek at the proposed project. DFG understands the importance of erosion control methods on San Antonio Creek. The SFPUC should investigate the use of native vegetation or an alternative method of bioengineering as a means of erosion control rather than the riprap. Bioengineering methods for reducing erosion, such as planting native vegetation, is preferable to a structural approach such as riprap. Structural approaches to stream bank erosion such as riprap tend to fix the stream in one place, exclude riparian vegetation, and prevent the natural movement that creates diverse habitats. Structural approaches are often more expensive and have limited habitat value for fish and wildlife. Over the long term, structural approaches tend to fail or require excessive maintenance. Bioengineering increases the effectiveness of the erosion control method and provides some habitat value as well. For example, streambanks with riprap typically have fewer undercut banks, less low-overhead cover and are less likely than natural stream banks to contribute large woody debris and organic matter from the riparian zone. The use of riprap for erosion control is a temporary and costly fix that lacks the ecological services commonly associated with some bioengineering techniques used for erosion control. Therefore, DFG recommends that bioengineering techniques for erosion control be included as an alternative to riprap in the EIR.

Alternatively, the EIR should include a discussion of the configuration of the cone valve to reduce the potential of erosion. For example, positioning the cone valve parallel to San Antonio Creek could be a more effective way of reducing erosion relative to positioning the cone valve perpendicular to the stream bank.

Mr. Bill Wycko
October 19, 2007
Page 4

The alternative analysis in the EIR should include a discussion of potentially discharging this water into San Antonio Reservoir, the Sunol Valley Water Treatment Facility for treatment, or another alternative which would return to the water to the system. These alternatives could then allow the SFPUC to put these waters to beneficial uses rather than having uncontrolled releases in San Antonio Creek. Keeping waters the SFPUC "now has" in the transmission system could be an incremental part of a larger scale water conservation program that could reduce the need to withdraw additional water.

We appreciate your consideration of our comments. DFG personnel are available for consultation regarding resources and strategies to minimize impacts. If you have any questions, please contact Dan Wilson, Environmental Scientist, at (707) 944-5534; or Greg Martinelli, Water Conservation Supervisor, at (707) 944-5570.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott Wilson" followed by "F.R." in a smaller, less legible script.

Charles Armor
Regional Manager
Bay Delta Region

DEPARTMENT OF TRANSPORTATION

111 GRAND AVENUE
P. O. BOX 23660
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November 2, 2007

Mr. Chris Kern
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103-2479

ALA000225
SCH#2007102030

Dear Mr. Kern:

San Antonio Backup Pipeline Projects – Notice of Preparation (NOP)

Thank you for including the California Department of Transportation (Department) in the early stages of the environmental review process for the proposed project. The comments presented below are based on the NOP of a Draft Environmental Impact Report (DEIR) for the San Antonio Backup Pipeline Projects. As lead agency, the San Francisco Planning Department is responsible for all project mitigation, including improvements to state highways. The project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures in the DEIR. Any required roadway improvements should be completed prior to the issuance of a certificate of occupancy. While an encroachment permit is only required when the project involves work in the State Right of Way (ROW), the Department will not issue an encroachment permit until our concerns are adequately addressed. Therefore, we strongly recommend that the lead agencies ensure resolution of the Department's concerns prior to submittal of an encroachment permit application. Further comments will be provided during the encroachment permit process; see the end of this letter for more information regarding encroachment permits.

The project's environmental analysis needs to include documentation of a current archaeological record search from the Northwest Information Center (NIC) of the California Historical Resources Information System (CHRIS) if construction activities are proposed within State right-of-way (ROW). Current searches must be no more than five years old. The Department requires the records search, and if warranted, a cultural resource study by a qualified, professional archaeologist, to ensure compliance with CEQA, Section 5024.5 of the California Public Resources Code, and Volume 2 of the Department's Environmental Handbook. Work subject to these requirements includes, but is not limited to: lane widening, channelization, auxiliary lanes, and/or modification of existing features such as slopes, drainage features, curbs, sidewalks and driveways within or adjacent to State ROW. These requirements, including applicable mitigation, must be fulfilled before an encroachment permit can be issued for project-related work in State ROW. See the website link below for more information regarding the CHRIS – NIC. (Click on IC Roster).

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Mr. Chris Kern
November 2, 2007
Page 2

<http://ohp.parks.ca.gov>

We look forward to reviewing the DEIR for this project. Please send a copy to the address at the top of this letterhead, marked ATTN: Lisa Carboni, Mail Stop #10D.

Encroachment Permit

Any work or traffic control within the State ROW requires an encroachment permit that is issued by the Department. Traffic-related mitigation measures will be incorporated into the construction plans during the encroachment permit process. See the following website link for more information: <http://www.dot.ca.gov/hq/traffops/developserv/permits/>

To apply for an encroachment permit, submit a completed encroachment permit application, environmental documentation, and five (5) sets of plans which clearly indicate State ROW to the address at the top of this letterhead, marked ATTN: Michael Condie, Mail Stop #5E.

Should you have any questions regarding this letter, please call Lisa Carboni at (510) 622-5491.

Sincerely,

A handwritten signature in black ink that reads "Timothy C. Sable". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

TIMOTHY C SABLE
District Branch Chief
IGR/CEQA

c: State Clearinghouse

APPENDIX C

WSIP PEIR Mitigation Measures, Applicability to the Proposed Project

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The San Antonio Backup Pipeline project (SABPL or proposed project) was analyzed at a program-level in the Water System Improvement Program (WSIP) Program Environmental Impact Report (PEIR)¹ as one of the facility improvement projects under the WSIP. The PEIR identified programmatic mitigation measures, and under Resolution No. 08-200, the SFPUC adopted the WSIP Mitigation Monitoring and Reporting Program that applies the programmatic mitigation measures to the WSIP facility improvements projects, including the SABPL project. This SABPL Environmental Impact Report (EIR) provides a detailed, project-level analysis of the proposed project based on site-specific and up-to-date information developed subsequent to the preparation of the PEIR. This section identifies the applicability of the WSIP PEIR mitigation measures to the proposed project based on the project-level impact analysis.

Table C-1 lists the programmatic mitigation measures identified in the WSIP PEIR and indicates which of these mitigation measures are applicable to the proposed project. For the programmatic mitigation measures that are applicable, the table identifies the comparable project-level mitigation measure identified in the SABPL EIR that either relies on the programmatic measures or identifies an equivalent or better site-specific mitigation measure to replace the programmatic mitigation measure. The table also provides an explanation for those programmatic mitigation measures that are not applicable to the proposed project.

¹ San Francisco Planning Department, *Final Program Environmental Impact Report for the San Francisco Public Utilities Commission's Water System Improvement Program*, San Francisco Planning Department File No. 2005.0159E, State Clearinghouse No. 2005092026. Certified October 30, 2008.

TABLE C-1
PEIR MITIGATION MEASURES – CONSISTENCY REVIEW FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

PEIR Mitigation Measure(s)	Applicable to Proposed Project (Y/N)?	Discussion
Land Use		
Measure 4.3-2, Facility Siting Studies: Conduct project-specific facility siting studies for non-SFPUC land and implement these studies' recommendations to avoid or minimize impacts on existing land uses.	N	Not applicable; all project facilities are sited on SFPUC-owned land.
Measure 4.3-4a, Architectural Design: Design permanent new, aboveground facilities to be compatible with existing visual character of the site and surrounding area.	Y	The proposed aboveground facilities, including the chemical facility and electrical control building for the new discharge facility at Pit F3-East, would have a similar appearance as the surrounding SFPUC water supply facilities and buildings. Further, existing topography and vegetation would provide partial screening of the proposed aboveground facilities. Although some trees along the Calaveras Road right-of-way would require removal during project construction, Mitigation Measure M-BI-1f (Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation) includes provisions for tree replacement to address tree removal impacts.
Measure 4.3-4b, Landscaping Plans: Prepare and implement landscaping plans to restore (recontour, revegetate, landscape) sites to preconstruction conditions. Monitor landscape plantings.	Y	See Mitigation Measure M-BI-1f (Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation). The project-level mitigation measure for biological resources requires site restoration with naturally occurring vegetation similar to surrounding habitats or to their site potential, as feasible, and monitoring of restored areas and replacement plantings. This mitigation measure replaces the requirement for preparation and implementation of a landscaping plan in accordance with the PEIR mitigation measure.
Measure 4.3-4c, Landscape Screens: Include new plantings and landscape berms to screen views of new structures and equipment from scenic roads.	N	The proposed aboveground facilities would be similar in appearance as other SFPUC water infrastructure facilities in the Sunol Valley and would be partially screened from Calaveras Road by intervening vegetation and topography. Mitigation Measure M-BI-1f (Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation) includes provisions for tree replacement to address tree removal impacts on scenic roads. The aboveground project improvements do not require additional screening. See Impact AE-2, Implementation of the proposed project could result in long-term adverse effects on scenic vistas and scenic resources, and degradation of the visual character of the site and its surroundings.
Measure 4.3-4d, Minimize Tree Removal: Minimize or avoid the removal of trees that screen existing and proposed WSIP facility sites; implement tree replacement plan.	Y	See Mitigation Measures M-BI-1a (General Protection Measures) and M-BI-1f (Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation).

TABLE C-1 (Continued)
PEIR MITIGATION MEASURES – CONSISTENCY REVIEW FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

PEIR Mitigation Measure(s)	Applicable to Proposed Project (Y/N)?	Discussion
Land Use (cont.)		
Measure 4.3-4d (cont.)		The project-level mitigation measures require implementation of protective measures to avoid or minimize impacts on mature native trees during construction, and if removal is necessary, to plant replacement trees at or in close proximity to the removal sites to the extent feasible. If replanting trees on the same location is not feasible or could result in damage to the proposed improvements, the SFPUC in consultation with the applicable resource agencies shall designate a suitable planting site elsewhere in the project vicinity.
Measure 4.3-5, Reduce Lighting Effects: Use cut-off shields and nonglare fixture design, direct lighting onsite and downward, prevent use of highly reflective building materials or finishes.	N	As part of the proposed project and in accordance with the Alameda WMP, nighttime lighting at the new chemical facility, electrical control building for the discharge facility at Pit F3-East, and Alameda Creek Pump Station would be motion-activated, and directed downward and shielded so it is not highly visible or obtrusive. No mitigation is necessary. See Impact AE-3, The proposed project would not create a new permanent source of substantial light and glare.
Geology		
Measure 4.4-1, Quantified Landslide Analysis: Avoid sites with landslide hazards; where they cannot be avoided, conduct site-specific slope stability analyses and implement recommendations.	Y	See Mitigation Measure M-GE-1 (Shoring Plan for Pit F3-East). The proposed project includes construction within the slope of quarry Pit F3-East. The PEIR measure is not applicable because a slope stability analysis at Pit F3-East was prepared as part of the project-specific geotechnical report. The results of the slope stability analysis indicate the quarry pit slopes are stable under static conditions. Mitigation Measure M-GE-1 is prescribed in this EIR to ensure that construction activities within and adjacent to the quarry pit do not cause it to become unstable during construction. See Impact GE-1, The project is located on a geologic unit that could become unstable as a result of project construction.
Measure 4.4-4, Subsidence Monitoring Program: Monitor subsidence and implement corrective actions as warranted.	N	Not applicable; the project does not involve tunneling.
Measure 4.4-9, Characterize Extent of Expansive and Corrosive Soil: Characterize the presence of expansive/corrosive soils; implement recommendations.	N	The presence of expansive and corrosive soils was evaluated as part of the project-specific geotechnical report. The project would be constructed and designed in accordance with the recommendations of the project-specific geotechnical investigation to minimize the effects of any expansive soils. With respect to corrosive soils, the SABPL, transfer pipeline, and other below-ground components would be designed with a cement mortar coating or dielectric coating, and a passive cathodic protection system to protect the pipeline from corrosive soils. With incorporation of these design features, impacts related to expansive and corrosive soils would be less than significant and no mitigation is required. See Impact GE-7, The project would not create significant risks to life or property due to expansive or corrosive soil.

TABLE C-1 (Continued)
PEIR MITIGATION MEASURES – CONSISTENCY REVIEW FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

PEIR Mitigation Measure(s)	Applicable to Proposed Project (Y/N)?	Discussion
Hydrology		
Measure 4.5-2, Site-Specific Groundwater Analysis and Identified Measures: Conduct project-specific analysis of dewatering and implement measures to ensure that groundwater resources and the beneficial uses of groundwater are not adversely affected.	N	Not necessary. Any project-related effects on the shallow groundwater table would be temporary in nature, as dewatering would be required only during certain phases of construction, and only if groundwater is encountered. See Impact HY-2, Dewatering of excavated areas during project construction would not substantially deplete groundwater supplies.
Measure 4.5-4a, Flood Flow Protection Measures: Preclude exposure of stockpiled soils, hazardous materials, and construction materials to flood flows.	N	The proposed staging areas are located outside of the designated 100-year FEMA flood hazard zone. Mitigation Measure M-HY-1a (Preparation and Implementation of a SWPPP) would require that the construction contractor implement site-specific BMPs to protect water quality during project construction activities. No additional mitigation is necessary.
Measure 4.5-4b, Site-Specific Flooding Analysis and Identified Measures: Implement design measures to preclude projects from causing flooding or damage from redirected flood flows.	N	No mitigation is necessary. The project-level analysis determined that no sensitive receptors would be adversely affected if the proposed floodplain encroachment in the vicinity of Pit F3-East were to result in an increase in 100-year flood elevations. See Impact HY-5, The placement of project facilities within a 100-year flood hazard zone would not substantially impede or redirect flood flows or result in damage to SFPUC facilities or private property.
Measure 4.5-5, Stormwater Treatment and Groundwater Monitoring: If treated stormwater is used to maintain Lake Merced water levels, monitor surface water and groundwater quality in the vicinity of Lake Merced. Identify and implement corrective actions (e.g., treatment).	N	Not applicable; this PEIR measure applies only to Groundwater Projects in the San Francisco that have the potential to affect water levels in or near Lake Merced.
Measure 4.5-6, Appropriate Source Controls and Site Design Measures: For projects located in areas not covered by a municipal stormwater permit and disturbing less than one acre of land during construction, implement appropriate source control and site design measures. These measures will ensure compliance with applicable water quality criteria and goals and protect the beneficial uses of the receiving water.	Y	See Mitigation Measure M-HY-1a (Preparation and Implementation of a SWPPP). The proposed project would result in the disturbance of more than one acre of land during construction and is subject to the requirements of the NPDES General Construction Permit. Mitigation Measure M-HY-1a includes provisions to protect water quality during project construction.
Biology		
Measure 4.6-1a, Wetlands Assessment: Wetland scientist will determine whether wetlands could be affected by the project, and, if so, perform a wetland delineation and develop mitigation.	N	Not applicable; a wetlands assessment was performed in support of the project.

TABLE C-1 (Continued)
PEIR MITIGATION MEASURES – CONSISTENCY REVIEW FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

PEIR Mitigation Measure(s)	Applicable to Proposed Project (Y/N)?	Discussion
Biology (cont.)		
Measure 4.6-1b, Compensation for Wetlands and Other Biological Resources: If a WSIP project will affect jurisdictional wetlands, implement avoidance measures, restoration procedures, and compensatory creation or enhancement to ensure no net loss of wetland extent or function. Compensate for sensitive riparian and upland habitats supporting key special-status species. Obtain permits for each project and comply with applicable regulations addressing sensitive habitats and species. The Habitat Reserve Program is an alternative for implementing offsite habitat compensation.	Y	See Mitigation Measure M-BI-3 (Avoidance and Protection Measures for Jurisdictional Water Bodies). The project-level mitigation measure requires avoidance of wetlands and protection of wetlands that cannot be avoided. This mitigation measure is consistent with the PEIR mitigation measure and is specific to the project requirements.
Measure 4.6-2, Habitat Restoration/Tree Replacement: Restore temporarily affected sensitive habitats. Replace trees designated as heritage trees (or similar local designation) consistent with requirements of local ordinances. Minimize loss of sensitive habitats by coordinating WSIP projects.	Y	See Mitigation Measures M-BI-1f (Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation). The project-level measure is consistent with the PEIR measure and provides additional details that define the trees to be avoided/protected and tree replacement requirements.
Measure 4.6-3a, Protection Measures During Construction for Key Special-Status Species and Other Species of Concern: Where key special-status species and other species of concern are potentially present, implement general practice measures (preconstruction surveys, worker awareness program, environmental inspector, minimization of habitat loss).	Y	See Mitigation Measures M-BI-1b (Worker Training and Awareness Program), M-BI-1c (Minimize Disturbance to Riparian Habitat), M-BI-1d (Prevent Movement of Specific Species through the Work Areas), M-BI-1e (Preconstruction Surveys and Construction Monitoring and Protocols for California Tiger Salamander, California Red-legged Frog, and Alameda Whipsnake), M-BI-1g (Measures to Minimize Disturbance to Special-Status Bird Species), and M-BI-1h (Conduct Preconstruction Surveys for Any Sensitive Bats Found and Implement Avoidance and Minimization Measures). The project-level measures are consistent with the PEIR measure and provide additional site- and project-specific details where key special-status species and other species of concern are potentially present. An environmental inspector is not required, but a biological monitor is required under Mitigation Measure M-BI-1e.
Measure 4.6-3b, Standard Mitigation Measures for Key Special-Status Plants and Animals: Implement measures to reduce impacts on key special-status species. <i>See below for specific species and corresponding sub-PEIR mitigation number.</i>		
Invertebrates		
Valley Elderberry Longhorn Beetle	I.1	N Species not identified in project vicinity.
Vernal Pool Crustaceans (Vernal Pool Fairy Shrimp; Conservancy Fairy Shrimp; Vernal Pool Tadpole Shrimp)	I.2	N Species not identified in project vicinity.
Bay Checkerspot Butterfly; Callippe Silverspot Butterfly	I.3	N Species not identified in project vicinity.

TABLE C-1 (Continued)
PEIR MITIGATION MEASURES – CONSISTENCY REVIEW FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

PEIR Mitigation Measure(s)	Applicable to Proposed Project (Y/N)?		Discussion
Biology (cont.)			
Measure 4.6-3b (cont.) Fish			
Central Valley Fall- and Late-Fall-Run DPS Chinook Salmon; Central Valley DPS Steelhead; Green Sturgeon Southern District DPS; Central Coast DPS Steelhead; Rainbow Trout	F.1	N	Species not identified in project vicinity.
Reptiles and Amphibians			
California Red-Legged Frog; Foothill Yellow-Legged Frog	RA.1	Y	See Mitigation Measures M-BI-1b (Worker Training and Awareness Program), M-BI-1c (Minimize Disturbance to Riparian Habitat), M-BI-1d (Prevent Movement of Specific Species through the Work Areas), and M-BI-1e (Preconstruction Surveys and Construction Monitoring and Protocols for California Tiger Salamander, California Red-legged Frog, and Alameda Whipsnake). The project-level measures are consistent with the PEIR measure and include site-specific protection measures for all special status species potentially present in the project area.
California Tiger Salamander	RA.2	Y	See Mitigation Measures M-BI-1b (Worker Training and Awareness Program), M-BI-1c (Minimize Disturbance to Riparian Habitat), M-BI-1d (Prevent Movement of Specific Species through the Work Areas), and M-BI-1e (Preconstruction Surveys and Construction Monitoring for California Tiger Salamander, California Red-legged Frog, and Alameda Whipsnake). The project-level measures are consistent with the PEIR measure and include site-specific protection measures for all special status species potentially present in the project area.
San Francisco Garter Snake	RA.3	N	Species not identified in project vicinity.
Alameda Whipsnake	RA.4	N	See Mitigation Measures M-BI-1b (Worker Training and Awareness Program), M-BI-1c (Minimize Disturbance to Riparian Habitat), M-BI-1d (Prevent Movement of Specific Species through the Work Areas), and M-BI-1e (Preconstruction Surveys and Construction Monitoring for California Tiger Salamander, California Red-legged Frog, and Alameda Whipsnake). The project-level measures are consistent with the PEIR measure and include site-specific protection measures for all special status species potentially present in the project area.

TABLE C-1 (Continued)
PEIR MITIGATION MEASURES – CONSISTENCY REVIEW FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

PEIR Mitigation Measure(s)	Applicable to Proposed Project (Y/N)?		Discussion
Biology (cont.)			
Measure 4.6-3b (cont.)	Birds		
Swainson’s Hawk	B.1	N	Species not identified in project vicinity.
Western Burrowing Owl	B.2 and B.3	N	Species not identified in project vicinity.
Raptors (including Bald Eagle)	B.4	N	Species not identified in project vicinity.
Least Bell’s Vireo	B.5	N	Species not identified in project vicinity.
California Black Rail, California Clapper Rail	B.6	N	Species not identified in project vicinity.
Western Snowy Plover	B.7	N	Species not identified in project vicinity.
	Mammals		
Salt Marsh Harvest Mouse	M.1	N	Species not identified in project vicinity.
San Joaquin Kit Fox	M.2	N	The project-level habitat assessment found that the project area offers minimal foraging and denning habitat for this species, and this species is absent or extremely scarce in the Sunol Valley. No mitigation is necessary.
Riparian Woodrat	M.3	N	Species not identified in project vicinity.
	Plants		
Vernal Pool Plants (Succulent Owl’s Clover; Hoover’s Spurge; Colusa Grass; San Joaquin Valley Orcutt Grass; Greene’s Tuctoria; Hairy Orcutt Grass)	P.1	N	Species not identified in project vicinity.
	Riparian Plants		
Delta Button-Celery	P.2	N	Species not identified in project vicinity.
Large-Flowered Fiddleneck	P.3	N	Species not identified in project vicinity.
San Francisco Woolly Sunflower; Marin Western Flax; Fountain Thistle	P.4	N	Species not identified in project vicinity.

TABLE C-1 (Continued)
PEIR MITIGATION MEASURES – CONSISTENCY REVIEW FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

PEIR Mitigation Measure(s)	Applicable to Proposed Project (Y/N)?	Discussion
Biology (cont.)		
Measure 4.6-4, Pipeline and Water Treatment Plant Treated Water Discharge Restrictions: Design planned discharges from the WSIP pipelines and water treatment plants to natural water bodies to minimize impacts on riparian and aquatic resources and to avoid or minimize temperature effects on aquatic resources.	N	The project-level analysis determined that mandatory compliance with the Waste Discharge Requirements for the SFPUC Drinking Water Transmission System and SFPUC Standard Operating Protocols would ensure that water quality impacts due to discharges of treated water from existing and newly installed pipelines during construction would be less than significant. As part of the project, the SFPUC would construct a new chemical facility to ensure that all discharges of water from the Hetch Hetchy system during project operations could be dechlorinated and pH-adjusted prior to discharge. This would address impacts on riparian and aquatic resources.
Cultural		
Measure 4.7-1, Suspend Construction Work if Paleontological Resource Is Identified: Suspend work and notify a qualified paleontologist when a paleontological resource is discovered at any of the project sites. The paleontologist will document the discovery as needed, evaluate the potential resource, and assess the significance of the find under CEQA criteria. Temporarily halt or divert excavation within 50 feet of a fossil find until the discovery is examined by a paleontologist. If avoidance is not feasible, the paleontologist will prepare an excavation plan.	Y	See Mitigation Measure M-CP-3 (Paleontological Resources Mitigation Program). The project-level measures specify more stringent requirements than the PEIR measure due to the high potential to encounter paleontological resources during construction. Specific requirements include a paleontological resources training for construction workers, a paleontological resources monitoring program, and assessment and salvage of fossil finds, as applicable.
Measure 4.7-2a, Archaeological Testing, Monitoring, and Treatment of Human Remains: Determine if implementation of an archaeological testing or archaeological monitoring program or both is the appropriate strategy for avoidance of potential adverse effects on significant archaeological resources. Review any requirements approved by the State Historic Preservation Officer. Prepare an archaeological testing plan, archaeological monitoring plan, final archeological resources report and, if applicable, an archaeological data recovery plan. The treatment of human remains and of associated or unassociated funerary objects discovered during any soil-disturbing activity will comply with applicable state laws.	Y	See Mitigation Measure M-CP-4 (Accidental Discovery of Human Remains). Although no known human burial locations have been identified within the project area, the EIR measure addresses the possibility of discovery during construction activities.
Measure 4.7-2b, Accidental Discovery Measures: Distribute archaeological resource "ALERT" sheet to contractors. If an archaeological resource may be present within the project site, an archaeological consultant will evaluate it and make a recommendation as to what action (e.g., preservation in situ) is warranted. The SFPUC will implement appropriate measures.	Y	See Mitigation Measure M-CP-2b (Accidental Discovery of Archaeological Resources).

TABLE C-1 (Continued)
PEIR MITIGATION MEASURES – CONSISTENCY REVIEW FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

PEIR Mitigation Measure(s)	Applicable to Proposed Project (Y/N)?	Discussion
Cultural (cont.)		
Measure 4.7-3, Protection of Historic Districts: A qualified historian will assess the city’s water system facilities affected by WSIP facility projects for their potential contribution to a historic district. If a historic district would be affected by one or more proposed WSIP facility project(s), develop and implement mitigation measures for effects with attention to the potential district as a whole. If a historic district is identified at the project level, it should be recorded as such, using National/California Register criteria of significance. Document the district by completing the State of California Department of Parks and Recreation Form 523 and submit to the State Historic Preservation Officer.	Y	See also Mitigation Measure M-UT-1h (Measures to Protect Alameda Siphons Nos. 1, 2, and 3). The Alameda Siphons Nos. 1 and 2 may contribute to a potential historic district, and the proposed project could potentially result in damage to the Alameda Siphons Nos. 1 and 2 during connection of the SABPL to Alameda Siphon No. 3.
Measure 4.7-4a, Alternatives Identification and Resource Relocation: Identify feasible project alternatives to eliminate or reduce the need for demolition or removal of a historic resource to the greatest extent possible. If preservation of the affected historical resource at the current site is determined to be infeasible, the structure will be stabilized and relocated to other appropriate nearby sites, if feasible. After relocation, the resource will be treated according to the Secretary of the Interior’s <i>Standards for the Treatment of Historic Properties</i> . If the affected historic resource is to be demolished, consult with local historical societies and governmental agencies regarding salvage of materials for public information or reuse in other locations.	N	No historic resources would be demolished or removed as a result of the project.
Measure 4.7-4b, Historical Resources Documentation: Prepare documentation of historic resources prior to any construction work associated with demolition or removal. The appropriate level of documentation will be selected by a qualified professional who meets the standards for history, architectural history, and/or architecture (as appropriate) set forth by the Secretary of the Interior’s <i>Professional Qualification Standards</i> (36 CFR 61) in consultation with a preservation specialist assigned by the San Francisco Planning Department and the local jurisdiction, if deemed appropriate by the Planning Department.	N	No historic resources would be demolished or removed as a result of the project.
Measure 4.7-4c, Secretary of the Interior’s Standards for the Treatment of Historic Properties: Prepare materials describing and depicting the proposed project. Review the proposed project for compliance with the Secretary of the Interior’s <i>Standards for the Treatment of Historic Properties</i> . If a project is determined to be inconsistent with the <i>Standards for the Treatment of Historic Properties</i> , pursue and implement redesign of the project such that consistency with the standards is achieved.	N	No historic properties would be altered as a result of project implementation.

TABLE C-1 (Continued)
PEIR MITIGATION MEASURES – CONSISTENCY REVIEW FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

PEIR Mitigation Measure(s)	Applicable to Proposed Project (Y/N)?	Discussion
Cultural (cont.)		
Measure 4.7-4d, Historic Resources Survey and Redesign: Undertake a historic resources survey to identify and evaluate potential historic resources that may exist in the project's area of potential effect. If a survey identifies one or more historical resources, assess the impact the project may have on those historical resources. If the project will cause a substantial adverse change to a historic resource, assign a preservation specialist to review the proposed project for compliance with the Secretary of the Interior's <i>Standards for the Treatment of Historic Properties</i> . If the project is determined to be inconsistent with those standards, pursue and implement redesign of the project such that consistency with the standards is achieved.	N	The historic resources survey was conducted as part of background technical study for the project and is documented in Section 5.4.1.6, Architectural/ Structural Methods, Survey, and Results.
Measure 4.7-4e, Historic Resources Protection Plan: A qualified historian will prepare a plan that specifies procedures for protecting and monitoring historic resources during construction.	Y	See Mitigation Measure M-UT-1h (Measures to Protect Alameda Siphons Nos. 1, 2 and 3).
Measure 4.7-4f, Preconstruction Surveys and Vibration Monitoring: Include geotechnical investigations if vibration-related impacts could affect historic resources. Follow recommendations of the final geotechnical reports. Conduct a preconstruction survey of existing conditions and monitor the adjacent buildings for damage during construction, if recommended.	Y	See Mitigation Measure M-UT-1h (Measures to Protect Alameda Siphons Nos. 1, 2 and 3). The project-level measure is more specific to the potential impacts of the project and requires that SFPUC engineers evaluate the structural integrity of these historic resources and implement construction techniques to protect them during project construction, including protection from surface vibration.
Traffic		
Measure 4.8-1a, Traffic Control Plan Measures: Elements of the traffic control plan could include: circulation and detour plans, designated truck routes, sufficient staging area, access to driveways, use of standard construction specifications for controlling construction vehicle movements, restrictions on truck trips during peak morning and evening commute hours, lane closure restrictions, maintenance of alternate one-way traffic flow, detour signing, pedestrian and bicycle access and circulation, equipment and materials storage, construction worker parking, roadside safety protocols, considerations for sensitive land uses, coordination with local transit service providers, roadway repair, and conformance with the state's <i>Manual of Traffic Controls for Construction and Maintenance Work Areas</i> .	Y	See Mitigation Measure M-TR-3 (Traffic Control Plan). The project-level mitigation measure has been tailored to specify those elements appropriate to the proposed project.

TABLE C-1 (Continued)
PEIR MITIGATION MEASURES – CONSISTENCY REVIEW FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

PEIR Mitigation Measure(s)	Applicable to Proposed Project (Y/N)?	Discussion
Traffic (cont.)		
Measure 4.8-1b, Coordination of Individual Traffic Control Plans: In the event that more than one construction contract is issued for work along existing or new pipelines, and where construction could occur within and/or across multiple streets in the same vicinity, coordinate the traffic control plans in order to mitigate the impact of traffic disruption by including measures that address overlapping construction schedules and activities, truck arrivals and departures, lane closures and detours, and the adequacy of on-street staging requirements.	Y	See Mitigation Measure C-M-TR (Combined Sunol Valley Traffic Control Plan).
Measure 4.8-4, Accommodation of Displaced Public Parking Supply for Recreational Visitors: Include an additional measure in the traffic control plans to accommodate any anticipated visitor parking demand that would be displaced by proposed projects at public recreational facilities.	N	No recreational parking would be displaced under the project.
Air Quality		
Measure 4.9-1a, SJVAPCD Dust Control Measures: Include San Joaquin Valley Air Pollution Control District (SJVAPCD) Basic Control Measures in contract specifications for all construction sites. Include SJVAPCD Enhanced Control Measures in contract specifications when required to mitigate significant PM10 impacts. Include SJVAPCD Additional Control Measures in contract specifications for construction sites that are large in area, located near sensitive receptors, or which for any other reason warrant additional emissions reductions. Include SJVAPCD Rule 9510, Indirect Source Review, Section 6.1, Construction Equipment Emissions in contract specifications for any project subject to discretionary approval by a public agency that ultimately results in the construction of a new building, facility, or structure or reconstruction of a building, facility, or structure for the purpose of increasing capacity or activity and also involving 9,000 square feet of space.	N	The project is not located within the jurisdiction of the SJVAPCD.
Measure 4.9-1b, SJVAPCD Exhaust Control Measures: Include SJVAPCD Exhaust Control Measures in contract specifications, where applicable, for heavy-duty equipment to limit exhaust emissions within the San Joaquin Region.	N	The project is not located within the jurisdiction of the SJVAPCD.
Measure 4.9-1c, BAAQMD Dust Control Measures: For projects in the Sunol Valley, Bay Division, Peninsula, and San Francisco Regions, include Bay Area Air Quality Management District (BAAQMD) Basic Control Measures in contract specifications for all construction sites. Include BAAQMD Enhanced Control Measures in contract specifications for sites over four acres. Include BAAQMD Optional Control Measures in contract specifications for sites that are large in area, located near sensitive receptors, or which for any other reason warrant additional emissions reductions.	Y	See Mitigation Measure M-AQ-1a (BAAQMD Basic Construction Measures). The project-level mitigation is consistent with the BAAQMD guidelines for assessing and mitigating air quality impacts.

TABLE C-1 (Continued)
PEIR MITIGATION MEASURES – CONSISTENCY REVIEW FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

PEIR Mitigation Measure(s)	Applicable to Proposed Project (Y/N)?	Discussion
Air Quality (cont.)		
Measure 4.9-1d, BAAQMD Exhaust Control Measures: For projects in the Sunol Valley, Bay Division, Peninsula, and San Francisco Regions, include BAAQMD Exhaust Control Measures to limit exhaust emissions, where applicable.	Y	See Mitigation Measure M-AQ-1b (BAAQMD Additional Construction Measures for NO _x Reduction). The project-level mitigation is consistent with the BAAQMD guidelines for assessing and mitigating air quality impacts.
Measure 4.9-2a, Health Risk Screening or Use of Soot Filters: Complete a health risk screening if truck volumes associated with a particular project along a particular haul route exceed 40,000 truck trips over the entire construction period. If a potentially significant impact is indicated, complete a site-specific health risk assessment. Consider diesel particulate matter (DPM) emission rates in separate project-level analysis at the time of construction. Develop a mitigation program based on the site-specific health risk assessment implementing methods of reducing DPM emission or exposure to a less-than-significant level.	N	The health risk assessment conducted as part of the background studies for the proposed project determined that DPM exposure at the only sensitive receptor along construction access routes, the SFPUC watershed keeper's residence, would not exceed the BAAQMD's cancer and non-cancer risk thresholds. No mitigation is required.
Measure 4.9-2b, Vacate SFPUC Land Managers' Residences in Sunol Valley: Vacate the two SFPUC Land Managers' residences in the Sunol Valley during construction of the Calaveras Dam or SVWTP – Treated Water Reservoirs projects or complete a health risk screening (and, if warranted, a health risk assessment) to determine health risks at these residences from either of these two projects.	N	The health risk assessment conducted as part of the background studies for the proposed project determined that DPM exposure at the only sensitive receptor along construction access routes, the SFPUC watershed keeper's residence, would not exceed the BAAQMD's cancer and non-cancer risk thresholds. At the time the Draft EIR was prepared, the SFPUC watershed keeper's residence was vacant but even if occupied in the future, no mitigation is necessary.
Measure 4.9-3, Tunnel Gas Odor Control: Add water scrubbers and appropriate chemicals to tunnel ventilation systems if odorous gases become a nuisance odor problem (i.e., odor complaints are received).	N	The project does not include tunneling.
Noise/Vibration		
Measure 4.10-1a, Noise Controls: For all WSIP projects located within 500 feet of any noise-sensitive receptors, implement appropriate noise controls to reduce daytime construction noise levels to meet the 70-dBA daytime speech interference criterion to the extent feasible. For all WSIP projects involving nighttime construction and located within 3,000 feet of any noise-sensitive receptors, implement appropriate noise controls to maintain noise levels at or below any applicable ordinance nighttime noise limits or the 50-dBA nighttime sleep interference criterion to the extent feasible.	Y	Construction-related daytime noise levels were determined to be less than significant. For nighttime construction noise, see Mitigation Measure M-NO-1 (Administrative and Source Controls).

TABLE C-1 (Continued)
PEIR MITIGATION MEASURES – CONSISTENCY REVIEW FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

PEIR Mitigation Measure(s)	Applicable to Proposed Project (Y/N)?	Discussion
Noise/Vibration (cont.)		
Measure 4.10-1b, Vacate SFPUC Caretaker's Residence at Tesla Portal: Vacate caretaker's residence at Tesla Portal during construction of the Advanced Disinfection and Tesla Portal Disinfection Station projects as well as those portions of the San Joaquin Pipeline System and Rehabilitation of Existing San Joaquin Pipelines projects located at Tesla Portal.	N	The project is not located at the Tesla Portal.
Measure 4.10-2a, Limit Hourly Truck Volumes: Haul and delivery truck routes for all WSIP projects will, to the extent feasible, avoid local residential streets and follow local designated truck routes. Total project-related haul and delivery truck volumes on any particular haul truck route will be limited to 80 trucks per hour.	N	Although two residences, the Garcia residence and SFPUC watershed keeper's residence, exist in the Sunol Valley, none of the construction access routes are located on residential streets. Truck volumes would vary day to day and would not exceed 80 trucks per hour. See Impact NO-1, Construction activities would result in substantial temporary increases in ambient noise levels that could interfere with nearby land uses.
Measure 4.10-2b, Restrict Truck Operations: Prohibit haul and delivery trucks from operating within 200 feet of any residential uses during the nighttime hours. For receptors beyond 200 feet from a haul route, limit noise levels to the 50-dBA sleep interference criterion at the closest receptor.	N	Not applicable; project-related haul and delivery trucks would not operate along Calaveras Road during the nighttime or evening hours (10 p.m. to 7 a.m.).
Measure 4.10-2c, Vacate SFPUC Land Manager's Residence: Vacate Land Manager's residence adjacent to Alameda East Portal during offsite truck operations associated with the New Irvington Tunnel project, if truck operations occur during the nighttime hours (10 p.m. to 7 a.m.) and are estimated to exceed the 50-dBA sleep interference criterion at this residence.	N	Not applicable; project-related haul and delivery trucks would not operate along Calaveras Road during nighttime hours (10 p.m. to 7 a.m.).
Measure 4.10-3a, Vibration Controls to Prevent Cosmetic or Structural Damage: Incorporate restrictions into all contract specifications (primarily for sheetpile driving, pile driving, or tunnel construction activities), whereby surface vibration will be limited to 0.2 inch/second peak particle velocity (PPV) for continuous vibration (e.g., vibratory equipment and impact pile drivers) and 0.5 inch/second PPV for controlled detonations at the closest receptors to ensure that cosmetic or structural damage does not occur.	N	Not applicable; the project's vibration impacts were determined to be less than significant. See Impact NO-3.
Measure 4.10-3b, Limit Vibration Levels At or Below Vibration Perception Threshold: Maintain vibration levels at or below the vibration perception threshold at adjacent properties to the extent feasible during nighttime. If vibration complaints are received, operational adjustments will be made to reduce vibration annoyance effects.	N	Not applicable; the project's vibration impacts were determined to be less than significant. See Impact NO-3.
Measure 4.10-3c, Limit Tunnel-Related Detonation to Daylight Hours: Limit controlled detonation associated with tunnel construction to daylight hours, Monday through Saturday.	N	Not applicable; the project does not include tunneling.

TABLE C-1 (Continued)
PEIR MITIGATION MEASURES – CONSISTENCY REVIEW FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

PEIR Mitigation Measure(s)	Applicable to Proposed Project (Y/N)?	Discussion
Services/Utilities		
Measure 4.11-1a, Notify Neighbors of Potential Utility Service Disruption: Notify residents and businesses in project area of potential utility service disruption two to four days in advance of construction.	N	Project construction is not anticipated to result in utility service disruption for residences or businesses.
Measure 4.11-1b, Locate Utility Lines Prior to Excavation: Locate overhead and underground utility lines prior to excavation work.	Y	See Mitigation Measure M-UT-1a (Confirm Utility Line Information).
Measure 4.11-1c, Confirmation of Utility Line Information: Find the exact location of underground utilities by safe and acceptable means. Confirm information regarding the size, color, and location of existing utilities before construction activities commence.	Y	See Mitigation Measure M-UT-1a (Confirm Utility Line Information).
Measure 4.11-1d, Safeguard Employees from Potential Accidents Related to Underground Utilities: While any excavation is open, protect, support, or remove underground utilities as necessary to safeguard employees.	Y	See Mitigation Measure M-UT-1b (Safeguard Employees from Potential Accidents Related to Underground Utilities).
Measure 4.11-1e, Notify Local Fire Departments: Notify local fire departments any time damage to a gas utility results in a leak or suspected leak, or whenever damage to any utility results in a threat to public safety.	Y	See Mitigation Measure M-UT-1c (Notify Local Fire Departments).
Measure 4.11-1f, Emergency Response Plan: Develop an emergency response plan in the event of a leak or explosion prior to commencing construction activities.	Y	See Mitigation Measure M-UT-1d (Emergency Response Plan).
Measure 4.11-1g, Prompt Reconnection of Utilities: Promptly reconnect any disconnected utility lines.	Y	See Mitigation Measure M-UT-1e (Ensure Prompt Reconnection of Utilities).
Measure 4.11-1h, Coordinate Final Construction Plans with Affected Utilities: Coordinate final construction plans and specifications with affected utilities.	Y	See Mitigation Measure M-UT-1f (Coordinate Final Construction Plans with Affected Utilities).
Measure 4.11-2, Waste Reduction Measures: Incorporate into contract specifications for each WSIP project the requirement to obtain any necessary waste management permits prior to construction and to comply with conditions of approval attached to project implementation.	N	Seventy-five percent of excavated materials would be reused or recycled in Sunol Valley, which would meet or exceed the State of California's and Alameda County's waste diversion goals. See Impact UT-4, Project construction would not result in a substantial adverse effect related to compliance with federal, state, and local statutes and regulations pertaining to solid waste.

TABLE C-1 (Continued)
PEIR MITIGATION MEASURES – CONSISTENCY REVIEW FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

PEIR Mitigation Measure(s)	Applicable to Proposed Project (Y/N)?	Discussion
Recreation		
Measure 4.12-1, Coordination with Golf Course/Recreational Facility Managers: Coordinate with managers of golf courses or other recreational facilities directly affected by pipeline construction to minimize adverse impacts on golfers and other recreational users.	N	The project would not directly affect golf courses or other designated recreational facilities.
Measure 4.12-2, Appropriate Siting of Proposed Facilities: Locate WSIP project facilities on park and recreation properties in consultation with park planning staff to minimize the direct loss of recreation and play space and to minimize inconvenience to park and recreation users.	N	The project does not include construction on park or recreation properties.
Agriculture		
Measure 4.13-1a, Supplemental Noticing and Soil Stockpiling: For the San Joaquin Pipeline projects (San Joaquin System and Rehabilitation of Existing San Joaquin Pipeline), stockpile and replace topsoil in mapped areas of Prime and Unique Farmland and Farmland of Statewide Importance that would be temporarily disturbed by pipeline construction, unless other actions are required under specific agreements with individual landowners.	N	The project is not located in the San Joaquin Region.
Measure 4.13-1b, Avoidance or Soil Stockpiling: Minimize any potential impacts on agricultural lands in the Sunol Valley by avoiding these resources wherever possible. Where this is not possible, stockpile, replace, and hydroseed topsoil to prevent erosion, unless other actions are required as a result of contracts affecting use of the property or under specific agreements with individual landowners.	Y	Although not specifically targeted at minimizing impacts on agricultural lands, Mitigation Measure M-BI-1f (Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation) requires that topsoil be salvaged during construction and used for post-construction restoration of disturbed areas. Mitigation Measure M-AG-1 (Compensation for Loss of Unique Farmland) addresses impacts to agricultural resources.
Measure 4.13-2, Siting Facilities to Avoid Prime Farmland: Avoid areas identified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. If avoidance is not feasible, adopt a permanent set-aside for an equivalent acreage of similarly valued farmland in the area.	Y	See Mitigation Measure M-AG-1 (Compensation for Loss of Unique Farmland).

TABLE C-1 (Continued)
PEIR MITIGATION MEASURES – CONSISTENCY REVIEW FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

PEIR Mitigation Measure(s)	Applicable to Proposed Project (Y/N)?	Discussion
Hazards		
Measure 4.14-1a, Site Health and Safety Plan: For all projects where the site assessment indicates the potential to encounter hazardous materials, prepare a site health and safety plan identifying the chemicals present, potential health and safety hazards, monitoring, soil-handling methods, appropriate personnel protective equipment, and emergency response procedures.	Y	See Mitigation Measure M-HZ-1b (Implement a Construction Risk and Spoils Management Plan). The project-level mitigation measure combines the requirements for a site health and safety plan and materials disposal plan required in PEIR Measures 4.14-1a and 4.14-1b.
Measure 4.14-1b, Materials Disposal Plan: For all projects where the site assessment indicates the potential to encounter hazardous materials in the soil, prepare a materials disposal plan that specifies the disposal method and approved disposal site for the soil.	Y	See Mitigation Measures M-HZ-1a (Evaluate Soil Quality) and M-HZ-1b (Implement a Construction Risk and Spoils Management Plan). The project-level mitigation measures fulfill the requirements for a site health and safety plan and materials disposal plan required in PEIR Measures 4.14-1a and 4.14-1b.
Measure 4.14-1c, Coordination with Property Owners and Regulatory Agencies: Based on regulatory agency file reviews, assess the potential to encounter unacceptable levels of hazardous materials at known environmental cases, for construction activities to cause groundwater plume migration or interfere with ongoing remediations at known environmental cases, and for increased water levels in reservoirs or lakes to inundate known environmental cases. Modify construction or remediation activities.	N	The project would not interfere with the investigation or remediation of a known environmental case. See Section 5.17.1.1, Hazardous Materials in Soil and Groundwater.
Measure 4.14-2, Health Risk Screening and Airborne Asbestos Monitoring Plan: For tunneling projects where soil or rock may contain naturally occurring asbestos, conduct a health risk screening assessment to identify acceptable levels of asbestos in tunnel emissions. Prepare an airborne asbestos monitoring plan for approval by the BAAQMD.	N	The project would not disturb a rock unit or soil that contains naturally occurring asbestos. See Section 5.17.2.1, Federal and State Regulations.
Measure 4.14-5, Hazardous Building Materials Surveys and Abatement: For all WSIP projects involving demolition or renovation of existing facilities, perform a hazardous building materials survey for each structure prior to demolition or renovation activities. If any friable asbestos-containing materials, lead-containing materials, or hazardous components of building materials are identified, implement adequate abatement practices prior to demolition or renovation.	Y	The project would require decommissioning of the existing chemical facility and demolition of two quarry buildings. Impacts related to the inadvertent release of hazardous chemicals during decommissioning of the existing chemical facility would be less than significant with preparation of a closure plan in accordance with Alameda County Department of Environmental Health facility closure requirements. Impacts related to hazardous building materials would be less than significant with implementation of Mitigation Measure M-HZ-1c (Hazardous Building Materials) and mandatory adherence to Cal/OSHA's Lead in Construction Standard and the requirements of the California Health and Safety Code and the BAAQMD for abatement of asbestos in buildings.

TABLE C-1 (Continued)
PEIR MITIGATION MEASURES – CONSISTENCY REVIEW FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

PEIR Mitigation Measure(s)	Applicable to Proposed Project (Y/N)?	Discussion
Energy		
Measure 4.15-2, Incorporation of Energy Efficiency Measures: Consistent with the Energy Action Plan II priorities for reducing energy usage, ensure that energy-efficient equipment is used in all WSIP projects. Prepare a repair and maintenance plan for each facility to minimize power use. Evaluate the potential for use of renewable energy resources.	N	Not applicable; the proposed project would incorporate energy efficiency measures in accordance with the 2008 Energy Efficiency Standards for Residential and Nonresidential Buildings and no mitigation would be required. See Impact ME-4, Project operations would not result in substantial adverse effects related to the long-term use of large amounts of fuel or energy, or the use of these resources in a wasteful manner.
Collective Impacts (These are considered cumulative mitigation measures in project-level CEQA documents)		
Measure 4.16-1a, Construction Coordination at Irvington Portal: If construction schedules of multiple WSIP projects occurring at and near Irvington Portal coincide or overlap, the SFPUC will coordinate with construction contractor(s) and neighbors to minimize disturbance of residents in the adjacent neighborhood to the extent practicable. Such coordination will need to balance the duration of construction with the magnitude of construction-related impacts on the same sensitive receptors.	N	The project is not located at the Irvington Portal.
Measure 4.16-4a, Bioregional Habitat Restoration Measures: Address the following bioregional effects and implement conservation principles when implementing habitat compensation mitigation required for individual WSIP facility projects: compound impacts on functional units of habitat as WSIP projects simplify vegetation structure and increase “edge” (the boundary between two different habitats); increased habitat impacts due to the spread of weedy, non-native plant species; genetic diversity impacts on small populations; impacts on wildlife movement due to habitat fragmentation; suppression of natural disturbance regimes; and reduced population recovery opportunities from stochastic events.	N	The project’s contribution to cumulative effects on biological resources would be mitigated with project-specific mitigation measures and therefore would not require implementation of bioregional habitat restoration measures. See Impact C-BI, Project implementation would result in a cumulatively considerable contribution to cumulative impacts on biological resources during project construction and operation.
Measure 4.16-4b, Coordination of Construction Staging and Access: Coordinate construction contractor(s) to minimize surface disturbance when construction schedules for WSIP projects affecting the same areas overlap.	N	SFPUC is already coordinating construction schedules, staging, and access issues for SFPUC projects in the Sunol Valley.
Measure 4.16-6a, SFPUC WSIP Projects Construction Coordinator: Identify a qualified construction coordinator to coordinate project-specific traffic control plans; develop a public information campaign to inform the public of construction activities, detour routes, and alternate routes; and work with local and regional agencies to pursue additional traffic mitigation measures and incorporate such measures into the project-specific traffic control plans.	Y	See Mitigation Measure C-M-TR (Combined Sunol Valley Traffic Control Plan). The PEIR measure for an SFPUC WSIP projects construction coordinator is incorporated into the project-level measure for cumulative impacts.

TABLE C-1 (Continued)
PEIR MITIGATION MEASURES – CONSISTENCY REVIEW FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

PEIR Mitigation Measure(s)	Applicable to Proposed Project (Y/N)?	Discussion
Collective Impacts (cont.)		
Measure 4.16-6b, Combined San Joaquin Traffic Control Plan: Develop a San Joaquin Traffic Control Plan that coordinates the project-specific traffic control plans and identifies additional measures (consistent with the standards of San Joaquin County, Stanislaus County, and Caltrans) to minimize the combined impacts of multiple WSIP project construction traffic on I-580, Chrisman Road, and Vernalis Road.	N	The project is not located in San Joaquin County.
Measure 4.16-6c, Combined Sunol Valley Traffic Control Plan: Develop a Sunol Valley Traffic Control Plan that coordinates the project-specific traffic control plans and identifies additional measures (consistent with the standards of Alameda County and Caltrans) to minimize the impacts of construction traffic on Calaveras Road and I-680.	Y	See Mitigation Measure C-M-TR (Combined Sunol Valley Traffic Control Plan).
Measure 4.16-7a, Dust and Exhaust Control Measures for All WSIP Projects: Require implementation of Air Quality Measures 4.9-1a thru 4.9-1d for all WSIP projects to address collective construction-related air quality impacts.	N	Specified air quality measures are already required under project-level Mitigation Measures M-AQ-1a (BAAQMD General Construction Measures) and M-AQ-1b (BAAQMD Additional Construction Measures for NO _x Reduction).
Measure 4.16-7b, Health Risk Screening or Use of Soot Filters for All Projects in the San Joaquin and Sunol Valley Regions: Require Measure 4.9-2a for all WSIP projects in the San Joaquin and Sunol Valley Regions to address collective DPM impacts. When this requirement is applied to the New Irvington Tunnel project, it will be applied to both the Sunol Valley and Fremont tunnel portals, taking into account truck traffic from other WSIP projects in the vicinity of both portals.	Y	See Mitigation Measure M-AQ-1b (BAAQMD Additional Construction Measures for NO _x Reduction). The project's contribution to significant and unavoidable cumulative health risk impacts are addressed by Mitigation Measure M-AQ-1b, which requires that "All construction equipment, diesel trucks, and generators shall be equipped with Best Available Control Technology for emission reductions of NO _x and DPM, including all generators meeting Tier 4 standards." The Best Available Control Technology for DPM emissions reductions is Tier 3 engines, and the only practical way to achieve the Tier 3 DPM standard for diesel-fueled equipment (burning diesel fuel) is with diesel particulate filters (soot filters). Therefore, it is assumed that soot filters would be implemented as part of the project-level mitigation.
Measure 4.16-7c, Vacate SFPUC Land Managers' Residences for All Projects in the Sunol Valley Region: Require Measure 4.9-2b for all WSIP projects in the Sunol Valley Region to address collective DPM impacts.	N	Vacation of the land manager's residence would not be required as a result of project-implementation because the project's contribution to cumulative DPM emissions would not be cumulatively considerable.

TABLE C-1 (Continued)
PEIR MITIGATION MEASURES – CONSISTENCY REVIEW FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

PEIR Mitigation Measure(s)	Applicable to Proposed Project (Y/N)?	Discussion
Measure 4.16-8a, Limiting Hourly Truck Volumes and Restricting Truck Operations on Haul Routes for Multiple WSIP Projects: Apply Measures 4.10-2a and 4.10-2b to total haul and delivery truck volumes attributable to all WSIP projects on any particular haul truck route (including haul routes in the Tesla Portal, Irvington Portal, and Lower Crystal Springs Dam vicinities as well as haul routes in the San Francisco Region) to address collective truck-related noise impacts.	N	Based on project traffic volumes for all Sunol Valley projects and the proximity of sensitive receptors, cumulative impacts related to temporary noise disturbance along construction access routes would be less than significant.
Collective Impacts (cont.)		
Measure 4.16-8b, Vacate Land Manager's Residence for All Projects in Sunol Valley Region: To address collective noise impacts, vacate Land Manager's residence adjacent to Alameda East Portal during construction truck operations associated with all WSIP projects in this region if collective daytime truck volumes exceed the 70-dBA speech interference criterion or nighttime truck volumes exceed the 50-dBA sleep interference criterion.	N	Based on project traffic volumes for all Sunol Valley projects and the proximity of the Land Manager's residence, noise levels from cumulative traffic on Calaveras Road would not exceed the 70-dBA speech interference criteria, and the proposed project would not include nighttime haul truck traffic.
Cumulative Effects		
Measure 4.17-6, SFPUC WSIP Projects Construction Coordinator – Other Agencies: The SFPUC WSIP construction coordinator designated in accordance with Measure 4.16-6a will also consider the effects of any traffic generated by SFPUC maintenance activities and other SFPUC projects; and coordinate with Caltrans, other county agencies, and local jurisdictions regarding construction of other private and public development projects so as to minimize traffic impacts on local access roads.	Y	See Mitigation Measure C-M-TR (Combined Sunol Valley Traffic Control Plan).
Measure 4.17-8, Coordination of Truck Traffic on Local Streets: The SFPUC WSIP construction coordinator designated in Measure 4.17-6 will also be responsible for coordinating truck traffic generated on these same streets by SFPUC maintenance activities and other SFPUC projects so that SFPUC-related truck noise increases are maintained at or below threshold levels specified in Measures 4.10-2a and 4.10-2b to the extent feasible.	Y	See Mitigation Measure C-M-TR (Combined Sunol Valley Traffic Control Plan).

NOTES:

(a) See WSIP PEIR, Volume 4, Chapter 6, Table 6-2, for description of standard programmatic biological resources mitigation measures that correspond to each special status species.

APPENDIX D

List of Wildlife Species Observed within the Biological Resources Study Area

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SPECIES OBSERVED ON THE SAN ANTONIO BACKUP PIPELINE PROJECT AREA

Common Name	Scientific Name	Habitat Type Where the Species was Observed
Fish		
Mosquito fish	<i>Gambusia</i>	Lacustrine
Minnows (unidentified)		San Antonio Creek
Amphibians		
American bullfrog	<i>Lithobates catesbeianus</i>	Lacustrine
Pacific chorus frog	<i>Pseudacris regilla</i>	Freshwater marsh Seasonal wetland
Western toad	<i>Bufo boreas</i>	Freshwater marsh Seasonal wetland
Reptiles		
Western rattlesnake	<i>Crotalus viridis helleri</i>	Riparian
Western fence lizard (coast range)	<i>Sceloporus occidentalis bocourtii</i>	Non-native annual grasslands Riparian
Birds		
Spotted sandpiper	<i>Actitis macularia</i>	Lacustrine (on exposed pump piping at the water surface)
Red-winged blackbird	<i>Agelaius phoeniceus</i>	Freshwater marsh Seasonal wetland Non-native annual grasslands Ruderal
Tricolored blackbird	<i>Agelaius tricolor</i>	Freshwater marsh Seasonal wetland Non-native annual grasslands Ruderal Alameda Creek channel
Mallard	<i>Anas platyrhynchos</i>	Lacustrine
Western scrub jay	<i>Aphelocoma californica</i>	Riparian
Oak titmouse	<i>Baeolophus inornatus</i>	Non-native annual grasslands (occasional oak trees)
Canada goose	<i>Branta canadensis</i>	Lacustrine
Red-tailed hawk	<i>Buteo jamaicensis</i>	Non-native annual grasslands (occasional oak trees)
Green heron	<i>Butorides virescens</i>	Lacustrine (water's edge)
California quail	<i>Callipepla californica</i>	Non-native annual grasslands (coyote brush)
Anna's hummingbird	<i>Calypte anna</i>	Riparian
Lesser goldfinch	<i>Carduelis psaltria</i>	Riparian
American goldfinch	<i>Carduelis tristis</i>	Riparian
House finch	<i>Carpodacus mexicanus</i>	Non-native annual grasslands
Turkey vulture	<i>Cathartes aura</i>	Non-native annual grasslands Developed (rubble piles)
Killdeer	<i>Charadrius vociferus</i>	Non-native annual grasslands/Ruderal Developed (roads)

SPECIES OBSERVED ON THE SAN ANTONIO BACKUP PIPELINE PROJECT AREA (Continued)

Common Name	Scientific Name	Habitat Type Where the Species was Observed
Birds (cont.)		
American crow	<i>Corvus brachyrhynchos</i>	Riparian Non-native annual grasslands
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	Non-native annual grasslands Ruderal
American kestrel	<i>Falco sparverius</i>	Non-native annual grasslands
American coot	<i>Fulica americana</i>	Lacustrine
Bullock's oriole	<i>Icterus bullockii</i>	Riparian
Belted kingfisher	<i>Megaceryle alcyon</i>	Lacustrine
Acorn woodpecker	<i>Melanerpes formicivorus</i>	Non-native annual grasslands (occasional oak trees)
Wild turkey	<i>Meleagris gallopavo</i>	Non-native annual grasslands
Song sparrow	<i>Melospiza melodia</i>	Freshwater marsh Ruderal
Black-crowned night heron	<i>Nycticorax nycticorax</i>	Lacustrine (water's edge)
Savannah sparrow	<i>Passerculus sandwichensis</i>	Freshwater marsh Ruderal
Brandt's cormorant	<i>Phalacrocorax penicillatus</i>	Lacustrine
Bushtit	<i>Psaltiriparus minimus</i>	Non-native annual grasslands (occasional oak trees)
Black phoebe	<i>Sayornis nigricans</i>	Riparian Freshwater marsh Lacustrine (water's edge)
Western bluebird	<i>Sialia mexicana</i>	Non-native annual grasslands
white-breasted nuthatch	<i>Sitta carolinensis</i>	Non-native annual grasslands (occasional oak trees)
Rough-winged swallow	<i>Stelgidopteryx serripennis</i>	Lacustrine (foraging over quarry pond)
European starling	<i>Sturnus vulgaris</i>	Non-native annual grasslands (occasional oak trees) Riparian
Tree swallow	<i>Tachycineta bicolor</i>	Lacustrine (foraging over quarry pond)
Bewick's wren	<i>Thryomanes bewickii</i>	Non-native annual grasslands (occasional oak trees) Riparian
Western kingbird	<i>Tyrannus verticalis</i>	Non-native annual grasslands (occasional oak trees)
Mammals		
Black-tailed jackrabbit	<i>Lepus californicus</i>	Non-native annual grasslands
California ground squirrel	<i>Spermophilus beecheyi</i>	Non-native annual grasslands
Tule elk	<i>Cervus elaphus nannodes</i>	Hilltops east of Calaveras Road

APPENDIX E

List of Plant Species Observed within the Biological Resources Study Area

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Plant Species Observed
San Antonio Backup Pipeline Project Focused Surveys
March 11 and 17, April 21, May 4, 2009, and November 17, 2010

Scientific Name	Common Name
ANACARDIACEAE	SUMAC OR CASHEW FAMILY
<i>Toxicodendron diversilobum</i>	Pacific poisonoak
APIACEAE	CARROT FAMILY
<i>Conium maculatum</i>	Poison hemlock
<i>Foeniculum vulgare</i>	Sweet fennel
<i>Oenanthe sarmentosa</i>	Oenanthe
<i>Torilis nodosa</i>	Knotted hedge-parsley
ASCLEPIADACEAE	MILKWEED FAMILY
<i>Asclepias fascicularis</i>	Narrowleaf milkweed
ASTERACEAE	SUNFLOWER FAMILY
<i>Achillea millefolium</i>	Common yarrow
<i>Artemisia douglasiana</i>	Douglas' mugwort
<i>Baccharis pilularis</i>	Coyotebrush
<i>Baccharis salicifolia</i>	Mule's fat; seepwillow
<i>Carduus pycnocephalus</i>	Italian thistle
<i>Centaurea solstitialis</i>	Yellow star thistle
<i>Cirsium vulgare</i>	Bull thistle
<i>Dittrichia graveolens</i>	Stinkwort
<i>Hypochaeris glabra</i>	Smooth catsear
<i>Matricaria discoidea</i> (= <i>Chamomilla suaveolens</i>)	Disc mayweed; pineapple weed
<i>Picris echioides</i>	Bristly oxtongue
<i>Senecio vulgaris</i>	Common groundsel
<i>Silybum marianum</i>	Milk thistle
<i>Sonchus asper</i> ssp. <i>asper</i>	Spiny sowthistle; prickly sow thistle
<i>Taraxacum officinale</i>	Dandelion
AZOLLACEAE	MOSQUITO FERN FAMILY
<i>Azolla filiculoides</i>	Pacific mosquitofern
BORAGINACEAE	FORGET-ME-NOT FAMILY
<i>Amsinckia menziesii</i> var. <i>intermedia</i>	Common fiddleneck, intermediate fiddleneck
<i>Plagiobothrys nothofulvus</i>	Rusty popcornflower
BRASSICACEAE	MUSTARD FAMILY
<i>Barbarea orthoceras</i>	American yellowrocket; wintercress
<i>Cardamine oligosperma</i>	Idaho bittercress
<i>Hirschfeldia incana</i>	Shortpod mustard
<i>Raphanus sativus</i>	Wild radish
<i>Rorippa curvisiliqua</i>	Curvepod yellowcress
<i>Rorippa nasturtium-aquaticum</i>	Watercress
CAPRIFOLIACEAE	HONEYSUCKLE FAMILY
<i>Sambucus nigra</i> ssp. <i>canadensis</i> (= <i>S. mexicana</i>)	Blue elder, common elderberry, Mexican elderberry
<i>Symphoricarpos albus</i> var. <i>laevigatus</i>	Common snowberry
<i>Symphoricarpos mollis</i>	Creeping snowberry

Scientific Name	Common Name
CARYOPHYLLACEAE	PINK FAMILY
<i>Cerastium glomeratum</i>	Sticky chickweed
<i>Stellaria media</i>	Common chickweed
CUCURBITACEAE	MELON FAMILY
<i>Marah fabaceus</i>	California manroot
CYPERACEAE	SEDGE FAMILY
<i>Carex</i> sp.	Sedge
<i>Cyperus eragrosis</i>	Tall flatsedge
<i>Eleocharis palustris</i> (=E. <i>macrostachya</i>)	Common spikerush
<i>Schoenoplectus acutus</i> var. <i>occidentalis</i> (=Scirpus <i>a.</i> var. <i>o.</i>)	Tule
FABACEAE	PEA FAMILY
<i>Lotus corniculatus</i>	Birdfoot deervetch; birdsfoot trefoil
<i>Lupinus bicolor</i>	
<i>Medicago polymorpha</i>	California burclover
<i>Melilotus indica</i> (<i>indicus</i>)	Sourclover
<i>Trifolium fucatum</i>	Bull clover
<i>Trifolium repens</i>	White clover
<i>Trifolium subterraneum</i>	Subterranean clover
<i>Vicia americana</i> var. <i>americana</i>	American vetch
<i>Vicia sativa</i> var. <i>sativa</i>	Spring vetch
<i>Vicia villosa</i> var. <i>villosa</i>	Winter vetch
FAGACEAE	OAK FAMILY
<i>Quercus agrifolia</i>	Coast live oak
<i>Quercus lobata</i>	Valley oak
GERANIACEAE	GERANIUM FAMILY
<i>Erodium brachycarpum</i>	Shortfruit stork's bill
<i>Erodium cicutarium</i>	Redstem stork's bill
<i>Erodium moschatum</i>	Musky stork's bill
<i>Geranium dissectum</i>	Cutleaf geranium
<i>Geranium molle</i>	Awnless geranium; dovefoot geranium
HIPPOCASTANACEAE	HORSE-CHESTNUT FAMILY
<i>Aesculus californica</i>	California buckeye
JUNCACEAE	RUSH FAMILY
<i>Juncus bufonius</i> var. <i>bufonius</i>	Toad rush
<i>Juncus effusus</i> var. <i>brunneus</i>	Soft rush
<i>Juncus phaeocephalus</i> var. <i>paniculatus</i>	Brownhead rush
<i>Juncus xiphioides</i>	Irisleaf rush
LAMIACEAE	MINT FAMILY
<i>Lamium amplexicaule</i>	Common henbit
<i>Marrubium vulgare</i>	Horehound
<i>Mentha pulegium</i>	Pennyroyal
<i>Stachys rigida</i> var. <i>rigida</i> (=S. <i>ajugoides</i> var. <i>r.</i>)	Rough hedgenettle
LAURACEAE	LAUREL FAMILY
<i>Umbellularia californica</i>	California bay

Scientific Name	Common Name
LEMNACEAE	DUCKWEED FAMILY
<i>Lemna</i> sp.	Duckweed
LILIACEAE	LILY FAMILY
<i>Chlorogalum pomeridianum</i>	Wavyleaf soap plant
ONAGRACEAE	EVENING PRIMROSE FAMILY
<i>Epilobium brachycarpum</i>	Autumn willowherb
PAPAVERACEAE	POPPY FAMILY
<i>Eschscholzia californica</i>	California poppy
PLANTAGINACEAE	PLANTAIN FAMILY
<i>Plantago coronopus</i>	Buckhorn plantain
<i>Plantago lanceolata</i>	English plantain
<i>Plantago major</i>	Common plantain
PLATANACEAE	PLANE TREE FAMILY
<i>Platanus racemosa</i>	California sycamore
POACEAE	GRASS FAMILY
<i>Avena barbata</i>	Slender oats
<i>Avena fatua</i>	Wild oats
<i>Briza minor</i>	Little quakinggrass
<i>Bromus carinatus</i> var. <i>carinatus</i>	California brome
<i>Bromus diandrus</i>	Ripgut brome
<i>Bromus hordeaceus</i>	Soft brome; soft chess
<i>Bromus madritensis</i> ssp. <i>rubens</i>	Red brome
<i>Cortaderia</i> sp.	Pampas grass
<i>Cynodon dactylon</i>	Bermudagrass
<i>Elymus glaucus</i>	Blue wildrye
<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Mediterranean barley
<i>Hordeum murinum</i> ssp. <i>leporinum</i>	Leporinum barley
<i>Leymus triticoides</i>	Creeping wildrye
<i>Lolium multiflorum</i>	Italian ryegrass
<i>Piptatherum miliaceum</i>	Smilo grass
<i>Poa annua</i>	Annual bluegrass
<i>Polypogon monspeliensis</i>	Annual rabbitsfoot grass
<i>Vulpia microstachys</i> var. <i>ciliata</i>	Nuttall's fescue
<i>Vulpia myuros</i>	Rat-tail fescue
POLYGONACEAE	BUCKWHEAT FAMILY
<i>Polygonum arenastrum</i>	Common knotweed
<i>Rumex crispus</i>	Curly dock
PORTULACACEAE	PURSLANE FAMILY
<i>Claytonia perfoliata</i>	Miner's lettuce
PRIMULACEAE	PRIMROSE FAMILY
<i>Anagallis arvensis</i>	Scarlet pimpernel
RHAMNACEAE	BUCKTHORN FAMILY
<i>Ceanothus</i> sp.	Ceanothus
<i>Frangula californica</i> ssp. <i>californica</i> (= <i>Rhamnus</i> c. ssp. <i>c</i>)	California buckthorn; California coffeeberry

Scientific Name	Common Name
ROSACEAE	ROSE FAMILY
<i>Aphanes arvensis</i> (=A. <i>occidentalis</i>)	Field parsley piert
<i>Rosa californica</i>	California wildrose
<i>Rubus ursinus</i>	California blackberry
RUBIACEAE	MADDER FAMILY
<i>Galium aparine</i>	Bedstraw; cleavers
SALICACEAE	WILLOW FAMILY
<i>Populus fremontii</i>	Fremont cottonwood
<i>Salix gooddingii</i>	Gooding's black willow
<i>Salix lasiolepis</i>	Arroyo willow
SCROPHULARIACEAE	FIGWORT FAMILY
<i>Scrophularia californica</i>	California figwort; California beeplant
<i>Veronica americana</i>	American brooklime
SOLANACEAE	TOMATO FAMILY
<i>Nicotiana glauca</i>	Tree tobacco
<i>Solanum umbelliferum</i> var. <i>incanum</i>	Bluewitch
TYPHACEAE	CATTAIL FAMILY
<i>Typha angustifolia</i>	Narrowleaf cattail
<i>Typha</i> sp.	Cattail
URTICACEAE	NETTLE FAMILY
<i>Urtica dioica</i> ssp. <i>holosericea</i>	Hoary stinging nettle

APPENDIX F

Special-Status Species Database Results

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United States Department of the Interior
FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825



January 16, 2011

Document Number: 110116071457

Martha Lowe
Environmental Science ASsociates
350 Frank H. Ogawa Plaza
Suite 300
Oakland, CA 94612

Subject: Species List for SFPUC San Antonio Backup Pipeline Project

Dear: Ms. Lowe

We are sending this official species list in response to your January 16, 2011 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be April 16, 2011.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found at www.fws.gov/sacramento/es/branches.htm.

Endangered Species Division



U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
Federal Endangered and Threatened Species that Occur in
or may be Affected by Projects in the Counties and/or
U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 110116071457

Database Last Updated: April 29, 2010

Quad Lists

Listed Species

Invertebrates

Branchinecta conservatio

Conservancy fairy shrimp (E)

Branchinecta lynchi

vernal pool fairy shrimp (T)

Euphydryas editha bayensis

bay checkerspot butterfly (T)

Lepidurus packardii

Critical habitat, vernal pool tadpole shrimp (X)

vernal pool tadpole shrimp (E)

Fish

Hypomesus transpacificus

delta smelt (T)

Oncorhynchus mykiss

Central California Coastal steelhead (T) (NMFS)

Central Valley steelhead (T) (NMFS)

Oncorhynchus tshawytscha

Central Valley spring-run chinook salmon (T) (NMFS)

winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense

California tiger salamander, central population (T)

Rana draytonii

California red-legged frog (T)

Critical habitat, California red-legged frog (X)

Reptiles

Masticophis lateralis euryxanthus

Alameda whipsnake [=striped racer] (T)

Critical habitat, Alameda whipsnake (X)

Birds

Sternula antillarum (= *Sterna*, = *albifrons*) *brownii*

California least tern (E)

Mammals

Reithrodontomys raviventris

salt marsh harvest mouse (E)

Vulpes macrotis mutica

San Joaquin kit fox (E)

Plants

Lasthenia conjugens

Contra Costa goldfields (E)

Critical habitat, Contra Costa goldfields (X)

Proposed Species

Amphibians

Rana draytonii

Critical habitat, California red-legged frog (PX)

Quads Containing Listed, Proposed or Candidate Species:

NILES (446C)

LA COSTA VALLEY (446D)

County Lists

No county species lists requested.

Key:

(E) *Endangered* - Listed as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the [National Oceanic & Atmospheric Administration Fisheries Service](#). Consult with them directly about these species.

Critical Habitat - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online [Inventory of Rare and Endangered Plants](#).

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our [Protocol](#) and [Recovery Permits](#) pages.

For plant surveys, we recommend using the [Guidelines for Conducting and Reporting Botanical Inventories](#). The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal [consultation](#) with the Service.

During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our [Map Room](#) page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. [More info](#)

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be April 16, 2011.

California Department of Fish and Game

Natural Diversity Database

Selected Elements by Scientific Name - Portrait

Data request for the La Costa Valley and Niles USGS 7.5 Minute Topographic Quadrangles

Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 Accipiter cooperii Cooper's hawk	ABNKC12040			G5	S3	
2 Accipiter striatus sharp-shinned hawk	ABNKC12020			G5	S3	
3 Agelaius tricolor tricolored blackbird	ABPBXB0020			G2G3	S2	SC
4 Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	SC
5 Antrozous pallidus pallid bat	AMACC10010			G5	S3	SC
6 Aquila chrysaetos golden eagle	ABNKC22010			G5	S3	
7 Campanula exigua chaparral harebell	PDCAM020A0			G2	S2.2	1B.2
8 Corynorhinus townsendii Townsend's big-eared bat	AMACC08010			G4	S2S3	SC
9 Emys marmorata western pond turtle	ARAAD02030			G3G4	S3	SC
10 Falco mexicanus prairie falcon	ABNKD06090			G5	S3	
11 Falco peregrinus anatum American peregrine falcon	ABNKD06071	Delisted	unknown code...	G4T3	S2	
12 Helianthella castanea Diablo helianthella	PDAST4M020			G2	S2	1B.2
13 Lasiurus cinereus hoary bat	AMACC05030			G5	S4?	
14 Linderiella occidentalis California linderiella	ICBRA06010			G3	S2S3	
15 Masticophis lateralis euryxanthus Alameda whipsnake	ARADB21031	Threatened	Threatened	G4T2	S2	
16 Oncorhynchus mykiss irideus steelhead - central California coast DPS	AFCHA0209G	Threatened		G5T2Q	S2	
17 Rana boylei foothill yellow-legged frog	AAABH01050			G3	S2S3	SC
18 Rana draytonii California red-legged frog	AAABH01022	Threatened		G4T2T3	S2S3	SC
19 Streptanthus albidus ssp. peramoenus most beautiful jewel-flower	PDBRA2G012			G2T2	S2.2	1B.2
20 Sycamore Alluvial Woodland	CTT62100CA			G1	S1.1	

CNPS Inventory of Rare and Endangered Plants

ECOLOGICAL REPORT

Scientific name	Family	Life form	Bloom period	Communities	Elevation	CNPS status
<u>Atriplex joaquiniana</u>	Chenopodiaceae	annual herb	Apr-Oct	•Chenopod scrub (ChScr) •Meadows and seeps (Medws) •Playas (Plyas) •Valley and foothill grassland (VFGrS)/alkaline	1 - 835 meters	List 1B.2
<u>Campanula exigua</u>	Campanulaceae	annual herb	May-Jun	•Chaparral (Chprl)(rocky, usually serpentinite)	275 - 1250 meters	List 1B.2
<u>Centromadia parryi ssp. congdonii</u>	Asteraceae	annual herb	May-Oct(Nov), Months in parentheses are uncommon.	•Valley and foothill grassland (VFGrS)(alkaline)	0 - 230 meters	List 1B.2
<u>Eriogonum nudum var. decurrens</u>	Polygonaceae	perennial herb	Jun-Oct	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Lower montane coniferous forest (LCFrS)(maritime ponderosa pine sandhills)/sandy	50 - 800 meters	List 1B.1
<u>Helianthella castanea</u>	Asteraceae	perennial herb	Mar-Jun	•Broadleafed upland forest (BUFrS) •Chaparral (Chprl) •Cismontane woodland (CmWld) •Coastal scrub (CoScr) •Riparian woodland (RpWld) •Valley and foothill grassland (VFGrS)	60 - 1300 meters	List 1B.2
<u>Monardella antonina ssp. antonina</u>	Lamiaceae	perennial rhizomatous herb	Jun-Aug	•Chaparral (Chprl) •Cismontane woodland (CmWld)	500 - 1000 meters	List 3

Scientific name	Family	Life form	Bloom period	Communities	Elevation	CNPS status
<u>Monardella villosa</u> <u>ssp. globosa</u>	Lamiaceae	perennial rhizomatous herb	Jun-Jul(Aug), Months in parentheses are uncommon.	•Broadleafed upland forest (BUFr)(openings) •Chaparral (Chprl)(openings) •Cismontane woodland (CmWld) •Coastal scrub (CoScr) •Valley and foothill grassland (VFGrs)	100 - 915 meters	List 1B.2
<u>Streptanthus</u> <u>albidus</u> ssp. <u>peramoenus</u>	Brassicaceae	annual herb	(Mar),Apr- Sep(Oct), Months in parentheses are uncommon.	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Valley and foothill grassland (VFGrs)/serpentinite	94 - 1000 meters	List 1B.2
<u>Stuckenia</u> <u>filiformis</u>	Potamogetonaceae	perennial rhizomatous herb aquatic	May-Jul	•Marshes and swamps (MshSw)(assorted shallow freshwater)	300 - 2150 meters	List 2.2

CNPS Online Inventory, August 1, 2011

APPENDIX G

Terrestrial Habitat Assessment

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SAN FRANCISCO PUBLIC UTILITIES COMMISSION SAN ANTONIO BACKUP PIPELINE PROJECT

Terrestrial Habitat Assessment

Prepared for
San Francisco Public Utilities Commission

January 2011



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SAN FRANCISCO PUBLIC UTILITIES COMMISSION SAN ANTONIO BACKUP PIPELINE PROJECT

Terrestrial Habitat Assessment

Prepared for
San Francisco Public Utilities Commission

January 2011



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Los Angeles

Oakland

Olympia

Petaluma

Portland

Sacramento

San Diego

Seattle

Tampa

Woodland Hills

206166.04

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San Francisco Public Utilities Commission San Antonio Backup Pipeline Project Terrestrial Habitat Assessment

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CHAPTER 1

Introduction

1.1 Background and Purpose for the Terrestrial Habitat Assessment

This terrestrial Habitat Assessment documents sensitive species potentially occurring in the San Francisco Public Utilities Commission (SFPUC) San Antonio Backup Pipeline (SABPL) project area. The intent and scope of this document is to identify the habitat types present in the project area, the quality of those habitat types relative to sensitive species, and the likelihood for sensitive species to occur in the project area. The SABPL project is one of many facility improvement projects being implemented as part of the SFPUC's Water System Improvement Program.

1.2 Project Location

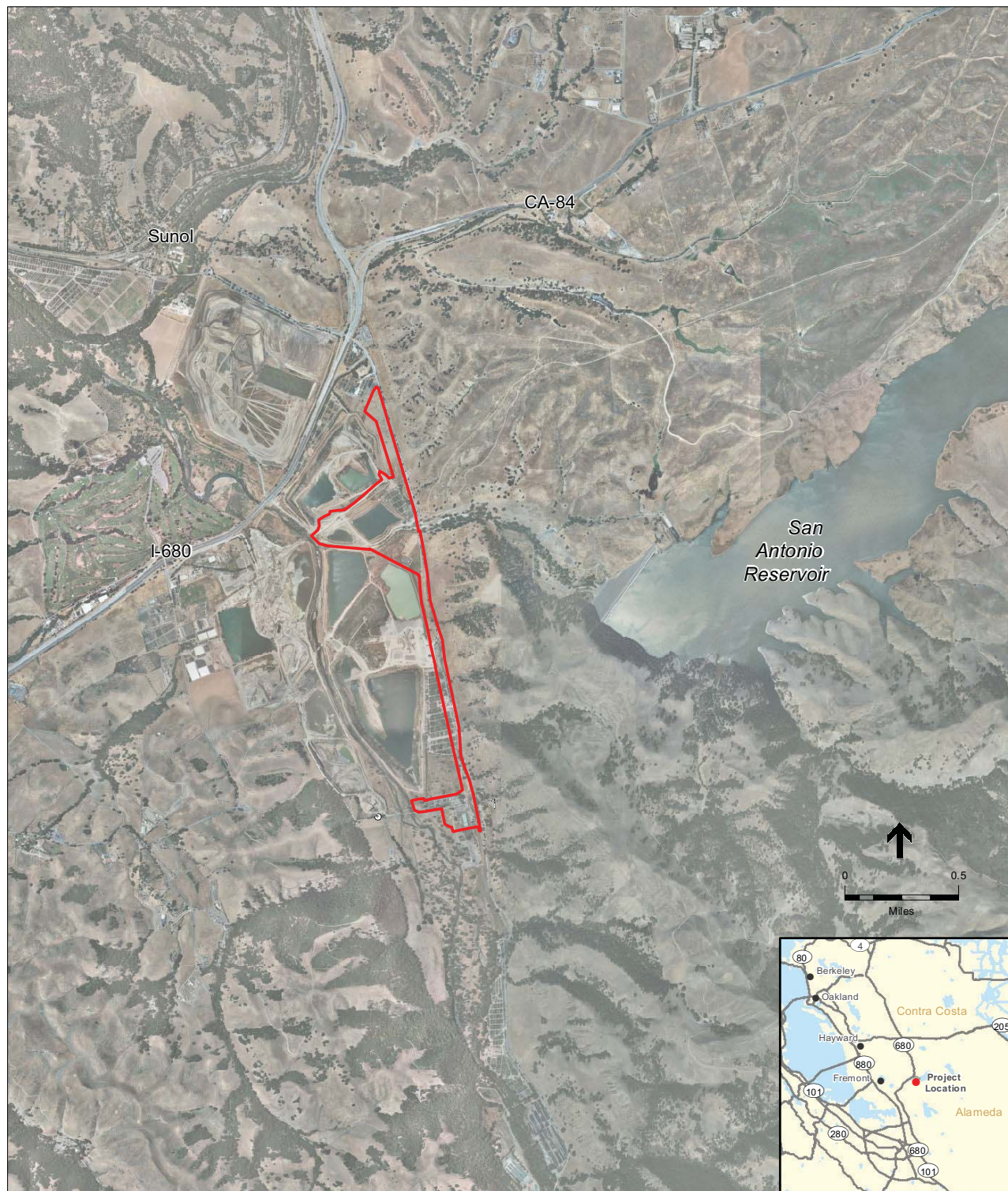
The SABPL project is located in an unincorporated area of Alameda County, California, within the Sunol Valley (see **Figures 1** and **2**). The project area is located along Calaveras Road south of the intersection of Interstate 680 (I-680) and State Route 84 (SR 84). Project construction would occur entirely on Alameda watershed lands¹ owned by the City and County of San Francisco (CCSF) and managed by the SFPUC. The general project area extends roughly two miles from the San Antonio Pump Station in the south to the North Spoils Site in the north. The nearest community is the town of Sunol located approximately one mile northwest of the project area.

1.3 Project Description

The proposed SABPL project would include the following components:

- 7,000-foot-long, 66-inch-diameter San Antonio Backup Pipeline (SABPL)
- Discharge Facility at quarry Pit F3-East (including discharge valve vault, electrical control building, baffled outfall, and reinforced concrete apron)
- Chemical facility
- Slurry cutoff-wall around quarry Pits F3-East and F3-West
- Alameda Creek Pump Station (including Transfer Pipeline)

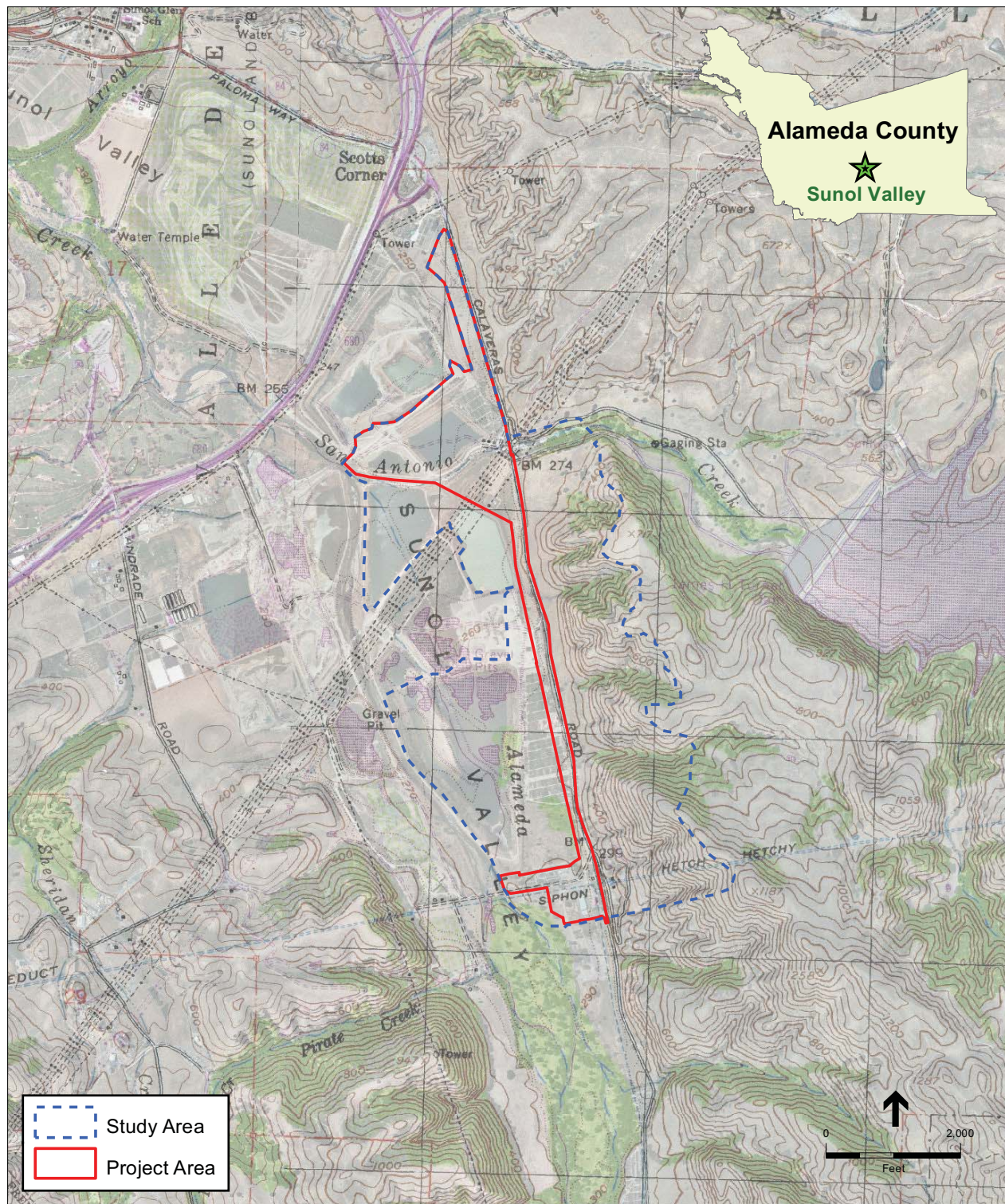
¹ The Alameda watershed refers to the City and County of San Francisco owned lands managed by the SFPUC as part of the SFPUC regional water system; the Alameda watershed lands are located within the much larger hydrologic boundary of the southern Alameda Creek watershed.



SOURCE: SFPUC, 2010

SFPUC San Antonio Backup Pipeline Project . 206166.04

Figure 1
SABPL Project Location



SOURCE: USGS, 2010; SFPUC 2010

San Antonio Backup Pipeline Project . 206166.04

Figure 2
Project Area

All project activities would be contained within the boundaries of the project area, as shown in **Figure 3**.

1.3.1 San Antonio Backup Pipeline and Discharge Facility

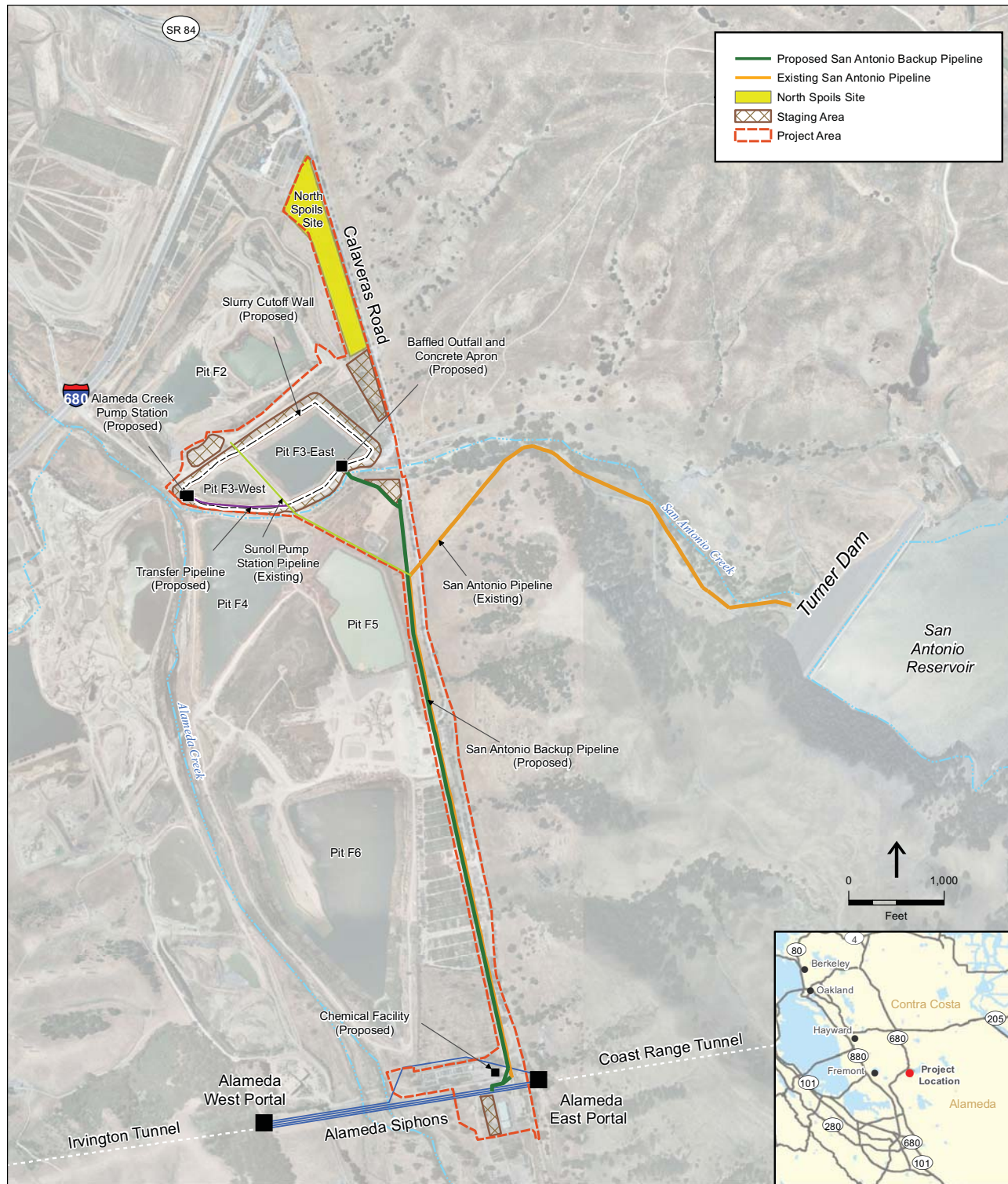
The proposed 7,000-foot-long, 66-inch-diameter SABPL would be installed in an open trench extending north from the San Antonio Pump Station to the southern slope of quarry Pit F3-East. The trench would be 12- to 15-foot wide, and have a maximum depth of 20 feet below the ground surface. The SABPL would be offset roughly ten feet west of the existing SAPL and would parallel the west side of Calaveras Road for approximately 6,200 feet. Near the intersection of Calaveras Road and the Turner Dam access road, the remaining 800-foot-long section of the SABPL would be routed northwest beneath San Antonio Creek to the southern slope of Pit F3-East. A discharge valve vault and electrical control building would be constructed on the south side of San Antonio Creek. The dimensions of the discharge valve vault would be approximately 19 feet wide, 38 feet long, and 16 feet deep. The electrical control building for the discharge facility would be roughly 15 feet long, 15 feet wide, and 16 feet tall. A baffled outfall and concrete splash pad would be constructed on the quarry pit slope at the northern terminus of the SABPL. In addition, a stub (approximately 20 feet long) would be installed immediately west of Calaveras Road and south of San Antonio Creek to provide a potential future connection point for a new pipeline segment to the base of Turner Dam.²

Cross-connections (interties with existing conveyance facilities) would be constructed at three locations along the alignment. Each cross-connection would include an air gap system. Air gaps would consist of vertical piping extending from the top of the pipeline approximately eight feet above the ground surface, with an elbow and an angled 40- to 80-foot-long section of pipe providing the space for the gap.

1.3.2 Slurry Cutoff Wall

A new slurry cutoff wall would be constructed around the perimeter of Pits F3-East and F3-West to minimize the seepage of groundwater into the pits and help maintain water levels at or below elevation 195 feet mean sea level. The cutoff wall would consist of a trench filled with a bentonite slurry and a soil-bentonite backfill mixture. The bentonite slurry would prevent the trench walls from collapsing during excavation of the trench. The entire slurry cutoff wall would be 5,000 feet long, 3 feet wide, and approximately 80 feet deep. The proposed slurry cutoff wall would require an approximately 125-foot-wide work platform along the cutoff wall alignment.

² Implementation of a new pipeline segment to Turner Dam was originally proposed as part of this project, but has since been dropped. If the SFPUC were to construct this pipeline in the future, the project would undergo further CEQA evaluation at that time.



SOURCE: ESA+Orion, 2011; Date of aerial photo is 2006.

SFPUC San Antonio Backup Pipeline Project
Figure 3
 Site Plan

1.3.3 Alameda Creek Pump Station and Transfer Pipeline

The Alameda Creek Pump Station would consist of pumps, pipelines, a wet well, and a control building that would house electrical equipment. Minor grading would be required for the Alameda Creek Pump Station, parking area, and driveway. The Alameda Creek Pump Station would be constructed just northeast of the confluence of San Antonio and Alameda Creeks, on the west end of Pit F3-West. The 140-foot-wide by 180-foot-long pump station site would be enclosed by a 7-foot-high security fence, and would house pumps, pipelines, a wet well, an electrical transformer³ and a 15-foot by 15-foot metal control building that would include the electrical equipment and controls for the pump station. The wet well would be approximately 45 feet deep. A portion of the existing access road would be paved to form a driveway and parking area. In addition, an approximately 500-foot-long, 15-foot-tall retaining wall would be constructed along the southern boundary of the pump station site adjacent to the access road. Exterior lighting with a motion sensor would be permanently installed at the Alameda Creek Pump Station.

The proposed 36-inch-diameter Transfer Pipeline would be used to convey water from the Alameda Creek Pump Station to the existing 36-inch-diameter Sunol Pump Station Pipeline. The Transfer Pipeline would be made of steel pipe approximately 1,250 feet long and would be aligned along the southern perimeter of Pits F3-East and F3-West.

1.3.4 New Chemical Facility

The proposed new chemical facility near the San Antonio Pump Station would include a chemical storage and containment area, a chemical loading area, an electrical control room, and a subterranean chemical feed system. The proposed chemical facility would be 48 feet long, 42 feet wide, and 22 feet tall. A 1,600-square-foot asphalt parking area would be constructed adjacent to the control building, with a permanent 8- to 10-foot-high security fence to surround the new control building and parking area. Exterior lighting with a motion sensor would be permanently installed on the new chemical facility.

1.4 Study Area, Survey Dates, and Surveying Personnel

All proposed project activities would be contained within the boundaries of the study area (shown in **Figure 2**). The study area for the wildlife habitat assessment encompasses the entire project area and, where appropriate, extends beyond the project area to include areas of potential indirect impact resulting from construction. Those portions previously surveyed for other recent SFPUC projects were briefly reviewed to ascertain whether conditions were the same or had changed since preparation of technical memoranda and environmental reports; those portions not previously surveyed were investigated in more detail.

³ The main purpose of a transformer is to alter a supply voltage from a primary power circuit to a secondary power circuit at the voltage desired to run a particular piece of electrical equipment. Electrical equipment running at a higher voltage is more efficient and requires smaller conduits.

Environmental Science Associates (ESA) biologists conducted a reconnaissance survey of the site on April 21, 2009. On May 4, 2009, ESA biologists conducted a focused survey of potential burrowing owl habitat within a 500-foot project buffer, as well as additional reconnaissance-level surveys in selected portions of the study area. An additional reconnaissance survey was conducted by ESA biologists on November 17, 2010 to characterize several small areas newly added to the SABPL project area and to verify current site conditions in light of recent and ongoing disturbance and modifications resulting from construction of the New Irvington Tunnel and Alameda Siphons Seismic Reliability Upgrade projects.

1.5 Survey Methods

The *Alameda Siphons Seismic Reliability Upgrade Project Biological Assessment* (Irvington Partners Joint Venture, 2008) and the *New Irvington Tunnel Project Environmental Site Assessment* (Baseline Environmental Consulting, 2008) were consulted for their analyses of local biological resources and potential project effects. The California Natural Diversity Database (CNDDB) was consulted concerning sensitive wildlife resources in the project vicinity (CDFG, 2009), and an official species list was obtained from the U.S. Fish and Wildlife Service (USFWS, 2009). Additional biological data was provided by the SFPUC (SFPUC, 2008; SFPUC 2011).

ESA's reconnaissance surveys identified species present in the study area and identified habitat elements that could support sensitive wildlife species not directly observed. Particular concern was given to identify potential breeding and foraging habitat, and movement corridors, for California tiger salamander (*Ambystoma californiense*), foothill yellow-legged frog (*Rana boylei*), California red-legged frog (*Rana draytonii*), western pond turtle (*Actinemys marmorata*), Alameda whipsnake (*Masticophis lateralis euryxanthus*), coast horned lizard (*Phrynosoma coronatum*), burrowing owl (*Athene cunicularia*), San Joaquin kit fox (*Vulpes macrotis mutica*), San Francisco dusky-footed woodrat (*Neotoma fuscipes*), American badger (*Taxidea taxus*), and sensitive bird and bat species.

The focused burrowing owl survey on May 4, 2009 was consistent with a Phase II assessment in accordance with the April 1993 *Burrowing Owl Consortium Survey Protocol and Mitigation Guidelines*. This consisted of two ESA biologists walking multiple transects along the grassland slopes east of Calaveras Road for a distance of approximately 1.0 mile. Transects were walked while scanning for burrowing owls, ground squirrels, and burrow complexes.

Vegetation types and wildlife habitats on the study area were characterized by field observations and review of prior biological reports.

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CHAPTER 2

Habitat Types and Sensitive Species in the Study Area

2.1 Environmental Setting

Sunol Valley is part of the San Francisco Bay Area sub-region of the California Floristic Province (Hickman, 1993). Oriented in a north-south direction, the valley is surrounded by numerous low-elevation ridges (less than 2,000 feet) that drain indirectly to Alameda Creek. Alameda Creek is the largest drainage in the Alameda Creek Watershed, which in turn is the largest in the Bay Area, draining a 650-square-mile area that ultimately empties into the southern portion of San Francisco Bay.

Sunol Valley supports extensive sand and gravel mining operations, and to a lesser extent provides flat expanses of land for use by commercial plant nurseries. The surrounding hillsides support cattle grazing, and these hills, associated stock ponds, San Antonio Reservoir, Alameda Creek and other local creeks, and Sunol Wilderness areas provide habitat for a variety of sensitive species.

2.2 Habitat Types

The project area supports developed, non-native annual grassland/ruderal, lacustrine, freshwater marsh/seasonal wetland, and riparian habitat (see **Figure 4**). The majority of the project area supports developed/ruderal habitats. Most of the project area, including non-native grassland, has been previously disturbed by grading, excavation, commercial development, or construction of infrastructure. Recently disturbed areas still support very limited plant cover, most of it weedy. Other areas have established annual grasslands dominated by non-native species. Oak woodlands, sycamore alluvial woodland, and coastal sage scrub occur within the wildlife habitat assessment study area on the hillslopes to the east of Calaveras Road. These habitat types are not discussed in detail below as they are not found within the project area. They are mapped on Figure 4 because they have the potential to support special-status species that are not expected to occur within the project area but that could suffer from indirect impacts resulting from project construction.

2.2.1 Developed Areas

Much of the project area is developed as active quarry facilities, active SFPUC facilities, abandoned commercial plant nurseries, and associated roads (see **Photo 1**), as well as areas recently cleared for construction of the NIT and Alameda Siphons Projects. Developed areas associated with existing facilities support a few planted areas including species such as eucalyptus (*Eucalyptus globulus*), oleander (*Nerium oleander*), and Monterey pine (*Pinus radiata*). Otherwise, vegetation has been removed or is precluded through ongoing quarry and construction activities in these developed areas and they thus provide little habitat for wildlife, but appear to be heavily used as movement corridors by wild pig (*Sus scrofa*) and mule deer (*Odocoileus hemionus*). California ground squirrels (*Spermophilus beecheyi*), while not abundant in any portion of the study area, were observed to have burrows in relatively friable soil along roadside fencelines. Developed portions of the study area may support nesting birds such as tree swallows (*Tachycineta bicolor*), rough-winged swallows (*Stelgidopteryx serripennis*), house finch (*Carpodacus mexicanus*), and mourning dove (*Zenaida macroura*), among others, that are protected under the Migratory Bird Treaty Act.

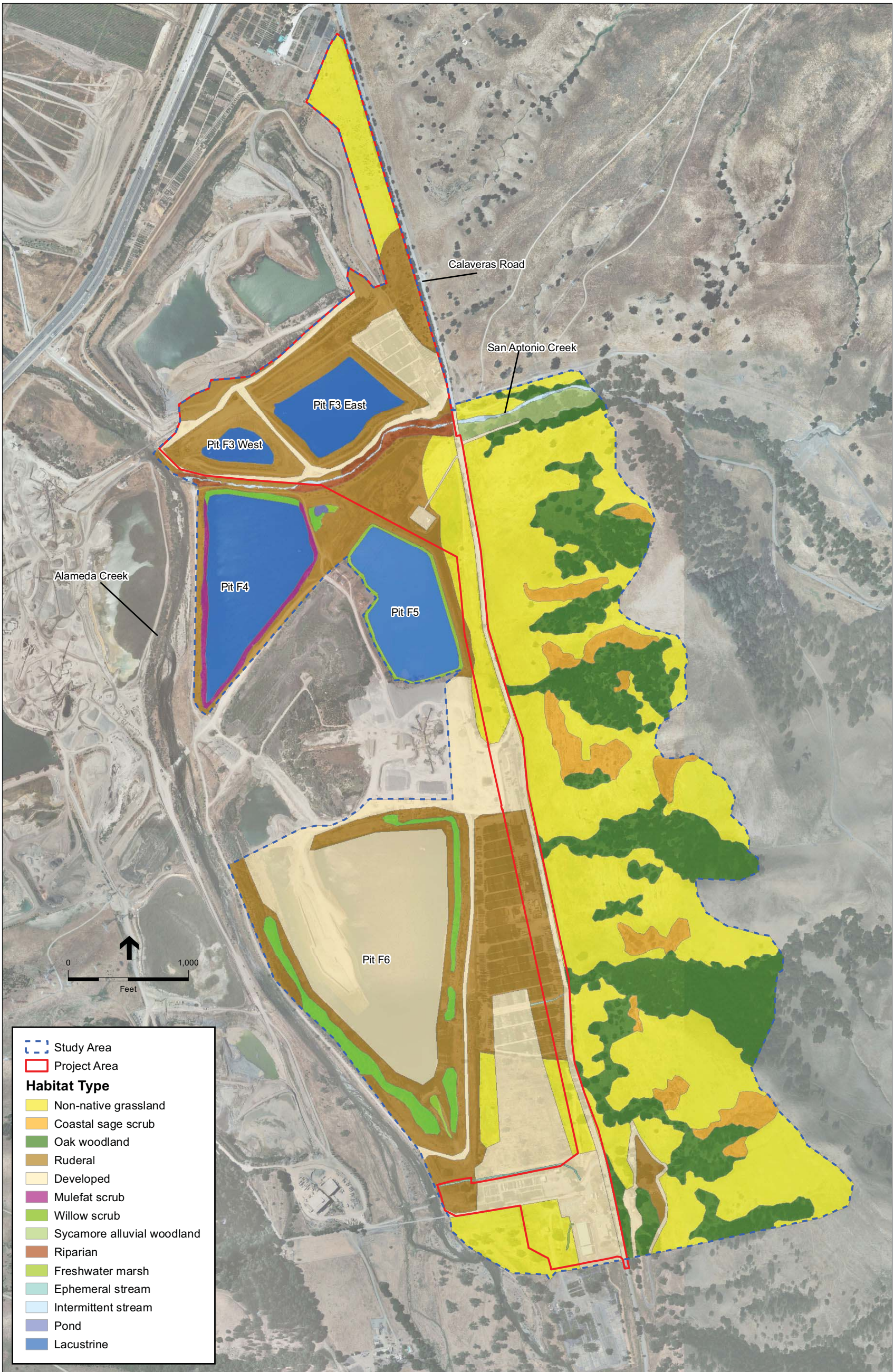
PHOTO 1

Developed Areas:

Calaveras Road, large commercial nursery areas (since abandoned and now supporting ruderal habitat), and quarry activities are visible in this representative photo (as of April, 2009) of developed portions of the study area.



The amount of developed habitat in the project area increased considerably in 2010 during construction of the NIT and Alameda Siphons projects. Site clearance, and hence conversion to developed habitat, occurred at the north spoils site, in the vicinity of the proposed chemical facility, near Air Gap #1, and in most of the southern portion of the SABPL pipeline alignment. In these areas, vegetation has been removed, burrows have been collapsed, and the site graded; however, mature trees such as valley oak (*Quercus lobata*), California sycamore (*Platanus racemosa*), coast live oak (*Quercus agrifolia*), and planted cork oak (*Quercus suber*) have been retained where possible, thus providing more structure than usual for these habitat types.



SOURCE: SFPUC, 2010; SFPUC, 2008; ESA, 2011

SFPUC San Antonio Backup Pipeline Project

Figure 4

Habitat Types in the SABPL Biological Resources Study Area

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2.2.2 Non-native Annual Grassland/Ruderal

Developed portions of the study area are interspersed with non-native annual grasslands and ruderal areas. Non-native annual grassland and ruderal portions of the study area are characterized by low habitat structure, low diversity, and the growth of invasive non-native species (see **Photo 2** and **Photo 3**). Dominant vegetation includes soft chess (*Bromus hordeaceus*), wild oat (*Avena fatua*), foxtail barley (*Hordeum murinum* var. *leporinum*), Italian ryegrass (*Lolium multiflorum*), and clover (*Trifolium* spp.), with lesser amounts of purple owl's clover (*Castilleja exerta*), cutleaf geranium (*Geranium dissectum*), star thistle (*Centaurea* spp.), Italian thistle (*Carduus pycnocephalus*), milk thistle (*Silybum* spp.), red-stem filaree (*Erodium cicutarium*), wild radish (*Raphanus sativa*), and mustard (*Brassica* spp.). A western rattlesnake (*Crotalus viridis helleri*) was observed, and Pacific gopher snake (*Pituophis catenifer catenifer*) and California kingsnake (*Lampropeltis getula californiae*) are also commonly found in grasslands where prey is abundant. Burrowing owls may occur in short grasslands where ground squirrel burrow complexes are present. Open grasslands may also provide nesting habitat for short-eared owl (*Asio flammeus*), foraging habitat for raptors, and denning and foraging habitat for San Joaquin kit fox and American badger.

Grasslands in the study area support low densities of small and medium-sized mammals such as mice, California vole (*Microtus californicus*), Botta's pocket gopher (*Thomomys bottae*), California ground squirrel, cottontail (*Sylvilagus auduboni*), and black-tailed jackrabbit (*Lepus californicus*).

Ruderal refers to areas that have been previously cleared or developed, are not in active use, and have developed little vegetation (or that contain developed vegetation that is mostly weedy non-grass species). Typical plant species found in ruderal habitats within the project area include yellow star thistle (*Centaurea solstitialis*), Italian thistle, milk thistle (*Silybum marianum*), stinkwort (*Dittrichia graveolens*), fennel (*Foeniculum vulgare*), and shortpod mustard (*Hirschfeldia incana*). The vegetation in many ruderal areas is sparse and does not resemble any identified natural community (such as non-native grassland). In some areas, shrubs such as coyote bush (*Baccharis pilularis*) have become established and contribute a significant amount of cover. However, these areas do not comprise a scrub community, due to the lack of shrub and herbaceous associates commonly found in coyote brush scrub. In some ruderal and developed areas in the Sunol Valley, large mature native trees have been preserved, providing significant wildlife habitat.

To the north of the San Antonio Pump Station, east from SMP-30's Pit F6, an open area measuring roughly seventeen acres in size⁴ offers low-quality grassland habitat with isolated native trees and scattered shrubs. At least half of this area was used as grounds for a former commercial nursery, as evidenced by an extensive network of aboveground pipes. The land is flat and heavily compacted. No ground squirrels and only a few small mammal burrows were observed in this area.

⁴ As of November 2010 this area had been reduced by several acres due to the clearing of vegetation for laydown and staging associated with the NIT and Alameda Siphons projects.

PHOTO 2
Non-native Annual
Grassland/Ruderal:

The proposed alignment traverses discontinuous patches of annually mowed non-native annual grasslands and ruderal vegetation.



PHOTO 3
Non-native Annual
Grassland/Ruderal:

Grassy hills within a 500-foot buffer of the project area (e.g., the study area), east of Calaveras Road, offer potential habitat for burrowing owls but few ground squirrel burrows were observed.



North of the former Naka Nurseries, Inc.⁵, between Calaveras Road and a CEMEX gate, the proposed pipeline route traverses a narrow strip of grassland that becomes wider as it approaches Pit F5. The eastern upland periphery of Pit F5 is thick with mustard and wild radish, and numerous Brewer's blackbird (*Euphagus cyanocephalus*) and red-winged blackbirds were observed foraging and roosting in the ruderal vegetation.

⁵ Information obtained from a SFPUC Real Estate Services map regarding Sunol Valley Leases and Permits, dated 01/04/06. This nursery has since been decommissioned.

The area south of San Antonio Creek, where Staging Area 2 is proposed to be sited, supports some annual grasslands but is dominated by dense ruderal vegetation with scattered a few trees and shrubs. As in other grassland and ruderal areas, no ground squirrels and only a few small mammal burrows were observed.

The north spoils site located east of SMP-24, north of an abandoned commercial nursery, and west of Calaveras Road, and was previously evaluated under the *New Irvington Tunnel Project Environmental Site Assessment* (Baseline Environmental Consulting, 2008) supports grasslands and ruderal habitat. From Calaveras Road, it was observed that much of this area was also possibly used as commercial nursery grounds, as evidenced by networks of aboveground pipes. An access road through the nursery would be used to access the north spoils site. In November 2010, the former nursery was still in the process of being decommissioned and was essentially barren, with highly compacted soils.

Within a 500-foot project buffer applicable to burrowing owls, potential burrowing owl habitat is present along the entire length of the project, but outside the project area, on grassland slopes east of Calaveras Road. Vegetation along these slopes consists of a variety of non-native annual grasses and forbs including soft chess, wild oat, foxtail barley, geranium, filaree, field vetch (*Vicia* spp.), and thistle. California poppy (*Eschscholzia californica*), annual lupine (*Lupinus bicolor*), blue dicks (*Dichelostemma capitatum*), and popcorn flower (*Plagiobothrys* spp.) were also observed. The hills are subject to grazing but vegetation was 12 to 18 inches in height during the focused survey. Two transects were walked in each direction, from San Antonio Creek to the south end of the former Naka Nurseries, Inc. No owls or owl sign were seen during the surveys, and no burrows suitably-sized for owl occupation were observed. Noticeably scarce in the survey area were the ground squirrel burrow complexes that are routinely colonized by burrowing owls. Despite the relatively tall grassland vegetation and obscured burrow entrances, ground squirrels were both visible and audible where present; thus, large burrow complexes, if present, would have been identified during surveys.

2.2.3 Lacustrine

Quarry pits within the study area provide lacustrine, or open water, habitat used by waterfowl and other birds for foraging (see **Photo 4**). Quarry Pit F3-East, operated by Hanson Aggregates under Surface Mining Permit 24 (SMP-24), measures approximately nine acres in size and is continually pumped by Hansen Aggregates to provide water for quarry operations. The pit's water depth is not known, but the level is deep enough to preclude the growth of emergent vegetation and surface algae. Banks are steep at approximately a 4:1 slope ratio and are vegetated by red brome (*Bromus rubens*), winter vetch (*Vicia villosa*), and wild oats. Upper slopes support the growth of occasional jubata grass (*Cortaderia jubata*), mulefat (*Baccharis salicifolia*), and coyote brush. The toe of Pit F3-East's southeastern slope supports a moderate growth of willows (*Salix* spp.). Such pits provide potential habitat for western pond turtle and California red-legged frog. An American bullfrog (*Lithobates catesbeianus*) tadpole was observed in the shallows of the pit's west corner.

PHOTO 4**Lacustrine:**

Pit F3-East within SMP-24, the discharge point for the proposed pipeline, offers lacustrine habitat. The proposed alignment also skirts other quarry pits providing lacustrine habitat.



A small pond is located to the east of Pit F4 (see Figure 4) outside of the project area but inside the study area. The pond receives water via surface runoff and seepage from Pit F4 and its water level fluctuates throughout the year. During the reconnaissance survey it measured approximately 80 feet by 30 feet with a maximum depth of approximately 5 feet. The pond supports emergent freshwater marsh consisting of cattail and tule at its eastern edge. The steep side slopes support ruderal vegetation on the east and willow riparian forest and scrub on the west. No amphibians were observed within the pond, but it may support Sierran treefrog (*Pseudacris sierra*) and possibly western toad (*Bufo boreas*) and California red-legged frog.

2.2.4 Freshwater Marsh

The southern portion of the project area supports a few small areas of freshwater marsh (see **Photo 5**). Within the SMP-30 Pit F6 at the southern end above the level of fluctuating inundation, are a series of small pools supporting wetland vegetation. These pools are the remnants of a former single large pond, measuring roughly 0.12 acre in size, that was inadvertently created in 2005 when a berm was constructed to keep water off an adjacent road. The berm effectively created a terrace above the quarry pit that was perennially filled by seeping groundwater, supported cattail growth, and in which adult bullfrogs were observed. In November 2007, mining activities breached the north bank of the pond, which subsequently drained and left behind three small pools (Irvington Partners Joint Venture, 2008). These pools, and several below them that only form when water levels in Pit F6 fall below the elevation at which they occur, provide potential aquatic breeding habitat for California red-legged frog as well as non-breeding aquatic refugia for the species.

PHOTO 5**Freshwater Marsh/
Seasonal Wetland:**

The fence-line drainage west of the San Antonio Pump Station supports a small wetland. Water is up to 12 inches deep and supports breeding Pacific chorus frog.



Runoff from the San Antonio Pump Station drains to the west into proposed Staging Area A and forms a freshwater marsh along the fenceline for a distance of approximately 350 feet. Cattails are emergent, and water was ponded to a depth of approximately three to twelve inches for the length of the drainage. Pacific chorus frog tadpoles were observed at this location.

Approximately 100 feet west of the project area, Pit F5 is entirely fringed by a ring of cattails and tules roughly five feet in width. Numerous blackbirds were observed in here, and depending on water quality, this active quarry pond could provide habitat for western pond turtle, adult non-breeding California red-legged frogs, and tricolored blackbird.

2.2.5 Riparian

Riparian habitat is present at three locations within or immediately adjacent to the project area (see **Photo 7** and **Photo 8**). North of the San Antonio Pump Station and associated access road is an intermittent drainage measuring approximately 730 feet in length. At the time of the 2009 surveys the drainage supported a growth of dense riparian vegetation including blackberry (*Rubus* spp.), cottonwood (*Populus fremontii*), California sycamore (*Platanus racemosa*), valley oak (*Quercus lobata*), and conifers. Also present were invasive bamboo and jubata grass, possibly escaped remnants from the former plant nursery. Most of this vegetation has since been removed in association with the NIT and Alameda Siphons projects, although efforts were made to retain some of the native trees.

One ephemeral stream, an unnamed tributary that formerly emptied into Alameda Creek, begins in the hills east of Calaveras Road, is conveyed under Calaveras Road in a culvert, and then empties into an unvegetated rip-rapped channel within the project area. At the time of ESA's

PHOTO 7

Riparian:

A discharge pipe from SMP-30 empties into the San Antonio Creek channel. Flows are consistent enough to support riparian growth along the stream corridor.



PHOTO 8

Riparian:

At the proposed stream crossing, upstream from Photo 6, the San Antonio Creek streambed is a dry, grassy contour that supports a sparsely distributed mulefat within the channel, and coast live oaks, buckeye, sycamore, and planted cottonwoods along its banks.



2009 surveys, the channel ultimately emptied into quarry Pit F6 via a culvert. By November 2010, the western half of the channel had been filled to create a staging area for the NIT and Alameda Siphons projects and it was unclear whether the channel had been culverted under the staging area. This channel provides little or no habitat values for wildlife that depend on water or wetland habitats.

Near the confluence of San Antonio Creek and Alameda Creek, SMP-30's Pit F4 has a discharge pipe that empties continuously, or nearly so, into the San Antonio Creek channel. This area supports dense riparian growth including poison hemlock (*Conium maculatum*), willows and mulefat (see **Photo 7**). Flowing water reaches a depth of approximately 12 inches in some locations. Minnows were observed in this area.

San Antonio Creek within the project area is a seasonal drainage that is dry for most of the year at the crossing location. The stream channel and banks are heavily vegetated with non-native annual grasses and ruderal vegetation, with an occasional mulefat and California poppy on the channel floor (see **Photo 8**). The northern bank is vertical, measuring approximately 12 feet in height, but the southern bank is relatively gentle and shallow, with a slope of roughly 2:1 and not more than four feet in height. Behind the margin of coast live oaks and buckeye (*Aesculus californica*) lining the gentle southern bank are a planted row of young cottonwoods.

2.3 Sensitive Species in the Study Area

Based on habitat present within the project area and locally documented occurrences, the following sensitive species may occur within the project area or within the wildlife habitat assessment study area where they could be indirectly impacted by project construction (see **Table 1**). This list of species was compiled from the California Natural Diversity Database (CNDDB), USFWS official lists and review of previous environmental studies of the project vicinity and surrounding watershed. The Official USFWS Species List and CNDDB List for the La Costa Valley and Niles USGS 7.5-minute quadrangles, which constitute the full list of species considered, are located in Appendix B. See **Figure 5** for a map of sensitive species occurrences in the project vicinity.

2.3.1 California Tiger Salamander (*Ambystoma californiense*)

Status

The central California Distinct Population Segment (DPS) of California tiger salamander is federally listed as threatened and is a candidate state threatened species.

General Ecology and Distribution

California tiger salamander is principally an upland species found in annual grasslands and in the grassy understory of valley-foothill hardwood habitats in Central and Northern California. They require underground refuges (usually ground squirrel or other small mammal burrows), where they spend the majority of their annual cycle. Between December and February, when seasonal ponds begin to fill, adult California tiger salamanders engage in mass migrations to aquatic sites during a few rainy nights and are explosive breeders (Barry and Shaffer, 1994).

During drought years when ponds do not form, adults may spend the entire year in upland environments, while juveniles may spend 4 to 5 years in their upland burrows before reaching sexual maturity and breeding for the first time (Petranka, 1998; Trenham et al, 2000). Adult

TABLE 1
FOCUSED LIST OF SPECIAL-STATUS SPECIES CONSIDERED
FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

Common Name Scientific Name	Listing Status USFWS/ CDFG/CNPS	General Habitat Requirements	Potential for Species Occurrence Within the Project Area
FEDERAL AND STATE LISTED SPECIES OR PROPOSED FOR LISTING			
Animals			
Amphibians			
California tiger salamander <i>Ambystoma californiense</i>	FT/ CC	Wintering sites occur in grasslands occupied by burrowing mammals; breed in ponds, vernal pools, and slow-moving or receding streams.	Moderate potential. Numerous breeding locations are known within 1.0 mile, and an individual was found in the Sunol Valley Chloramination Facility, suggesting the project area is within a potential CTS movement corridor. Small mammal burrows offer aestivation and foraging opportunities. However, suitable breeding habitat is not present within the project area nor the study area.
California red-legged frog <i>Rana draytonii</i>	FT/CSC	Breed in stock ponds, pools, and slow-moving streams.	Moderate potential. This species is known from upstream portions of Alameda Creek within 2.5 miles, downstream portions within 0.25 mile, and from San Antonio Creek at the base of Turner Dam within 0.9 mile. Two adults were sighted in February 2010 in the southeastern portion of the study area, one in a seasonal wetland that is no longer present. Aquatic habitat within the study area provides aquatic refugia. Grasslands, small mammal burrows, and rock and debris piles offer summer habitat. The species is not expected to breed within the project area.
Reptiles			
Alameda whipsnake <i>Masticophis lateralis euryxanthus</i>	FT/CT	Lakes, ponds, reservoirs, and slow-moving streams and rivers, primarily in foothills and lowlands.	Low to moderate potential. Core habitat is absent from the project area. Marginally suitable foraging and dispersal habitat is present grasslands and ruderal habitat within the project area. Adjacent scrub on the slopes east of Calaveras Road provides suitable habitat within the study area.
Birds			
American peregrine falcon (nesting) <i>Falco peregrinus anatum</i>	--/CE	Nests on cliffs, tall buildings, high bridges, and specially-designed towers.	Low potential. Suitable nesting habitat is absent from the project area. Nesting on interior quarry pit slopes or utility towers seems unlikely.
Bald eagle <i>Haliaeetus leucocephalus</i>	--/CE	Nest in mountainous habitats near reservoirs, lakes and rivers, usually in coniferous trees, close to permanent water.	Low potential. Large trees in the project area could provide potential nesting habitat, but this is unlikely. Nesting is documented from Calaveras Reservoir.
Mammals			
San Joaquin kit fox <i>Vulpes macrotis mutica</i>	FE/ST	Arid grasslands and open scrubland.	Low potential. Suitable habitat is present for denning and foraging, but kit fox is known from just one sighting in the Sunol Valley, with the next nearest sighting over 16 miles east. However, the species has a low potential to disperse through the study area.

TABLE 1 (Continued)
FOCUSED LIST OF SPECIAL-STATUS SPECIES CONSIDERED
FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

Common Name Scientific Name	Listing Status USFWS/ CDFG/CNPS	General Habitat Requirements	Potential for Species Occurrence Within the Project Area
FEDERAL OR STATE FULLY PROTECTED/SPECIES OF SPECIAL CONCERN			
Animals			
<i>Amphibians</i>			
Foothill yellow-legged frog <i>Rana boylei</i>	--/CSC	A year-round resident of cobble-lined streams; breeds in spring months after high water subsides.	Absent. Suitable habitat is absent from the project area. This species is limited to perennial, high-gradient drainages.
<i>Reptiles</i>			
Western pond turtle <i>Actinemys marmorata</i>	--/CSC	Lakes, ponds, reservoirs, and slow-moving streams and rivers, primarily in foothills and lowlands.	Presumed present. This species is known from Alameda Creek and San Antonio Creek. Western pond turtle may be found in quarry pits, riparian areas, and uplands.
Coast horned lizard <i>Phrynosoma coronatum</i>	--/CSC	Sandy areas and river washes, as well as riparian woodland clearings, chaparral, and alkali flats.	Low potential. This species has a low potential to occur in the study area. May be present in sandy washes of Alameda Creek channel, or in rock and debris piles near quarry pits.
<i>Birds</i>			
Tricolored blackbird <i>Agelaius tricolor</i>	--/CSC	A colonial nester; nests in dense freshwater emergent vegetation.	High potential. Breeding is known from the Sunol Valley and large flocks were observed foraging over the project area. Potential breeding habitat exists in freshwater marshes and ruderal vegetation in or near the project area.
Golden eagle <i>Aquila chrysaetos</i>	CDFG fully protected	Nests in open areas on cliffs and in large trees.	Moderate potential. Open areas with large sycamore, cottonwood and oak trees in the southern project area and along San Antonio Creek east of Calaveras Road could provide nesting habitat. Known nesting sites on slopes above base of Turner Dam.
Short-eared owl <i>Asio flammeus</i>	--/CSC	Nests in grasslands, usually on the ground.	Low potential. Grasslands in the project area could provide nesting habitat for short-eared owl. Known nesting site along southeastern San Antonio Reservoir. However, grassland extent is limited and some is mowed annually. Much grassland habitat has been recently cleared in association with other SFPUC projects.
Burrowing owl <i>Athene cunicularia</i>	--/CSC	Nests and forages in low-growing grasslands that support burrowing mammals.	Low potential. Grasslands in the project area and 500-foot buffer support few small mammal burrows and fewer burrow complexes. Few holes were observed in rock and debris piles. No owls observed during breeding season surveys.
Northern harrier <i>Circus cyaneus</i>	--/CSC	Nests in coastal freshwater and saltwater marshes, nests and forages in grasslands.	Low potential. Nesting sites are potentially present in quarry ponds supporting freshwater emergent marshes.
White-tailed kite (nesting) <i>Elanus leucurus</i>	CDFG fully protected	Nests near wet meadows and open grasslands in dense oak, willow or other large tree stands.	Moderate potential. Potential nesting habitat is present along riparian corridors, and in oak woodlands to the east of Calaveras Road and at the southern end of the project area.

TABLE 1 (Continued)
FOCUSED LIST OF SPECIAL-STATUS SPECIES CONSIDERED
FOR THE SAN ANTONIO BACKUP PIPELINE PROJECT

Common Name Scientific Name	Listing Status USFWS/ CDFG/CNPS	General Habitat Requirements	Potential for Species Occurrence Within the Project Area
Animals (cont.)			
<i>Birds (cont.)</i>			
Horned lark <i>Eremophila alpestris</i>	--/CSC	Year-long resident in California. Nests on the ground, in grasslands.	Moderate potential. Nesting is documented on north slopes of San Antonio Reservoir. Suitable habitat is present in the project area in grasslands and along access roads.
Loggerhead shrike <i>Lanius ludovicianus</i>	--/CSC	Scrub, open woodlands, and grasslands.	High potential. Shrike nesting sites may occur in grasslands, shrubs, and trees throughout the study area.
<i>Mammals</i>			
Pallid bat <i>Antrozous pallidus</i>	--/CSC	Day roosts are mainly in caves, crevices and mines; also found in buildings and under bark. Forages in open lowland areas.	Low to moderate potential. Potential roosting habitat is available in large diameter oaks and cottonwoods, and under bridges.
Tule elk <i>Cervus elaphus nannodes</i>	--/Local protection	The San Antonio elk herd is a resident herd from hills surrounding the San Antonio Reservoir.	Low potential. Tule elk are present on the slopes east of Calaveras Road and sign was observed within 400 feet of the road. May be affected by project noise during construction.
Hoary bat <i>Lasiurus cinereus</i>	--/CSC	Roosts in dense foliage of large trees.	Low to moderate potential. Roosting habitat is available in large, dense oak trees.
Yuma myotis <i>Myotis yumanensis</i>	--/CSC	Roosts in caves, old buildings and under bark. Forms maternity colony in the spring.	Low to moderate potential. Roosting habitat is available in large diameter oaks and cottonwoods, and under bridges.
San Francisco dusky-footed woodrat <i>Neotoma fuscipes</i>	--/CSC	Occur in forests with established understory. Construct nests from woody debris.	Low potential. Woodland and scrub are generally absent from the project area. Riparian corridors within the project area lack forest understory, and habitat size is too small to support the species.
Townsend's big-eared bat <i>Plecotus townsendii</i>	--/CSC	Roosts in caves, mines, buildings or other human-made structures for roosting. Forages in open lowland areas.	Low to moderate potential. Roosting habitat is available in large diameter oaks and cottonwoods, and under bridges.
American badger <i>Taxidea taxus</i>	--/CSC	Grasslands, savannas, deserts, timberline mountain meadows.	Low potential. Denning habitat may be present in study area grasslands; but foraging habitat is limited by lack of abundant small mammal activity in the project area and no denning opportunities were noted within the project area.

STATUS CODES:

FEDERAL: (U.S. Fish and Wildlife Service)

FE = Listed as Endangered (in danger of extinction) by the Federal Government.

FT = Listed as Threatened (likely to become Endangered within the foreseeable future) by the Federal Government.

FC = Candidate to become a *proposed* species.

FSC = Federal Species of Concern. May be Endangered or Threatened, but not enough biological information has been gathered to support listing at this time.

STATE: (California Department of Fish and Game)

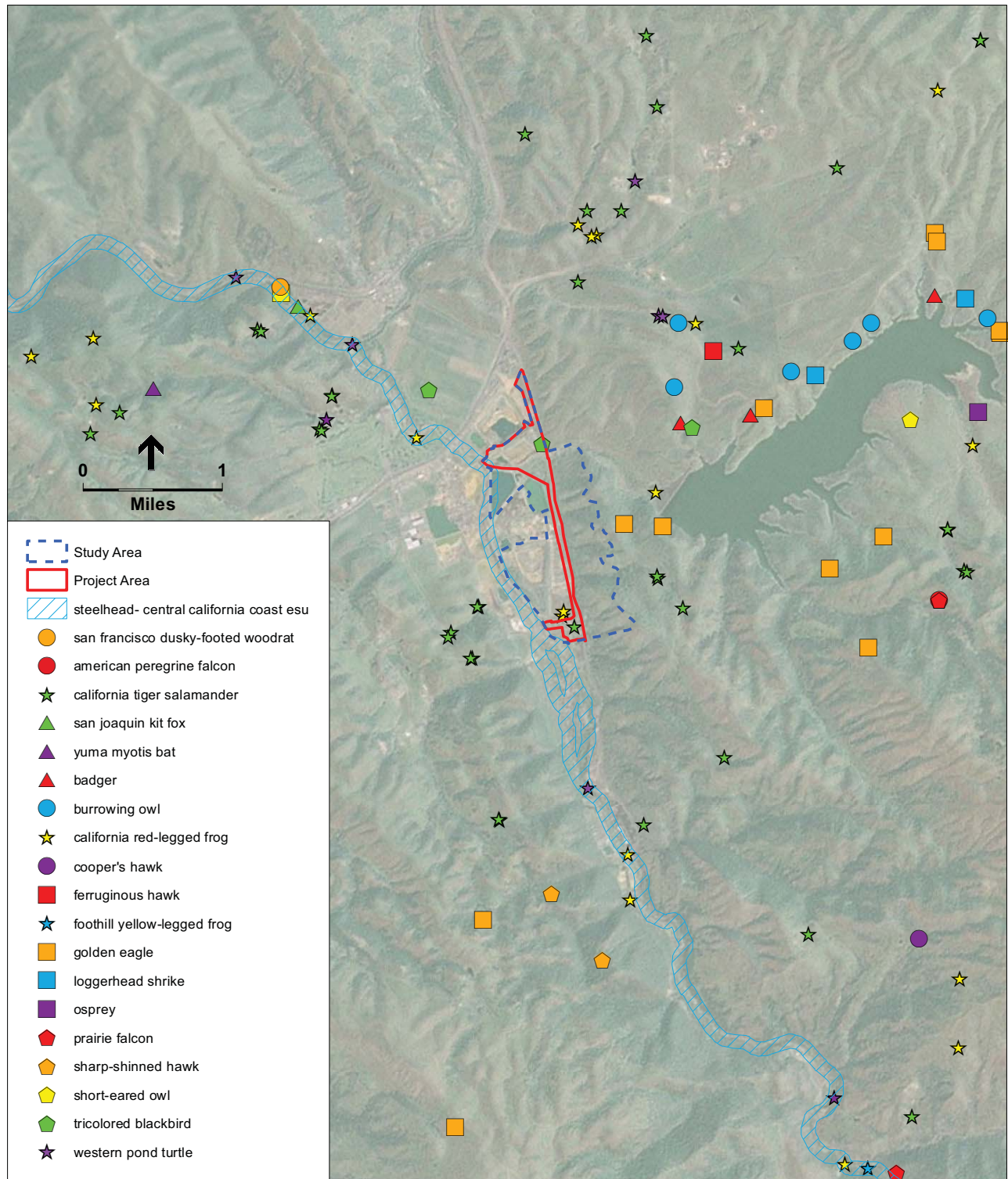
CE = Listed as Endangered by the State of California

CT = Listed as Threatened by the State of California

CC = Candidate to become a *proposed* species

CSC = California Species of Special Concern

SOURCE: CDFG, 2011; USFWS, 2011; SFPUC, 2008, 2009, and 2011



SOURCE: CNDDB, 2010; SFPUC, 2008; SFPUC, 2010; ESRI, 2010

San Antonio Backup Pipeline Project . 206166.04

Figure 5
 Special Status Species in the Project Area Vicinity

California tiger salamanders readily aestivate⁶ in grasslands near ponds and at great distances from breeding ponds. Adults are known to travel distances greater than 1 kilometer (0.62 mile) from breeding ponds and have been documented at distances of 2 kilometers (1.2 miles) or more (Orloff, 2007). Typical aestivation sites include the burrows of California ground squirrels and valley pocket gophers (*Thomomys bottae*).

Project Area Occurrence

California tiger salamander occurs in at least five stock ponds located in surrounding foothills on both sides of Sunol Valley, at distances ranging from 0.6 to 0.8 mile from the project area (CDFG, 2009). A road mortality was recorded 1.4 miles south along Calaveras Road (CDFG, 2009), and a live individual was observed in 2009 in a sump at the Sunol Valley Chloramination Facility at the southern end of the project area (SFPUC, 2009a), suggesting that California tiger salamander uses the valley floor as a movement corridor. California tiger salamanders may utilize grassland habitat throughout the project area for dispersal; aestivation and foraging opportunities are limited by the small number of mammal burrows observed in the project area's ungrazed grassland and ruderal areas and have been further reduced by site preparation and fencing for construction of the NIT and Alameda Siphons projects, which overlap with the SABPL project area. This species is expected to occur occasionally in the project area, mainly using the grassland habitat for dispersal.

2.3.2 California Red-legged Frog (*Rana draytonii*)

Status

The California red-legged frog is federally listed as a threatened species, and is a California species of special concern.

General Ecology and Distribution

This ranid species is principally a pond frog that can be found in quiet permanent waters of ponds, pools, streams, springs, marshes, and lakes. Moist woodlands, forest clearings, and grasslands also provide suitable habitat for this species in the non-breeding season. Adult frogs seek waters with dense shoreline vegetation, such as cattails, that provide good cover, but may be found in unvegetated waters as well.

Red-legged frogs breed from January to May. Eggs are attached to vegetation in shallow water and are deposited in irregular clusters. Tadpoles grow to three inches before metamorphosing. Red-legged frogs are active year-round along the coast but inland populations may aestivate from late summer to early winter. Adults consume insects such as beetles, caterpillars and isopods, while tadpoles forage on algae and detritus.

Historically, the California red-legged frog occurred along the coast from the vicinity of Point Reyes National Seashore, Marin County, and inland from Redding, Shasta County southward to

⁶ Aestivation is a state of dormancy similar to hibernation that occurs during summer and fall.

northwestern Baja California, Mexico (Jennings and Hayes, 1994). The majority of California red-legged frog occurrences in the San Francisco Bay Area are from Contra Costa and Alameda Counties.

Project Area Occurrence

California red-legged frog is known to occur in Alameda Creek both upstream and downstream of the project area. Upstream from the project area at a distance of 1.6 miles, several juvenile frogs were observed in 1998 in the deep pools of a glide-and-run portion of Alameda Creek; in 1999, an adult was observed in Alameda Creek 0.6 mile downstream of the San Antonio Creek confluence (CDFG, 2009); and California red-legged frog is known to occur in San Antonio Creek at the foot of Turner Dam at a distance of 0.9 mile from the project area. Downstream from the project area at a distance of 1.9 miles, up to fifteen adult red-legged frogs were observed over several years in off-channel ponds between Western Star Nursery and Alameda Creek (CDFG, 2009) but have not been observed there in the past two survey years (ESA, 2008; ESA, unpubl.data).

The nearest documented breeding habitat is in a small, shallow pond 1.4 miles northeast of the project area (CDFG, 2009). During surveys for the Alameda Siphons project, one California red-legged frog was observed within a seasonal wetland and one in an overflow ditch south of Pit F6 and just east of Calaveras Road (SFPUC, 2011). The wetland feature has recently been removed as a result of the Alameda Siphons project. The small pools at the southern end of SMP-30 Pit F6, discussed previously in the freshwater marsh habitat type, may provide potential low-quality breeding habitat for California red-legged frog (Irvington Partners Joint Venture, 2008). Additionally, the small pond at the northern end of the study area and east of Pit F4 may provide breeding habitat for California red-legged frog. Potential non-breeding aquatic refugia in the project area occur in the freshwater marsh near the San Antonio Chloramination Facility and in the SMP-24 pits, and infrequent small mammal burrows and rock and debris piles in project-area grasslands offer summer habitat. Based on the proximity of known occurrences and the presence of suitable habitat, this species is expected to occasionally occur in the project area.

2.3.3 Foothill Yellow-legged Frog (*Rana boylei*)

Status

Foothill yellow-legged frog is a California species of special concern.

General Ecology and Distribution

The foothill yellow-legged frog is found in or near rocky streams in a variety of habitats, including valley-foothill hardwood, valley-foothill riparian, coastal scrub, mixed chaparral, and wet meadows. Tadpoles are thought to graze on algae and diatoms, while adults eat both aquatic and terrestrial invertebrates. They are heavily predated by garter snakes. Adults bask on exposed streamside rock surfaces, diving into the stream when disturbed to take refuge under rocks or sediment. During cold weather, frogs seek shelter under submerged rocks or under rocks within a few feet of shore. Home ranges are thought to be very local, no more than 35 feet along a stream (CWHR, 2005). Breeding

occurs from mid-March to May commensurate with seasonal rains, after which females deposit eggs in clusters of 200 to 300 attached to submerged cobble, boulder or bedrock substrate within glides, runs and pools (EBRPD, 2007). Tadpoles take anywhere from 5 to 22 days to hatch (CWHR, 2005; EBRPD, 2007) and metamorphose in roughly three to four months.

The foothill yellow-legged frog occurs in most of northern California west of the Cascade crest, along western Sierra Nevada slopes south to Kern County, and in the Coast Ranges from the Oregon border south to the Transverse Mountains in Los Angeles County. Isolated populations are also known from the Central Valley floor in San Joaquin County and from the mountains of Los Angeles County.

Project Area Occurrence

Foothill yellow-legged frog is known from the upper reaches of Alameda Creek but suitable habitat is absent in the project area (CDFG, 2009; SFPUC, 2008). The nearest documented occurrence is in Alameda Creek 4.6 miles upstream from the San Antonio Pump Station (CDFG, 2009). Within the study area, an unnamed intermittent drainage northeast of the San Antonio Pump Station and perpendicular to Calaveras Road provides cool and shaded cascading pools, but water flow is not perennial and pools lose their connectivity during the dry season. No amphibians were observed in upper portions of this drainage, though Pacific chorus frog tadpoles were observed in shallow pools near and east of Calaveras Road, outside the project area.

2.3.4 Western Pond Turtle (*Actinemys marmorata*)

Status

Western pond turtle is a California species of special concern.

General Ecology and Distribution

Western pond turtles are commonly found in ponds, lakes, marshes, rivers, streams, and irrigation ditches with rocky or muddy substrates surrounded by aquatic vegetation. These watercourses usually are within woodlands, grasslands, and open forests, between sea level and 6,000-foot elevation. Turtles bask on logs or other objects when water temperatures are lower than air temperatures. Nests are located at upland sites, often up to 0.25 mile from an aquatic site (Jennings and Hayes, 1994; Stebbins, 2003; Zeiner et al., 1988-1990). General dispersal may occur throughout upland habitat.

Western pond turtles are uncommon and discontinuously distributed throughout California west of the Cascade-Sierran crest, with isolated populations in the Mojave River area and Andreas Canyon (Jennings and Hayes, 1994).

Project Area Occurrence

Western pond turtle is known from Alameda Creek and tributaries, and is presumed present at aquatic sites throughout the study area, potentially including pits within the SMP-24 and SMP-30 quarry areas. The nearest documented occurrences are from Alameda Creek at a distance of 1.1 miles south of the San Antonio Pump Station, and from a tributary to Vallecitos Creek at a distance of 1.2 miles northeast of SMP-24 (SFPUC, 2008). During reconnaissance surveys, this species was observed in San Antonio Creek at the base of Turner Dam. Within the project area, intermittent drainages, quarry pits, and upland areas provide potential pond turtle habitat.

2.3.5 Alameda Whipsnake (*Masticophis lateralis euryxanthus*)

Status

Alameda whipsnake is a federal and state threatened species.

General Ecology and Distribution

Alameda whipsnakes are dependent upon open chaparral, sage scrub, and coastal scrub. Core habitat most commonly occurs on east, southeast, south, and southwest facing slopes (Federal Register, 2000). However, telemetry data indicate that although core habitat is centered on shrub communities, they extensively utilize adjacent habitats including grassland, oak savanna, and occasionally oak-bay woodland (ESA, 2009a). Alameda whipsnakes use grassland habitats for periods of up to several weeks, with males using grassland habitats more frequently in the mating season and females using grassland habitats after mating occurs. Rock outcrops are an important feature of Alameda whipsnake habitat because they provide retreat opportunities and support lizard populations (USFWS, 2002; 2005).

While Alameda whipsnakes are regularly observed in nonscrub areas, the ultimate role of such habitat in the life history of this snake species is still emerging. While it is not fully understood how far or often Alameda whipsnakes venture away from scrub habitat, or whether such movements represent individuals that have become permanently separated from scrub habitat, recent studies indicate that snakes routinely move several miles farther from scrub habitat than previously described (Swaim, 2007).

Historically, Alameda whipsnakes were probably found in the coastal scrub and oak woodland communities of the East Bay in Contra Costa, Alameda, western San Joaquin, and northern Santa Clara Counties (USFWS, 2002). Currently, they are only found in the inner Coast Range in western and central Contra Costa and Alameda Counties (USFWS, 2002). Five isolated populations of Alameda whipsnake are now recognized within its historical range: Tilden–Briones, Oakland–Las Trampas, Hayward–Pleasanton Ridge, Sunol–Cedar Mountain, and Mt. Diablo–Black Hills (USFWS, 1997).

Project Area Occurrence

Alameda whipsnake is known from three occurrences in the La Costa Valley and Niles USGS 7.5-minute topographic quadrangles, which includes San Antonio Reservoir and Sunol Valley. All locations are sensitive and thus are suppressed data, though CDFG disclosed that the nearest occurrence is 5.0 miles south of the project area (Darlene McGriff, pers. comm., 2009). Documented habitat described for these occurrences is riparian woodland bordered by slopes vegetated with annual grasses, soft chaparral, and blue oak woodland, with numerous rock outcrops; chaparral, oak woodland, and grassland; and chaparral scrub. Sage scrub habitat is absent from the project area, but is present in small, discontinuous patches on the upper south and west-facing slopes east of Calaveras Road within the study area. Marginally suitable foraging and dispersal habitat is present within the project area in grasslands and ruderal habitat between Calaveras Road and Alameda Creek, but based on the distance from known occurrences, this species has a low likelihood of occurrence within the project area and much of the habitat within the proposed project area has recently been cleared and fenced for the NIT and Alameda Siphons projects and no longer provides foraging and dispersal habitat for this species.

2.3.6 Coast Horned Lizard (*Phrynosoma coronatum*)

Status

The coast horned lizard is a California species of special concern.

General Ecology and Distribution

The coast horned lizard occurs in the Sierra Nevada foothills from Butte County to Kern County and throughout the central and southern California coast. The species is found in several habitat types including areas with an exposed gravelly-sandy substrate containing scattered shrubs, clearings in riparian woodlands, dry uniform chamise chaparral, and annual grassland with scattered perennial seepweed or saltbush. Horned lizard populations reach maximum abundance in sandy loam areas and on alkali flats often dominated by iodine bush. Coast horned lizards utilize small mammal burrows or burrow into loose soils under surface objects during extended periods of inactivity or hibernation (Jennings and Hayes, 1994).

Project Area Occurrence

This species has not been documented in the Sunol Valley. The nearest reported occurrence is in eastern La Costa Valley at a distance of 4.8 miles east of the project area (SFPUC, 2008). Alkali areas with sandy loam soils and alkali flats are not present within the project area. Washes associated with Alameda Creek are characterized as large cobble beds with minimal areas of sand, though sand is accumulated or exposed at the foot of both wooden bridges crossing the creek. Sandy areas are absent within the project area, though a few small mammal burrows are present in area grasslands and surface debris is abundant along the access road traversing the ruderal area between the western rim of Pit F3-East and Pit F3-West. Based on the absence of suitable habitat, coast horned lizard has a low likelihood to occur within the project area.

2.3.7 Western Burrowing Owl (*Athene cunicularia*)

Status

The western burrowing owl is a California species of special concern.

General Ecology and Distribution

Western burrowing owls are relatively small, semicolonial owls, and are mostly residents of open dry grasslands and desert areas. They occupy burrows for both breeding and roosting. They use burrows excavated by ground squirrels and other small mammals and will use human-made burrows and cavities. Where the number and availability of natural burrows is limited, owls may occupy human-made burrows such as drainage culverts, cavities under piles of rubble, discarded pipe, and other tunnel-like structures (Shuford and Gardali, 2008). Burrowing owls hunt from perches and are opportunistic feeders. They consume arthropods, small mammals (e.g., meadow voles), birds, amphibians, and reptiles. Insects are often taken during the day, while small mammals are taken at night (Shuford and Gardali, 2008).

Project Area Occurrence

Burrowing owl is known from the northern slopes of San Antonio Reservoir, with the nearest occurrence being 1.1 miles east of SMP-24 (SFPUC, 2008). Potential habitat occurs adjacent to the project area within grassland foothills on the east side of Calaveras Road, but no owls and very few small mammal burrow complexes were observed during a focused survey of the 500-foot project buffer area. Grasslands within the project area are very compacted and ground squirrels were not observed in these areas. Abundant debris piles are present along an access road traversing the ruderal area between the western rim of Pit F3-East and the adjacent quarry pit, but few small mammal burrows and no burrowing owls or their sign were observed during the reconnaissance survey. Based on the absence of suitable habitat features identified during focused surveys, burrowing owl have a low likelihood of occurrence within, or within 500 feet of, the project area.

2.3.8 Fully-protected Birds and Birds of Prey

American peregrine falcon (*Falco peregrinus anatum*). American peregrine falcon is found in a variety of habitats and is one of the most widespread birds in the world, though U.S. populations plunged due to increased pesticide use from the 1950s to 1970s (White et al, 2002). Peregrine falcon forages in open areas, but historical cliff nesting has been adapted to include tall buildings in large cities.

Nesting sites are documented within five miles of the project area, though exact locations are suppressed due to the sensitivity of the species (CDFG, 2009). This species was not observed during field assessments, and the cliffs, tall buildings, high bridges, or specially-constructed towers that could provide potential nesting habitat are absent from the project area.

Golden Eagle (*Aquila chrysaetos*). Golden eagles nest in open areas on cliffs and in large trees, often constructing multiple nests in one breeding territory (Zeiner et al., 1988-1990). They prefer open habitats such as rolling grasslands, deserts, savannahs, and early successional forest and shrub habitats, with cliffs or large trees for nesting and cover (Zeiner et al., 1988-1990).

Nest locations are documented in oak woodland on the slopes above and to the southwest of Turner Dam, at a distance of 0.49 mile from the project area (SFPUC, 2009). Additional nests are documented east of San Antonio Reservoir, approximately 3.6 miles from the project area, and in hills west of Sunol Valley approximately 4.0 miles south of the project area. This species was not observed during field assessments and potential nesting habitat is available in large sycamore trees adjacent to open grassland in the vicinity of the southern project area. However, due to the ongoing disturbance adjacent to this area, nesting golden eagles are considered unlikely anywhere but in trees on the slopes to the east of Calaveras Road.

Short-Eared Owl (*Asio flammeus*). The short-eared owl is an open country bird that is seen most often at dawn and dusk. Short-eared owls usually nest on dry ground in depressions that are concealed by vegetation, sometimes nesting within burrows. Breeding is from early March through July with a typical clutch size of five to seven eggs. This owl is a widespread winter migrant with resident populations in portions of California (Shuford and Gardali, 2008). The short-eared owl is one of the most widely distributed owls in the world.

Short-eared owl nesting is documented from western La Costa Valley at a distance of 2.7 miles east of the project area. Very limited suitable habitat is present in the project area due to the extensive clearance of non-native grassland and ruderal areas during construction of other SFPUC projects.

White-tailed Kite (*Elanus leucurus*). White-tailed kites forage in open grasslands, meadows, farmlands, and emergent wetlands. They typically nest in oak woodlands or trees, especially along marsh or river margins, although they will use any suitable tree or shrub that is of moderate height. They are rarely found far from agricultural areas (Zeiner et al., 1988-1990).

No nest locations are documented within six miles of the project area, but suitable habitat is available along San Antonio Creek at the proposed pipeline crossing, and within the study area in oak woodlands east of Calaveras Road. This species was observed foraging east of Calaveras Road, north of the project area. However, potential foraging habitat has become increasingly limited within the project area due to site clearance for other SFPUC projects.

Bald Eagle (*Haliaeetus leucocephalus*). Bald eagles occupy a wide range of habitats, including woodlands, forests, grasslands, and wetlands. They winter throughout California near lakes, reservoirs, rivers, and some rangelands and coastal wetlands. Nesting is usually restricted to mountainous habitats near reservoirs, lakes, and rivers. Bald eagles usually nest in large coniferous trees within 1 mile of permanent water. They forage over large water bodies or rivers with easily approached snags and other perches (Zeiner et al., 1988-1990).

Bald eagle nesting is documented from Calaveras Reservoir approximately 6.0 miles southeast of the project area (SFPUC, 2008). Large quarry ponds in the project area could provide potential

foraging habitat if fish are present. However, the absence of documented occurrences in the area (CDFG, 2009), including San Antonio Reservoir, makes it unlikely that this species is nesting in the project vicinity. This species was not observed during field assessments.

Northern Harrier (*Circus cyaneus*). Northern harriers are found in a wide variety of habitats from Central Valley grasslands up to lodgepole pines and alpine meadow habitats. They are known to frequent meadows, grasslands, open rangelands, desert sinks, freshwater and saltwater emergent wetlands. Harriers are seldom found in wooded areas. Harriers nest on the ground, usually within patches of dense, tall vegetation in undisturbed areas (Shuford and Gardali, 2008).

No nesting locations are documented within six miles of the project area. Suitable nesting habitat is present in project area grasslands and ruderal vegetation, though the region's mining activity likely creates a significant noise disturbance such that nesting is avoided in the area. In addition, potential foraging habitat has become increasingly limited within the project area due to site clearance for other SFPUC projects.

2.3.9 Nesting Birds

Tricolored Blackbird (*Agelaius tricolor*). Tricolored blackbirds are a colonial species that nest in dense vegetation in and around freshwater wetlands. When nesting, tricolored blackbirds generally require freshwater wetland areas large enough to support colonies of 50 pairs or more. They prefer freshwater emergent wetlands with tall, dense cattails or tules for nesting, but will also breed in thickets of willow, blackberry, wild rose, or tall herbs. During the nonbreeding season, flocks are highly mobile and forage in grasslands, croplands, and wetlands (Shuford and Gardali, 2008).

Tricolored blackbirds are locally common throughout the Central Valley and breeding habitat is documented from the Sunol Valley (CDFG, 2009; SFPUC, 2008). During the reconnaissance survey, a large mixed flock of tricolored and red-winged blackbirds (*Agelaius phoeniceus*) numbering in the hundreds-to-thousands was observed flying back and forth over the project area, and a smaller flock of tricolored blackbirds numbering approximately 100 was observed foraging in the floodplain of Alameda Creek beneath the two wooden bridges; this pure flock was also observed flying back and forth over the quarry area. Breeding may occur in a large freshwater marsh west of Pit F4, which contains abundant cattails and measures roughly six acres in size, and may occur in another large freshwater marsh west of SMP-30 which measures roughly eight acres in size. Low-quality nesting habitat occurs in the project area in tall mustard (*Brassica* sp.), and other herbaceous vegetation, but tricolored blackbirds are not expected to nest in these areas when high-quality aquatic emergent habitat is present nearby.

Horned Lark (*Eremophila alpestris*). California horned larks are brown songbirds that form large flocks for foraging and roosting. They build grass-lined nests directly on the ground, in dry, open habitats with sparse vegetation. This species is a common to abundant resident songbird in a variety of open habitats. Range-wide, California horned larks breed in level or gently sloping shortgrass prairie, montane meadows, barren fields, opens coastal plains, fallow grain fields, row crops, and alkali flats.

Horned larks range across North America from Alaska and the Canadian arctic southward to southern Mexico. Within the project vicinity, nesting is documented from grasslands on the north slopes of San Antonio Reservoir. In the project area, limited areas of potentially suitable habitat is present in grasslands on the margins of access roads.

Loggerhead Shrike (*Lanius ludovicianus*). Loggerhead shrikes are a California semipermanent resident species that occurs in abundance in the Central Valley and central coast where shrub habitats and open woodlands are available. Shrikes generally forage on the fringes of open habitats where suitable hunting perches are available. This species typically hunts from dead trees, tall shrubs, utility wires and fences, impaling their prey on sharp twigs, thorns, or barbed wire.

Breeding is documented from the northern slopes of San Antonio Reservoir (SFPPUC, 2008). Shrike populations are generally known from wooded riparian corridors and grazed lands, with breeding often associated with blackberry and willows ranging in size from individual shrubs to dense thickets. Shrikes are common throughout California and are expected to occur in the project area along San Antonio Creek, along an intermittent drainage northwest of the San Antonio Pump Station, and along the southeast fringes of Pit F3-East where shrubby willows provide adequate cover and nesting sites. This species was observed during the reconnaissance survey.

2.3.10 Tule Elk (*Cervus elaphus nannodes*)

Status

Tule elk is currently protected under Senate Bill 722 (enacted in 1971), which prohibits the taking of tule elk until the statewide population exceeds 2000 statewide, or until suitable habitat can no longer be found. Additionally, federal protection is offered by P.L. 94-389, the Joint Resolution for Federal Participation in Preserving the Tule Elk Population in California (enacted 1976). This resolution provides for federal participation in preserving tule elk populations in California, and recognized that the species is rare.

General Ecology and Distribution

Tule elk are endemic to California, and nearly faced extinction in the last century due to settlement pressures. They have been reintroduced into various parts of California and at least eighteen herds are established. Tule elk use brush, scrub and herbaceous habitats throughout the year. Diet varies geographically and includes grasses, forbs, tender twigs and leaves of shrubs and trees, fungi, mast, and aquatic vegetation. Calving occurs in areas with available water and brushy vegetation, secluded from human impacts. Threats include predation by mountain lions and coyotes, illegal poaching by humans, and human interference (CDFG, 2005).

Project Area Occurrence

The San Antonio herd descends from a small group reintroduced to the area in the late 1970s. The herd was observed during reconnaissance surveys on hilltops east of Calaveras Road. Calaveras Road is fenced on both sides of the road at a height greater than three feet for the entire length of

the project area, and presumably for the length of the road. Tule elk are deterred by fencing greater than three feet in height, are sensitive to human disturbance and avoid areas near human activities (Ferrier and Roberts, 1973). Due to fencing and Tule elk's tendency to favor remote areas with scrub habitat, it is unlikely that Tule elk would be encountered in the project area.

2.3.11 San Francisco Dusky-footed Woodrat (*Neotoma fuscipes*)

Status

The San Francisco dusky-footed woodrat is a California species of special concern.

General Ecology and Distribution

San Francisco dusky-footed woodrat is common in the Coast Ranges and the interior of California in a variety of habitats including forests and shrubland, especially near water, and is generally absent in agricultural and grassland areas. Woodrats inhabit the dense forest understory but require multi-story habitat layers for foraging. The forest understory needs to be sufficiently open for shrubs, forbs, and grasses to persist (CWHR, 2005), as they feed on woody plants, fungi, graminoids, forbs, seeds, acorns, berries, fruits, nuts, flowers, shrubs and tree leaves. They build nests from woody debris, usually on the ground, but occasionally nest in tree hollows and rock piles.

Project Area Occurrence

Dusky-footed woodrat is known from the Sunol Valley, with a documented occurrence approximately 2 miles north of the project area along Alameda Creek, near the Western Star Nursery. Within the project area, the forest understory or dense scrub habitat required to support dusky-footed woodrat is absent. Marginally suitable habitat is present within the study area on the east side of Calaveras Road along riparian corridors associated with seasonal and intermittent creeks, and scat possibly belonging to woodrat was observed in a large oak tree hollow near San Antonio Creek east of Calaveras Road. This species is not expected to occur within the project area.

2.3.12 American Badger (*Taxidea taxus*)

Status

The American badger is a California species of special concern.

General Ecology and Distribution

Badgers range throughout the state except for the humid coastal forests of northwestern California in Del Norte County and the northwestern portion of Humboldt County (Williams, 1986). They occupy a diversity of California habitats, including grasslands, savannas, mountain meadows near

timberline, and deserts. The principal requirements seem to be sufficient food, friable soils, and relatively open, uncultivated ground; a minimum of 25 acres is required for persistence of an individual (CWHR, 2005). Their diet consists of small-to-medium-sized mammals including shrews, mice, voles, gophers, and ground squirrels, as well as terrestrial insects, invertebrates, lizards, snakes, small-to-medium-sized birds, and eggs.

Project Area Occurrence

Suitable habitat is absent in the project area. Grasslands and ruderal areas within the project area are heavily compacted, resulting in a low density of small mammal burrows; no ground squirrels were observed in these areas. Within the study area, on the east side of Calaveras Road, suitable habitat is available in the form of non-native annual grassland foothills but no badger dens were observed. Few ground squirrel complexes were observed during a focused survey for burrowing owl, but the area appears to support a moderate number of moles and gophers. Badgers are described from grassland hills on the north banks of San Antonio Reservoir, with the nearest occurring 1.0 mile east of SMP-24 (SFPUC, 2008). The absence of denning habitat and the low density of small mammal burrows make it unlikely that badger would be encountered in the project area.

2.3.13 San Joaquin Kit Fox (*Vulpes macrotis mutica*)

Status

The San Joaquin kit fox is federally listed as an endangered species and state listed as a threatened species.

General Ecology and Distribution

The San Joaquin kit fox is a permanent resident of arid grasslands and open scrubland, where friable soils are present. Dens are required year-round for reproduction, shelter, temperature regulation, and protection from predators (USFWS, 1998). Grasslands with friable soils are considered the principal habitat for denning, foraging, and dispersal, while open oak woodlands provide lower quality foraging and dispersal habitat. Kit foxes will use habitats that have been extensively modified by humans, including grasslands and scrublands with active oil fields, wind turbines, and agricultural matrices (USFWS, 1998).

San Joaquin kit foxes occur only in and around the Central Valley, inhabiting open habitat in the San Joaquin Valley and surrounding foothills. Kit fox population densities are greatest in the southern portion of their range; populations in the northern portion of their range are highly fragmented and sparsely distributed (Orloff et al., 1986). In the northern portion of its range, California ground squirrels are a chief component of the kit fox diet (Hall, 1983).

Project Area Occurrence

One kit fox occurrence has been documented in the Sunol Valley, between the Western Star Nursery and Alameda Creek approximately 2.0 miles northwest of Pit F3-East, where two adult

foxes were sighted along the Sunol Aqueduct access road in 2006 (CDFG, 2009). The next nearest occurrence with habitat connectivity is more than 16 miles east of the Sunol Valley. No ground squirrels and few small mammal burrows were observed in project area grasslands, and suitable denning habitat is absent from the project area due to graded and compacted ruderal and non-native annual grasslands that are naturalizing after use as commercial plant nursery grounds. The distance from other known occurrences and the minimal foraging opportunities available in the project area make it unlikely that kit fox would be encountered.

2.3.14 Sensitive Bat Species

Sensitive bat species known from the project vicinity include Yuma myotis, hoary bat, pallid bat and Townsend's big-eared bat (*Corynorhinus townsendii*) (CDFG, 2009; SFPUC, 2008). Yuma myotis is documented from hills approximately 2.5 miles west of the project area. Hoary bat, pallid bat, and Townsend's big-eared bat are known from the project vicinity, but the exact locations are suppressed due to the sensitivity of the species (CDFG, 2009). Quarry pits and the Alameda Creek channel provide potential foraging habitat for insectivorous bats, and potential roosting habitat is available in buildings, under bridges, and in tree hollows within the project area. The house and open barn near the proposed Staging Area 2 were inspected but no bats or bat sign were observed. The Calaveras Road bridge over San Antonio Creek and two wooden bridges crossing Alameda Creek near the southern project area were also inspected but no bats were observed. Large tree hollows are present in the project vicinity and could provide potential habitat for tree-roosting bats near the SMP-24 access gate at Calaveras Road, and west of the San Antonio Pump Station in the southern project area. These hollows were observed in large sycamore, oak, and cottonwood trees along San Antonio Creek, on slopes east of Calaveras Road, and in grasslands west of the proposed chemical facility. Although extensive site clearance has temporarily removed bat foraging habitat in much of the project area, the large trees in these areas, for the most part, have been preserved.

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CHAPTER 3

References, Communications, and Report Preparation

3.1 References

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3.2 List of Preparers

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APPENDIX A

List of Species Observed Within the Study Area

SPECIES OBSERVED WITHIN THE STUDY AREA

Common Name	Scientific Name	Habitat Type Where the Species was Observed
Fish		
Mosquito fish	<i>Gambusia</i>	Lacustrine
Minnows (unidentified)		San Antonio Creek
Amphibians		
American bullfrog	<i>Lithobates catesbeianus</i>	Lacustrine
Pacific chorus frog	<i>Pseudacris regilla</i>	Freshwater marsh Seasonal wetland
Western toad	<i>Bufo boreas</i>	Freshwater marsh Seasonal wetland
Reptiles		
Western rattlesnake	<i>Crotalus viridis helleri</i>	Riparian
Western fence lizard (coast range)	<i>Sceloporus occidentalis bocourtii</i>	Non-native annual grasslands Riparian
Birds		
Spotted sandpiper	<i>Actitis macularia</i>	Lacustrine (on exposed pump piping at the water surface)
Red-winged blackbird	<i>Agelaius phoeniceus</i>	Freshwater marsh Seasonal wetland Non-native annual grasslands Ruderal
Tricolored blackbird	<i>Agelaius tricolor</i>	Freshwater marsh Seasonal wetland Non-native annual grasslands Ruderal Alameda Creek channel
Mallard	<i>Anas platyrhynchos</i>	Lacustrine
Western scrub jay	<i>Aphelocoma californica</i>	Riparian
Oak titmouse	<i>Baeolophus inornatus</i>	Non-native annual grasslands (occasional oak trees)
Canada goose	<i>Branta canadensis</i>	Lacustrine
Red-tailed hawk	<i>Buteo jamaicensis</i>	Non-native annual grasslands (occasional oak trees)
Green heron	<i>Butorides virescens</i>	Lacustrine (water's edge)
California quail	<i>Callipepla californica</i>	Non-native annual grasslands (coyote brush)
Anna's hummingbird	<i>Calypte anna</i>	Riparian
Lesser goldfinch	<i>Carduelis psaltria</i>	Riparian
American goldfinch	<i>Carduelis tristis</i>	Riparian
House finch	<i>Carpodacus mexicanus</i>	Non-native annual grasslands
Turkey vulture	<i>Cathartes aura</i>	Non-native annual grasslands Developed (rubble piles)
Killdeer	<i>Charadrius vociferus</i>	Non-native annual grasslands/Ruderal Developed (roads)

SPECIES OBSERVED WITHIN THE STUDY AREA (Continued)

Common Name	Scientific Name	Habitat Type Where the Species was Observed
Birds (cont.)		
American crow	<i>Corvus brachyrhynchos</i>	Riparian Non-native annual grasslands
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	Non-native annual grasslands Ruderal
American kestrel	<i>Falco sparverius</i>	Non-native annual grasslands
American coot	<i>Fulica americana</i>	Lacustrine
Bullock's oriole	<i>Icterus bullockii</i>	Riparian
Belted kingfisher	<i>Megasceryle alcyon</i>	Lacustrine
Acorn woodpecker	<i>Melanerpes formicivorus</i>	Non-native annual grasslands (occasional oak trees)
Wild turkey	<i>Meleagris gallopavo</i>	Non-native annual grasslands
Song sparrow	<i>Melospiza melodia</i>	Freshwater marsh Ruderal
Black-crowned night heron	<i>Nycticorax nycticorax</i>	Lacustrine (water's edge)
Savannah sparrow	<i>Passerculus sandwichensis</i>	Freshwater marsh Ruderal
Brandt's cormorant	<i>Phalacrocorax penicillatus</i>	Lacustrine
Bushtit	<i>Psaltiriparus minimus</i>	Non-native annual grasslands (occasional oak trees)
Black phoebe	<i>Sayornis nigricans</i>	Riparian Freshwater marsh Lacustrine (water's edge)
Western bluebird	<i>Sialia mexicana</i>	Non-native annual grasslands
white-breasted nuthatch	<i>Sitta carolinensis</i>	Non-native annual grasslands (occasional oak trees)
Rough-winged swallow	<i>Stelgidopteryx serripennis</i>	Lacustrine (foraging over quarry pond)
European starling	<i>Sturnus vulgaris</i>	Non-native annual grasslands (occasional oak trees) Riparian
Tree swallow	<i>Tachycineta bicolor</i>	Lacustrine (foraging over quarry pond)
Bewick's wren	<i>Thryomanes bewickii</i>	Non-native annual grasslands (occasional oak trees) Riparian
Western kingbird	<i>Tyrannus verticalis</i>	Non-native annual grasslands (occasional oak trees)
Mammals		
Black-tailed jackrabbit	<i>Lepus californicus</i>	Non-native annual grasslands
California ground squirrel	<i>Spermophilus beecheyi</i>	Non-native annual grasslands
Tule elk	<i>Cervus elaphus nannodes</i>	Hilltops east of Calaveras Road

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APPENDIX B

USFWS Official List for the La Costa Valley
and Niles USGS 7.5-minute quadrangles
CNDDDB List for the La Costa Valley and Niles
USGS 7.5-minute quadrangles

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United States Department of the Interior
FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825



January 16, 2011

Document Number: 110116071457

Martha Lowe
Environmental Science ASsociates
350 Frank H. Ogawa Plaza
Suite 300
Oakland, CA 94612

Subject: Species List for SFPUC San Antonio Backup Pipeline Project

Dear: Ms. Lowe

We are sending this official species list in response to your January 16, 2011 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be April 16, 2011.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found at www.fws.gov/sacramento/es/branches.htm.

Endangered Species Division



U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
Federal Endangered and Threatened Species that Occur in
or may be Affected by Projects in the Counties and/or
U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 110116071457

Database Last Updated: April 29, 2010

Quad Lists

Listed Species

Invertebrates

- Branchinecta conservatio*
Conservancy fairy shrimp (E)
- Branchinecta lynchi*
vernal pool fairy shrimp (T)
- Euphydryas editha bayensis*
bay checkerspot butterfly (T)
- Lepidurus packardii*
Critical habitat, vernal pool tadpole shrimp (X)
vernal pool tadpole shrimp (E)

Fish

- Hypomesus transpacificus*
delta smelt (T)
- Oncorhynchus mykiss*
Central California Coastal steelhead (T) (NMFS)
Central Valley steelhead (T) (NMFS)
- Oncorhynchus tshawytscha*
Central Valley spring-run chinook salmon (T) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

- Ambystoma californiense*
California tiger salamander, central population (T)
- Rana draytonii*
California red-legged frog (T)
Critical habitat, California red-legged frog (X)

Reptiles

- Masticophis lateralis euryxanthus*
Alameda whipsnake [=striped racer] (T)
Critical habitat, Alameda whipsnake (X)

Birds

- Sternula antillarum* (=Sterna, =albifrons) browni
California least tern (E)

Mammals

Reithrodontomys raviventris
salt marsh harvest mouse (E)

Vulpes macrotis mutica
San Joaquin kit fox (E)

Plants

Lasthenia conjugens
Contra Costa goldfields (E)
Critical habitat, Contra Costa goldfields (X)

Proposed Species

Amphibians

Rana draytonii
Critical habitat, California red-legged frog (PX)

Quads Containing Listed, Proposed or Candidate Species:

NILES (446C)

LA COSTA VALLEY (446D)

County Lists

No county species lists requested.

Key:

- (E) *Endangered* - Listed as being in danger of extinction.
- (T) *Threatened* - Listed as likely to become endangered within the foreseeable future.
- (P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.
- (NMFS) Species under the Jurisdiction of the [National Oceanic & Atmospheric Administration Fisheries Service](#). Consult with them directly about these species.
- Critical Habitat* - Area essential to the conservation of a species.
- (PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.
- (C) *Candidate* - Candidate to become a proposed species.
- (V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
- (X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online [Inventory of Rare and Endangered Plants](#).

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our [Protocol](#) and [Recovery Permits](#) pages.

For plant surveys, we recommend using the [Guidelines for Conducting and Reporting Botanical Inventories](#). The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal [consultation](#) with the Service.

During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our [Map Room](#) page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. [More info](#)

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be April 16, 2011.

California Department of Fish and Game

Natural Diversity Database

Selected Elements by Scientific Name - Portrait

Data request for the La Costa Valley and Niles USGS 7.5 Minute Topographic Quadrangles

Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 <i>Accipiter cooperii</i> Cooper's hawk	ABNKC12040			G5	S3	
2 <i>Accipiter striatus</i> sharp-shinned hawk	ABNKC12020			G5	S3	
3 <i>Agelaius tricolor</i> tricolored blackbird	ABPBXB0020			G2G3	S2	SC
4 <i>Ambystoma californiense</i> California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	SC
5 <i>Antrozous pallidus</i> pallid bat	AMACC10010			G5	S3	SC
6 <i>Aquila chrysaetos</i> golden eagle	ABNKC22010			G5	S3	
7 <i>Campanula exigua</i> chaparral harebell	PDCAM020A0			G2	S2.2	1B.2
8 <i>Corynorhinus townsendii</i> Townsend's big-eared bat	AMACC08010			G4	S2S3	SC
9 <i>Emys marmorata</i> western pond turtle	ARAAD02030			G3G4	S3	SC
10 <i>Falco mexicanus</i> prairie falcon	ABNKD06090			G5	S3	
11 <i>Falco peregrinus anatum</i> American peregrine falcon	ABNKD06071	Delisted	unknown code...	G4T3	S2	
12 <i>Helianthella castanea</i> Diablo helianthella	PDAST4M020			G2	S2	1B.2
13 <i>Lasiurus cinereus</i> hoary bat	AMACC05030			G5	S4?	
14 <i>Linderiella occidentalis</i> California linderiella	ICBRA06010			G3	S2S3	
15 <i>Masticophis lateralis euryxanthus</i> Alameda whipsnake	ARADB21031	Threatened	Threatened	G4T2	S2	
16 <i>Oncorhynchus mykiss irideus</i> steelhead - central California coast DPS	AFCHA0209G	Threatened		G5T2Q	S2	
17 <i>Rana boylei</i> foothill yellow-legged frog	AAABH01050			G3	S2S3	SC
18 <i>Rana draytonii</i> California red-legged frog	AAABH01022	Threatened		G4T2T3	S2S3	SC
19 <i>Streptanthus albidus ssp. peramoenus</i> most beautiful jewel-flower	PDBRA2G012			G2T2	S2.2	1B.2
20 <i>Sycamore Alluvial Woodland</i>	CTT62100CA			G1	S1.1	

APPENDIX H

Wetland Delineation

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DEPARTMENT OF THE ARMY

SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS

1455 MARKET STREET

SAN FRANCISCO, CALIFORNIA 94103-1398

JUL 08 2011

Regulatory Division

SUBJECT: File Number 08-00207

Ms. YinLan Zhang
San Francisco Public Utilities Commission
Bureau of Environmental Management
1145 Market Street, Suite 500
San Francisco, CA 94103

Dear Ms. Zhang:

This letter is written in response to your submittal of November 23, 2009 requesting confirmation of the extent of Corps of Engineers jurisdiction at San Antonio Backup Pipeline Project site, near Sunol, Alameda County, California.

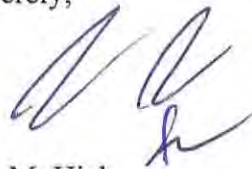
Enclosed are maps showing the extent and location of Corps of Engineers jurisdiction, entitled "USACE File # 08-00207S, San Francisco Public Utilities Commission, San Antonio Backup Pipeline" in 7 sheets, dated June 14, 2010. We have based this jurisdictional delineation on the current conditions on the site as verified during a site visit performed by our staff on February 27, 2008. A change in those conditions may also change the extent of our jurisdiction. This jurisdictional delineation will expire in five years from the date of this letter. However, if there has been a change in circumstances that affects the extent of Corps jurisdiction, a revision may be completed before that date.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; March 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal" form (NAO-RFA). If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA form within sixty (60) days of the date of the NAO-RFA.

Should you have any questions regarding this matter, please call Bob Smith of our Regulatory Division at (415) 503-6792. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter. If you would like to provide

comments on our permit review process, please complete the Customer Survey Form available online at <http://per2.nwp.usace.army.mil/survey.html>.

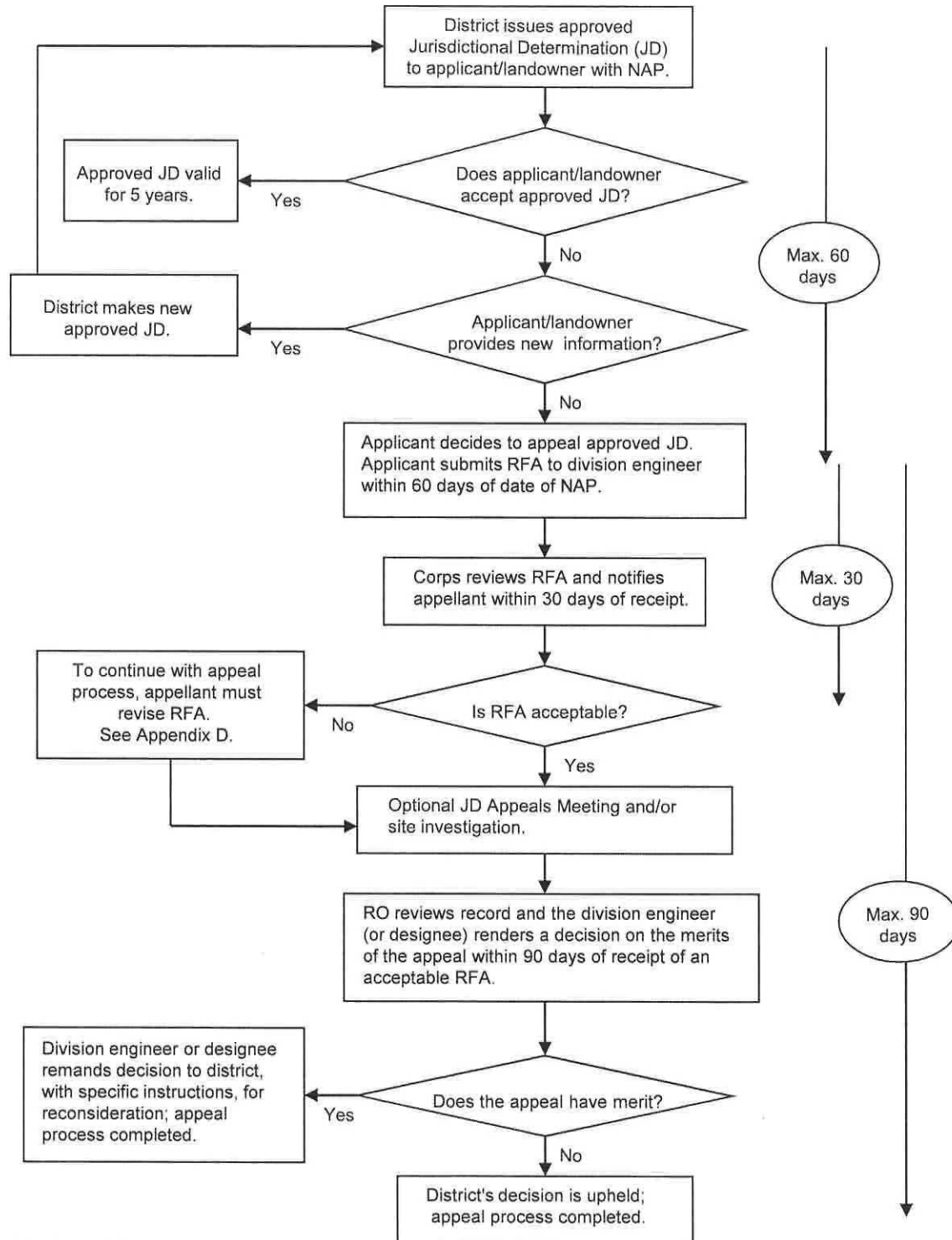
Sincerely,

A handwritten signature in blue ink, appearing to read 'J. Hicks', is written over the typed name.

Jane M. Hicks
Chief, Regulatory Division

Enclosures

Administrative Appeal Process for Approved Jurisdictional Determinations



Appendix C

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: SFPUC		File Number: 2008-00207S	Date: 6/18/10
Attached is:			See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A	
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B	
	PERMIT DENIAL	C	
X	APPROVED JURISDICTIONAL DETERMINATION	D	
	PRELIMINARY JURISDICTIONAL DETERMINATION	E	

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at <http://usace.army.mil/inet/functions/cw/cecwo/reg> or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. The district engineer must receive your objections within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. The division engineer must receive this form within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. The division engineer must receive this form within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. The division engineer must receive this form within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Mr. Cameron Johnson
Chief, South Branch, Regulatory Division
U.S. Army Corps of Engineers, San Francisco District
1455 Market Street, San Francisco, CA 94103-1398

Tel.: (415) 503-6773 Fax: (415) 503-6690

If you only have questions regarding the appeal process you may also contact:

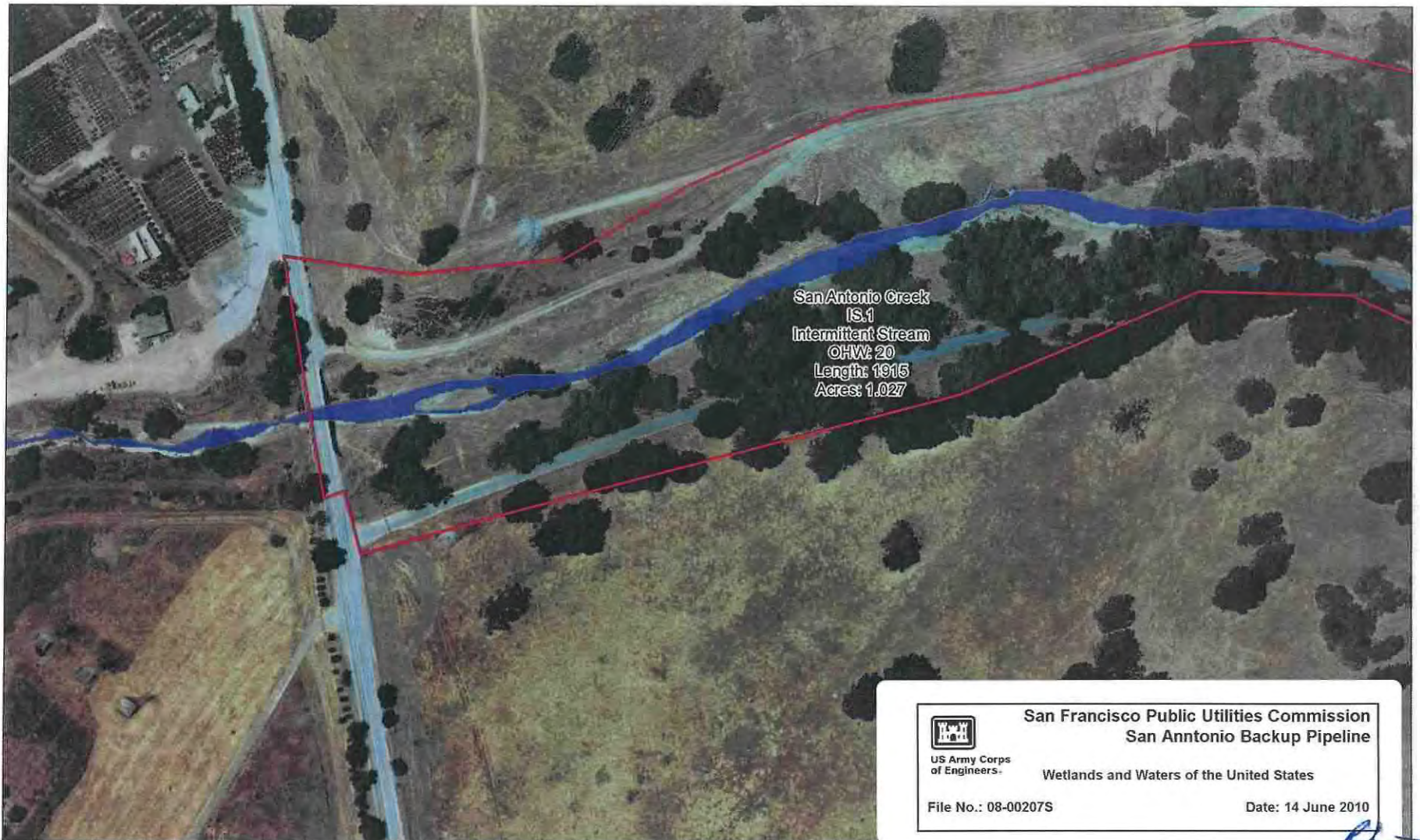
Mr. Tom Cavanaugh, Appeal Review Officer
U.S. Army Corps of Engineers, South Pacific Division
1455 Market Street, Attn: CESPD-PDS-O
San Francisco, CA 94103-1399
Tel. (415)503-6574 FAX (415)503-6646

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.

Date:

Telephone number:



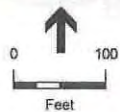
US Army Corps
of Engineers

San Francisco Public Utilities Commission
San Antonio Backup Pipeline

Wetlands and Waters of the United States

File No.: 08-00207S

Date: 14 June 2010



○ Data Points □ Study Area	Waters of the U.S. □ Ephemeral Stream □ Intermittent Stream □ Open Water	□ Wetland Tributary □ Freshwater Marsh □ Seasonal Wetland



Appendix G

SFPUC San Antonio Backup Pipeline Project

**Delineation of Waters
of the U.S.: Map 1 of 3**

For contiguous features see adjacent maps for feature information

Map scale: 1:2400

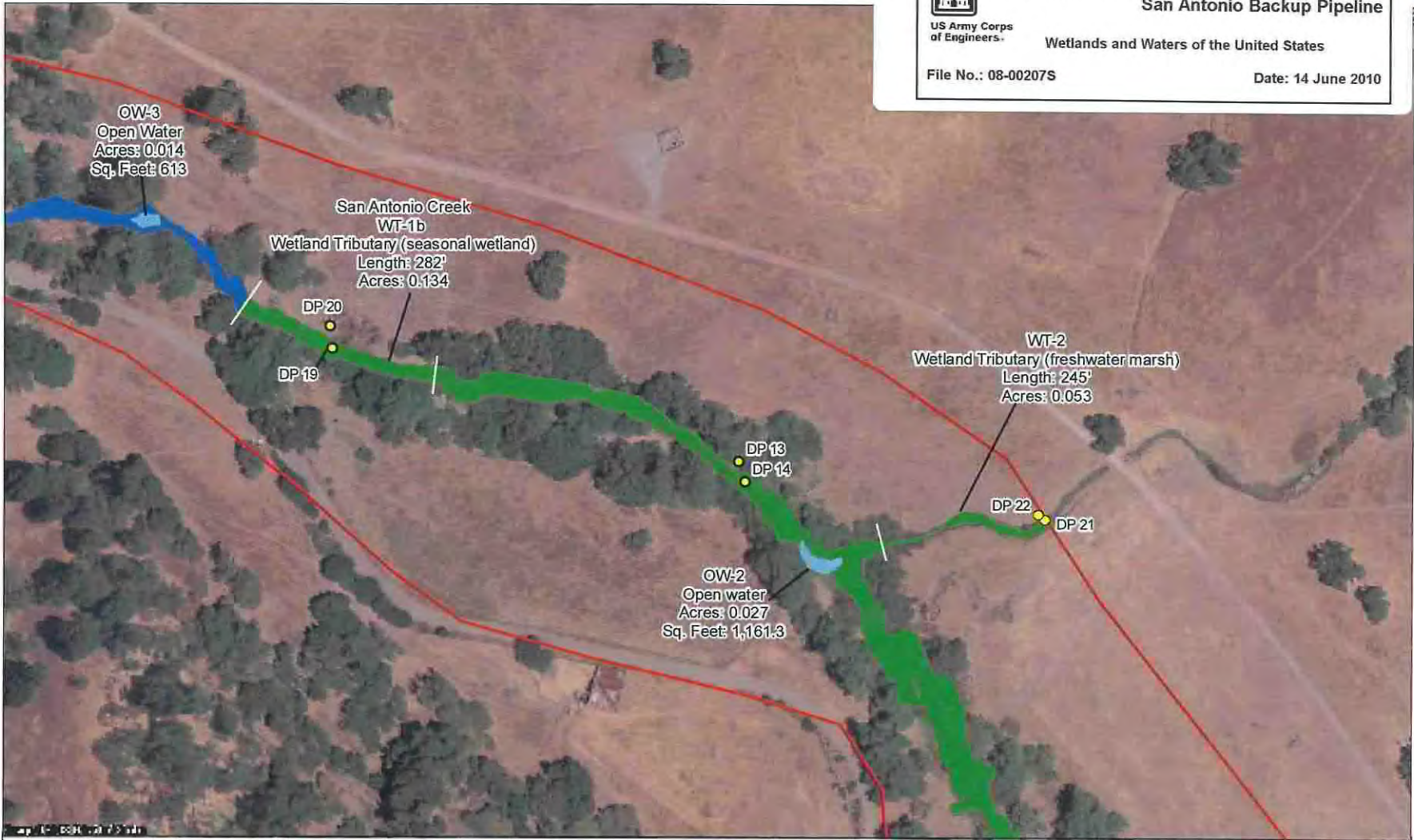
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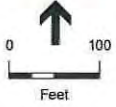
*Revised
SFPUC
6/15/10*

Handwritten:
 08/06/10
 15/10



San Francisco Public Utilities Commission
San Antonio Backup Pipeline
 US Army Corps of Engineers
 Wetlands and Waters of the United States
 File No.: 08-00207S
 Date: 14 June 2010





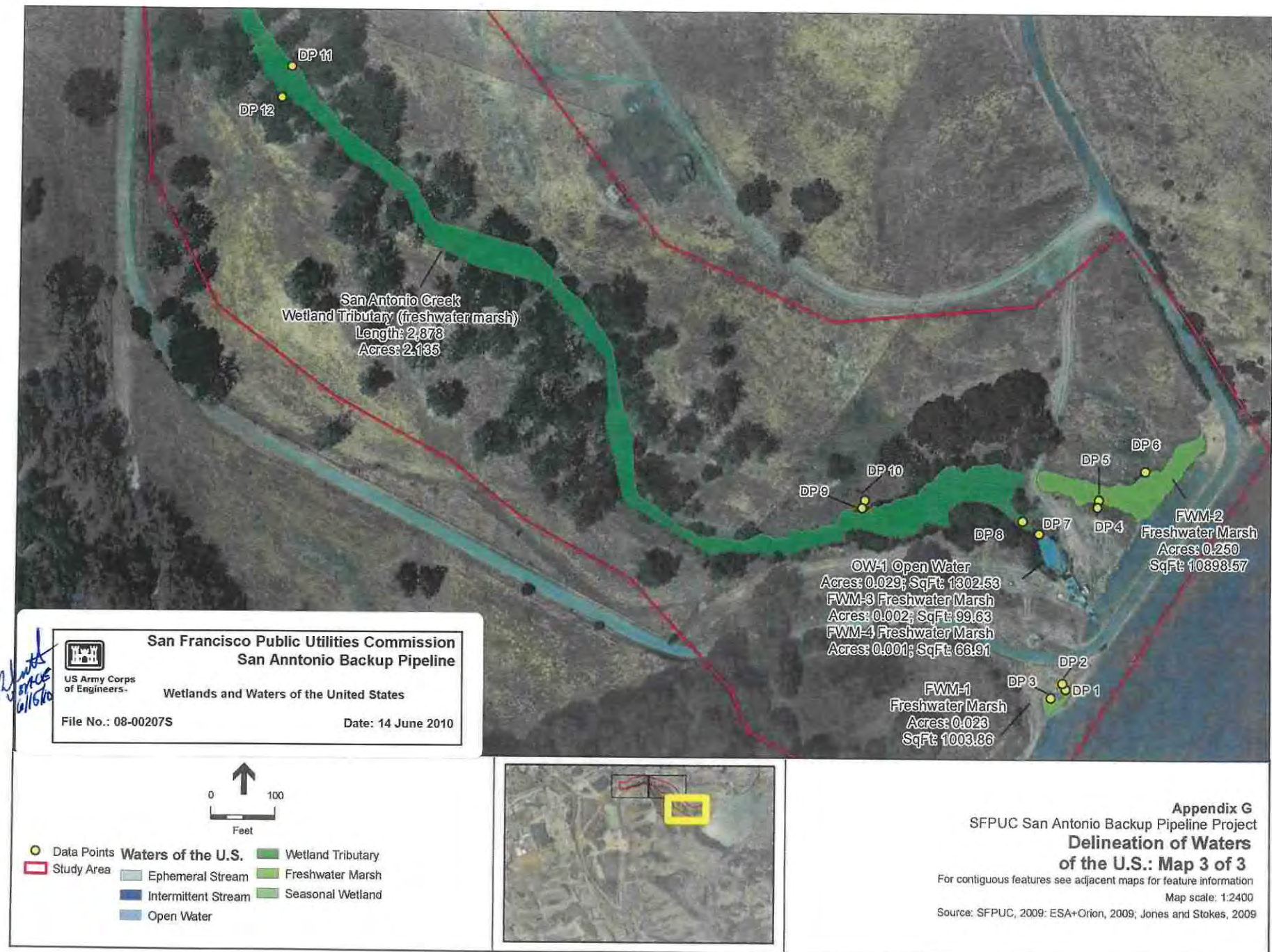
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Feet

Waters of the U.S.

Data Points	Open Water
Study Area	Wetland Tributary
Intermittent Stream	Freshwater Marsh
	Seasonal Wetland



Appendix G
 SFPUC San Antonio Backup Pipeline Project
Delineation of Waters of the U.S.: Map 2 of 3
 For contiguous features see adjacent maps for feature information
 Map scale: 1:2400
 Source: SFPUC, 2009; ESA+Orion, 2010; Jones and Stokes, 2009





San Francisco Public Utilities Commission
San Antonio Backup Pipeline

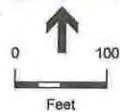
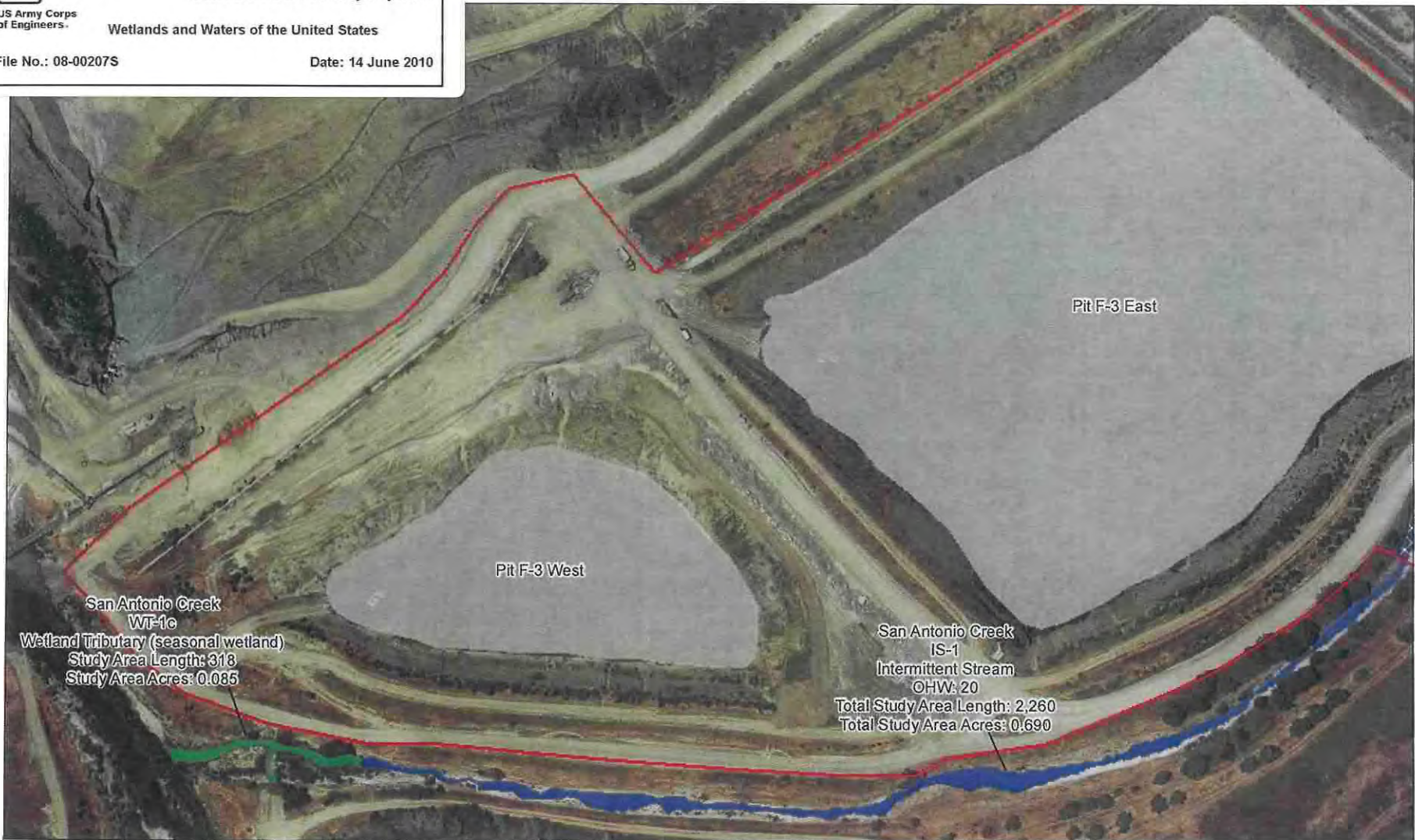
US Army Corps
of Engineers

Wetlands and Waters of the United States

File No.: 08-00207S

Date: 14 June 2010

*about
space
4/10/10*



- Data Points
- Project Footprint

Waters of the U.S.

- Ephemeral Stream
- Intermittent Stream
- Open Water

- Wetland Tributary
- Freshwater Marsh
- Seasonal Wetland

Not Corps jurisdictional

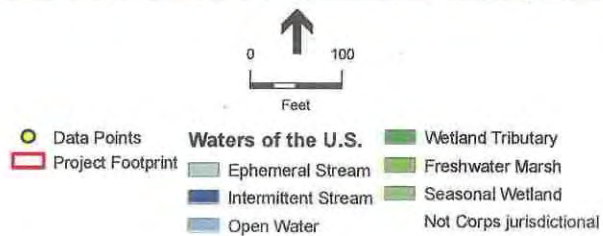
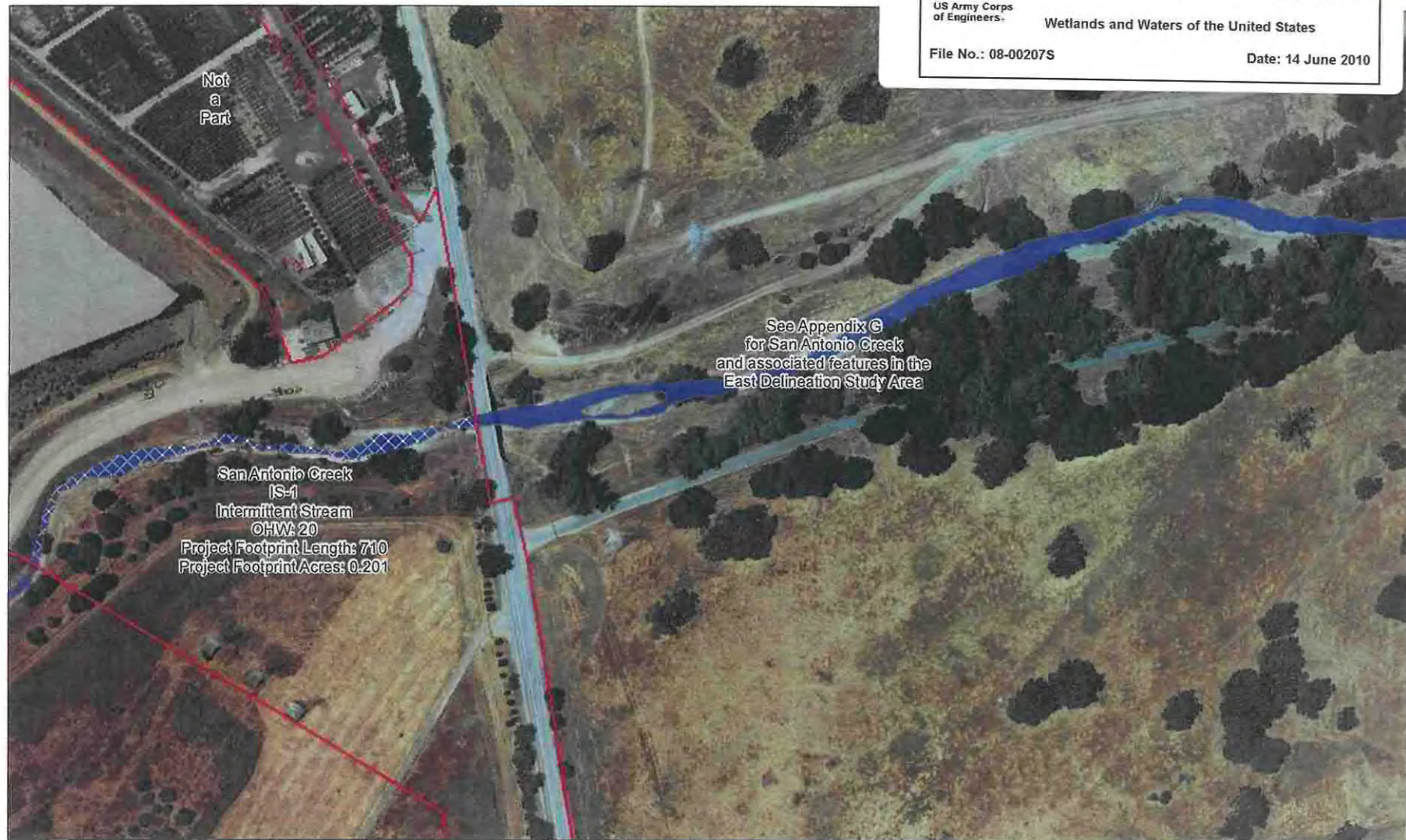


Appendix A
SFPUC San Antonio Backup Pipeline Project
Delineation of Waters
of the U.S.: Map 1 of 4

Waters overlaid with white crosshatching are within the Project Footprint
For contiguous features see adjacent maps for feature information

Map scale: 1:2400

Source: SFPUC, 2009; ESA+Orion, 2009; Jones and Stokes, 2009



Appendix A SFPUC San Antonio Backup Pipeline Project Delineation of Waters of the U.S.: Map 2 of 4

Waters overlaid with white crosshatching are within the Project Footprint
For contiguous features see adjacent maps for feature information

Map scale: 1:2400

Source: SFPUC, 2009; ESA+Orion, 2009; Jones and Stokes, 2009

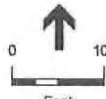
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P3500
6/16/10*



San Francisco Public Utilities Commission
San Antonio Backup Pipeline
 US Army Corps of Engineers
 Wetlands and Waters of the United States
 File No.: 08-00207S
 Date: 14 June 2010



H-13



0 100
Feet

● Data Points
 ■ Project Footprint

Waters of the U.S.
 ■ Ephemeral Stream
 ■ Intermittent Stream
 ■ Open Water

■ Wetland Tributary
 ■ Freshwater Marsh
 ■ Seasonal Wetland
 ■ Not Corps jurisdictional



Appendix A
SFPUC San Antonio Backup Pipeline Project
Delineation of Waters
of the U.S.: Map 3 of 4

Waters overlaid with white crosshatching are within the Project Footprint
 For contiguous features see adjacent maps for feature information
 Map scale: 1:2400
 Source: SFPUC, 2009; ESA+Orion, 2009; Jones and Stokes, 2009

Not a part of
Project Footprint
but included within
SABPL Delineation Study Area

All features on this map were previously delineated and
verified as not jurisdictional by the Corps, 02/2009

DP 15

DP 16



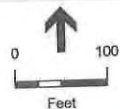
US Army Corps
of Engineers

San Francisco Public Utilities Commission San Antonio Backup Pipeline

Wetlands and Waters of the United States

File No.: 08-00207S

Date: 14 June 2010



- Data Points
- Project Footprint

Waters of the U.S.

- Ephemeral Stream
- Intermittent Stream
- Open Water

Wetland Tributary

- Freshwater Marsh
- Seasonal Wetland
- Not Corps jurisdictional



Appendix A SFPUC San Antonio Backup Pipeline Project Delineation of Waters of the U.S.: Map 4 of 4

Waters overlaid with white crosshatching are within the Project Footprint
For contiguous features see adjacent maps for feature information

Map scale: 1:2400

Source: SFPUC, 2009; ESA+Orion, 2009; Jones and Stokes, 2009

SAN FRANCISCO PUBLIC UTILITIES COMMISSION SAN ANTONIO BACKUP PIPELINE PROJECT

Final Delineation of Waters of the United States,
Alameda County, California

Prepared for
San Francisco Public Utilities Commission

November 2009



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SAN FRANCISCO PUBLIC UTILITIES COMMISSION SAN ANTONIO BACKUP PIPELINE PROJECT

Final Delineation of Waters of the United States,
Alameda County, California

Prepared for
San Francisco Public Utilities Commission

November 2009

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Los Angeles

Petaluma

Portland

Sacramento

San Diego

San Francisco

Seattle

Tampa

Woodland Hills

206166.04

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ACRONYMS AND ABBREVIATIONS USED IN THIS DOCUMENT

Bay Area	San Francisco Bay Area
CCSF	City and County of San Francisco
CFR	Code of Federal Regulations
CWA	Clean Water Act
EDSA	East Delineation Study Area
EPA	United States Environmental Protection Agency
FAC	Facultative plant species
FACU	Facultative upland plant species
FACW	Facultative wetland plant species
GIS	Geographic Information System
GPS	Global Positioning System
NI	No wetland indicator assigned (for plants)
NRPW	Non-relatively permanent waters
OBL	Obligate wetland plant species
OHWM	Ordinary high water mark
NWI	National Wetlands Inventory
RPW	Relatively permanent waters
SAPL	San Antonio Pipeline
SABPL	San Antonio Backup Pipeline
SF District	San Francisco District of the Army Corps of Engineers
SFPUC	San Francisco Public Utilities Commission
SMP	Surface Mining Permit (e.g., SMP-24)
SWANCC	Solid Waste Agency of Northern Cook County
TNW	Traditionally navigable waters
UPL	Obligate upland plant species
Corps	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service
WRCC	Western Regional Climate Center

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CHAPTER 1.0

Introduction

1.1 Objective

This report documents the extent of jurisdictional waters of the United States, including wetlands and other waters, that occur within the San Francisco Public Utilities Commission's (SFPUC) proposed San Antonio Backup Pipeline (SABPL) Project in the Sunol Valley, Alameda County, California. The purpose of this document is to identify features under jurisdiction of the U.S. Army Corps of Engineers (Corps) and to provide the background information necessary to support applications for wetland permitting required to carry out the proposed project. The wetland delineation process involves determining the boundaries between wetlands and surrounding uplands through the investigation of the three parameters that define a wetland: vegetation, soils, and hydrology.

1.2 Summary of Results

ESA+Orion staff conducted a formal wetland delineation of the SABPL project footprint and immediately adjacent areas, as well as the reach of San Antonio Creek between Turner Dam and Calaveras Road¹, on March 16-18 and April 13, 2009. Further biological resources investigations, including wetland assessment, were conducted by ESA staff on April 21 and May 4, 2009. The field delineation documented all jurisdictional wetlands and other waters of the U.S. within and immediately adjacent to the project footprint. Results were verified in the field on November 5, 2009 by Bob Smith of the Corps. Totals for area and linear feet of Waters of the U.S. within the SABPL Delineation Study Area are as follows: 0.912 acre (39,738.73 square feet) of ephemeral and intermittent stream, open water, seasonal wetland, freshwater marsh, and wetland tributary (which includes seasonal wetlands) and 3,308 linear feet of intermittent and ephemeral stream and wetland tributary. Totals for Waters within the project footprint only are: 0.223 acre (10,025.98 square feet) of ephemeral and intermittent stream, seasonal wetland, and freshwater marsh and 890 linear feet of ephemeral and intermittent stream. A detailed summary of all jurisdictional features documented within the SABPL Delineation Study Area is presented in Table 4-1, located in Chapter 4 of this report. Delineation maps are presented in Appendix A.

¹ The wetland delineation study area is comprised of two parts: 1) the SABPL Delineation Study Area, which includes the Project footprint and immediately adjacent areas, and 2) the reach of San Antonio Creek between Calaveras Road and Turner Dam, which is referred to in this document as the East Delineation Study Area. The wetland delineation study area is shown in Figures 2-1, 4-1, and C.2.

1.3 Responsible Parties

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SFPUC Project Management Bureau
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1.4 Project Description

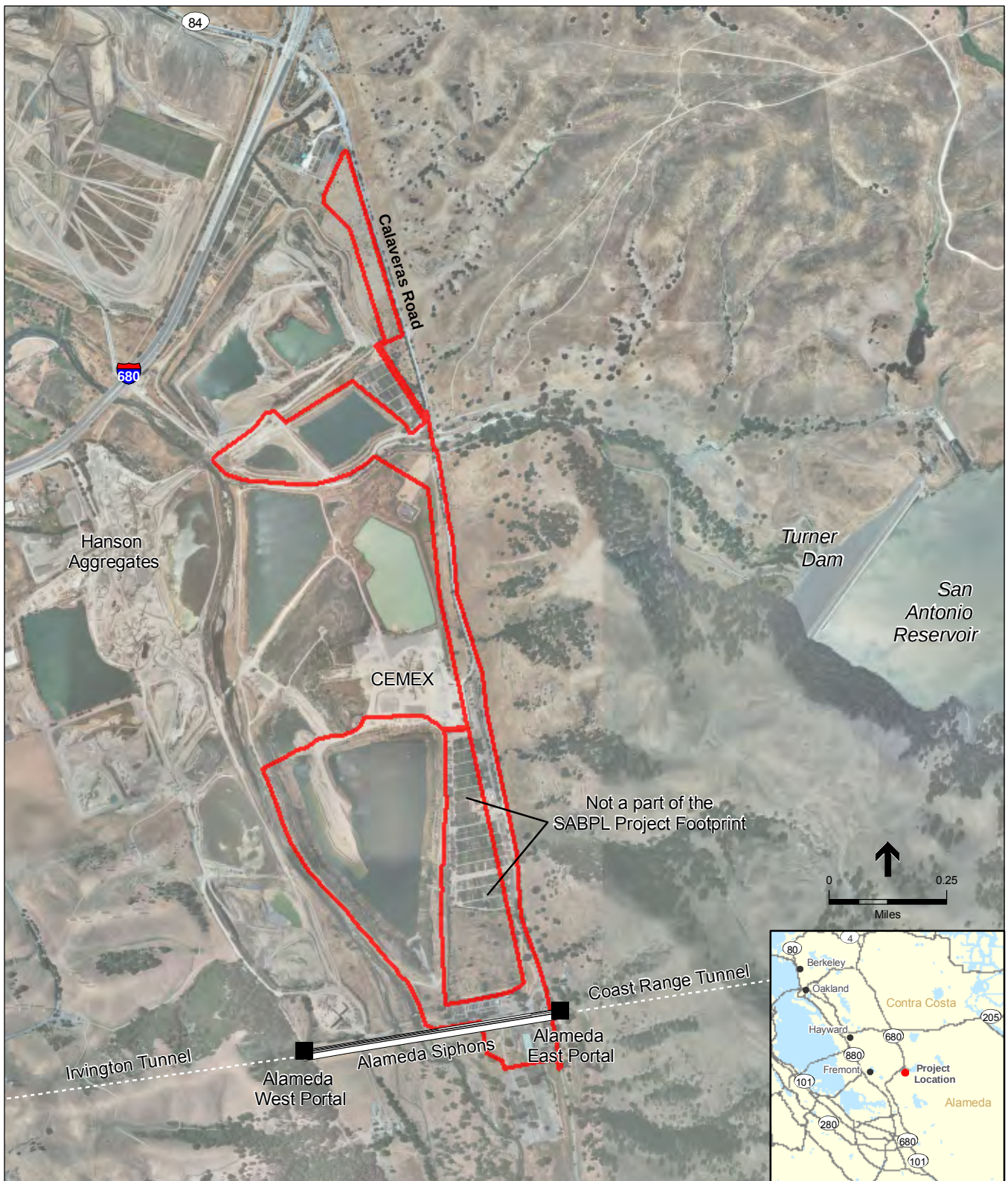
The SABPL project would include the following components:

- San Antonio Backup Pipeline;
- Discharge Valve Vault and Electrical Control Building near the SMP-24 Quarry Pit;
- New Chemical Facility near San Antonio Pump Station; and
- Other Related and Auxiliary Improvements.

The SABPL project is located in an unincorporated area of Alameda County, south of the intersection of Interstate 680 (I-680) and Highway 84 along Calaveras Road. Project construction would occur on lands owned by the City and County of San Francisco (CCSF) and managed by the SFPUC within the Sunol Valley and the Alameda watershed. The nearest community is the town of Sunol, approximately two miles north of the project site. The general project area extends roughly one and one-half miles from the San Antonio Pump Station to the Hanson Aggregates quarry (Surface Mining Permit 24 or SMP-24), which is approximately three-quarters of a mile south of the intersection of I-680 and Highway 84. **Figure 1-1** shows the project location and regional context.

The proposed project would improve the reliability of regional water system operations with respect to two existing facilities in the Sunol Valley—the San Antonio Pipeline (SAPL) and the San Antonio Pump Station Chemical Facility. **Figure 1-2** depicts the locations of proposed facilities and the project footprint.

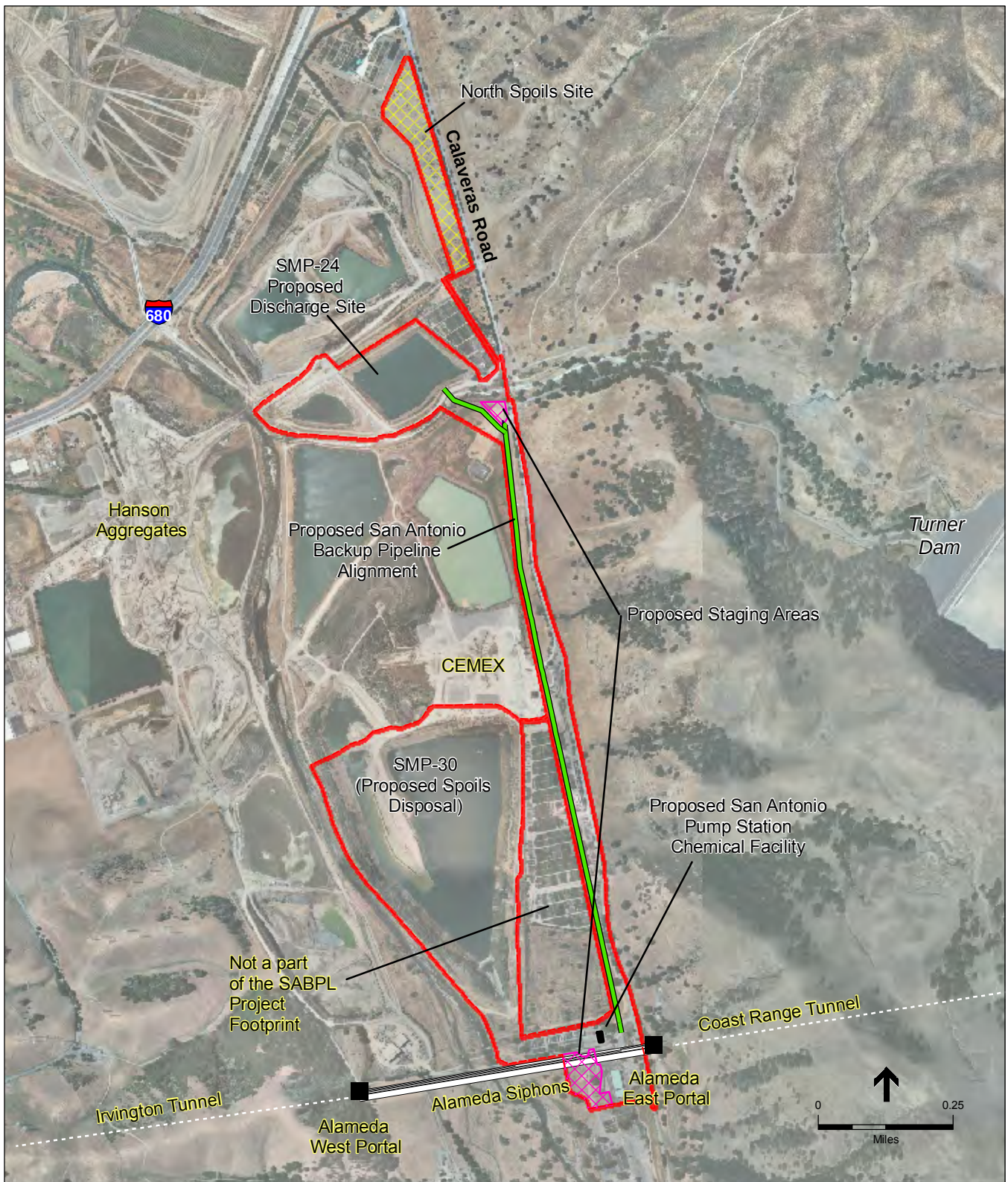
The proposed project includes installation of approximately 7,000 feet (1.3 miles) of pipeline from Alameda Siphon No. 3 at the San Antonio Pump Station along the west side of Calaveras Road, beneath the San Antonio Creek channel, to the lip of Pit F3-East within the SMP-24 quarry area. The proposed project would route discharges of quality-impaired Hetch Hetchy water to Pit F3-East within the SMP-24 quarry area. A stub consisting of a 20-foot-long section of pipe would be installed immediately west of Calaveras Road and south of San Antonio Creek to provide a potential future connection point for a new pipeline segment to the base of Turner Dam. Implementation of a new pipeline segment to Turner Dam was originally proposed as part of the



SOURCE: ESA+Orion, 2009

SFPUC San Antonio Backup Pipeline Project . 206166.04

Figure 1-1
SABPL Project Location



SOURCE: ESA+Orion, 2009

SFPUC San Antonio Backup Pipeline Project . 206166.04

Figure 1-2
SABPL Proposed Project Elements

project, but has since been deleted. This delineation, however, includes the data collected for this deleted portion of the project (known as the East Delineation Study Area in this report). If the SFPUC were to contemplate such a pipeline and decide to pursue it as a project in the future, the project would undergo evaluation under CEQA at that time. A new Discharge Valve Vault and Electrical Control Building would be installed south of San Antonio Creek approximately 200 feet before the terminus of the SABPL. The Discharge Valve Vault would be an approximately 20-foot-wide, 35-foot-long, and 18-foot-deep concrete vault containing a 54-inch-diameter control valve. The Discharge Valve Vault would be supported by an adjacent Electrical Control Building connected to existing overhead PG&E electrical lines and housing an uninterruptible power supply (UPS), an air conditioning unit for the UPS, a chlorine analyzer, and water quality sensors and transmitters to monitor dissolved oxygen, pH, and temperature. The Electrical Control Building would be approximately 14.5 feet long, 14.5 feet wide, and 15.5 feet tall. A 1,600-square-foot asphalt parking area would be constructed adjacent to the Electrical Control Building. A 50-foot-wide, 60-foot-long, and 8- to 10-foot-high perimeter security fence would surround the building and parking area. Exterior lighting would be permanently installed on the building. The Electrical Control Building would be accessed by an existing unpaved access road to the site that could require some grading. The discharge point of the SABPL would be at the edge of the F3-East quarry pit wall. Riprap or other erosion protection may be needed at the discharge point to armor the pit wall and protect against erosion and instability. The proposed project would be capable of discharging up to 313 mgd (484 cubic feet per second [cfs]) of Hetch Hetchy flow to the SMP-24 F3-East quarry pit.² The SABPL project includes construction of a new chemical facility at the San Antonio Pump Station. The proposed San Antonio Pump Station Chemical Facility would include a chemical storage and containment area, a chemical loading area, and an electrical control room. Auxiliary facilities that would be constructed as part of the SABPL include three air gap systems and a cathodic protection system.

² SMP-24 property is currently leased to Hanson Aggregates for gravel mining. As part of dewatering operations performed to facilitate mining, Hanson Aggregates pumps groundwater that seeps into the F3-East quarry pit to Alameda Creek, resulting in discharges ranging from 1.44 mgd to 6.6 mgd. Discharges from the quarry pit to Alameda Creek are covered under RWQCB Order No. R2-2008-0011, NPDES General Permit No. CAG982001 (Aggregate Mining, Sand Washing, and Sand Offloading General Permit).

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CHAPTER 2.0

Setting

2.1 Project Site

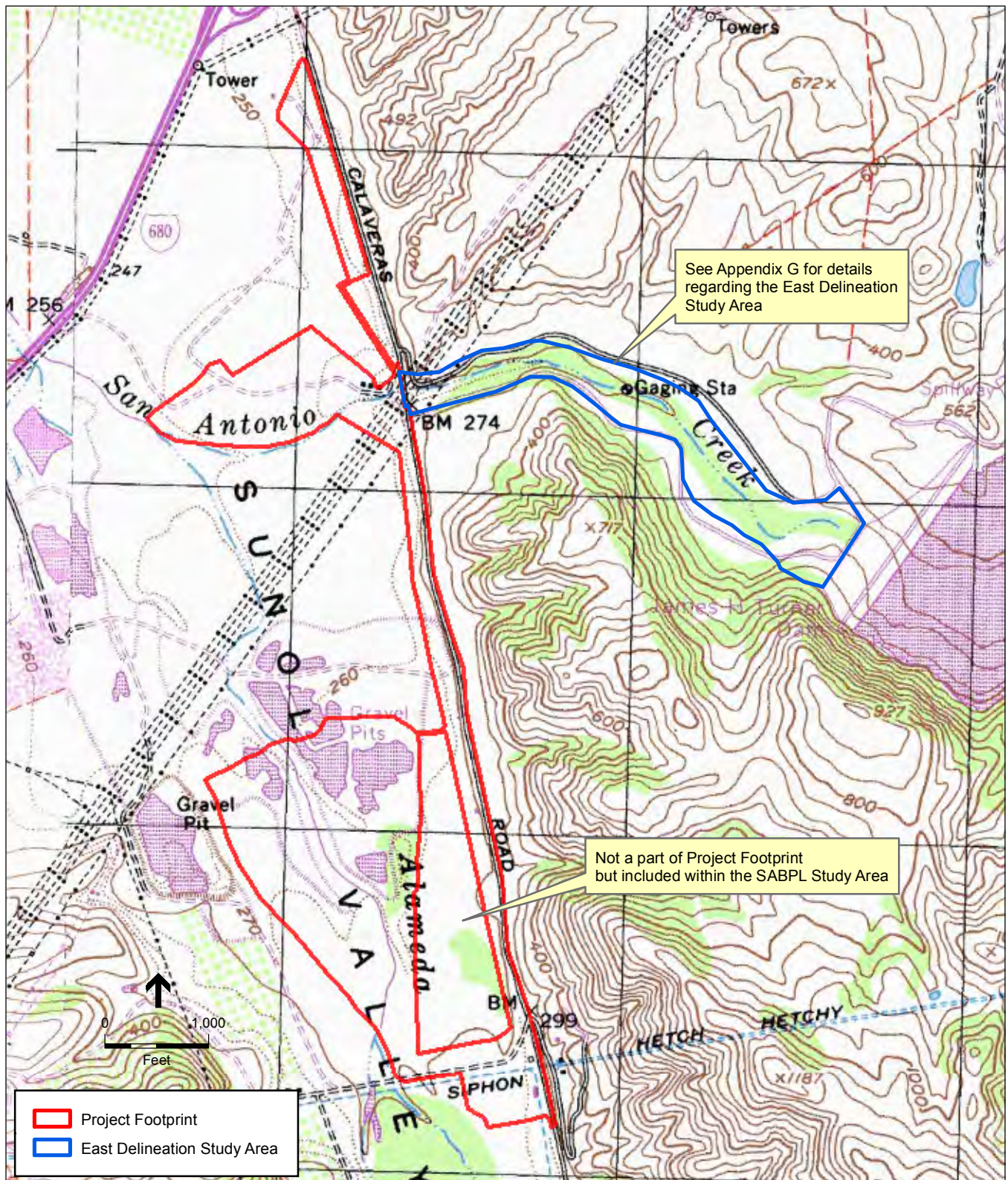
The SABPL Project site is situated in the Sunol Valley, along Calaveras Road south of Highway 680 (see Figure 1-1).

For the purposes of this delineation, the wetland delineation study area is comprised of two parts: 1) the SABPL Delineation Study Area, which includes the project footprint (see Figures 1-1 and 1-2) and immediately adjacent areas and 2) the reach of San Antonio Creek between Calaveras Road and Turner Dam, which is referred to in this document as the East Delineation Study Area. The wetland delineation study area is shown in **Figures 2-1, 4-1, and C.2**. The environmental setting and results discussions for the SABPL Delineation Study Area are presented below and in Section 4, *Results*. The environmental setting and results discussions for the East Delineation Study Area are presented in **Appendix G**.

A previous wetland delineation in support of the SFPUC Alameda Siphons Seismic Reliability Upgrade Project and the SFPUC New Irvington Tunnel Project was conducted and verified by the Corps in February 2009. This delineation included the northern spoils area and SMP-30 and overlapped in several other portions of the current delineation. Under the current delineation, only features that were not mapped or appeared significantly different from the previous delineation were investigated. Most of the features investigated under the previous delineation were not found to be jurisdictional. These are shown on the delineation maps in Appendix A, but not discussed as part of the results of this investigation.

All of the wetland delineation study area is managed by the SFPUC. Land uses in the vicinity of the study area include cattle ranching, watershed management, aggregate mining, commercial nursery operations, and SFPUC water infrastructure management and operations.

Land use within the SABPL Delineation Study Area in the Sunol Valley is largely aggregate mining, with some areas committed to Hetch Hetchy infrastructure. The former commercial nurseries within SABPL Delineation Study Area have largely been closed and vacated although two still are in operation. The surface topography of nearly all of the study area in Sunol Valley has been altered and the original natural communities removed. The vegetation remaining in this portion of the Sunol Valley is primarily ruderal, or disturbed, habitats, include non-native grasslands, and some areas with planted vegetation.



SOURCE: SFPUC, 2009; ESA+Orion, 2009

SFPUC San Antonio Backup Pipeline Project . 206166.04

Figure 2-1
SABPL Wetland Delineation Study Areas

2.2 Climate and Topography

The overall California climate is characterized as Mediterranean, with the majority of precipitation occurring as rain in the winter months, and generally mild temperatures year round. The annual average rainfall in the study area is 19.99 inches at Calaveras Reservoir, the closest weather station providing historical climatic averages (WRCC, 2009). According to the Livermore, California WETS³ station data the median length of the growing season in the study area is approximately 365 days (NRCS, 2002). Elevation in the project area ranges from about 250 ft at the confluence of San Antonio Creek and Alameda Creek to 300 ft at the base of Turner Dam.

2.3 Soils

The National Resources Conservation Service Web Soil Survey (USDA, 2009) was consulted to determine the soil types occurring within the project area for this delineation. A map depicting the soils within the wetland delineation study area is presented in Appendix D. A brief description of each mapped soil series within the SABPL Delineation Study Area follows. According to the Alameda County soil survey (USDA, 2009), Riverwash is considered a hydric soil, in addition, this soil type may be considered hydric if wetland vegetation and hydrology are also present (Corps, 2008). None of the other soil types are considered hydric but the Yolo loam series contains unnamed inclusions that occur in depressions and may be considered hydric (USDA, 2009).

Mapped soils within the SABPL Delineation Study Area:

- Danville silty clay loam, 3-10% slopes
- Livermore gravelly loam
- Livermore very gravelly coarse sandy loam
- Yolo loam over gravel 0-3% slopes
- Yolo loam, 0-3% slopes and 3-10% slopes
- Riverwash
- Zamora silt loam, 0-4% slopes

Danville silty clay loam, 3-10% slopes

The Danville series are very deep, well drained soils formed in alluvial fans and terraces derived from sedimentary rock. These soils have slow to medium runoff and slow permeability. The surface layer consists of grayish brown (10YR 5/2; dark gray when moist, 10YR 3/1), silty clay loam about 21 inches thick. The subsoil is grayish brown (10YR 5/2; very dark grayish brown when moist, 10YR 3/2), slightly acid silty clay and heavy silty clay loam extending to a depth of 61 inches. The soil classification for this soil is fine, montmorillonitic, thermic Pachic Argixerolls (USDA, 1981; NRCS, 2009). This soil is found along Calaveras Road on the terraces and fans between the historic floodplain of Alameda Creek and the steeply sloping hillsides to the east.

³ The NRCS Wetlands Determination (WETS) tables give a month by month summary and probability analysis of temperature and precipitation. The tables also provide average length of growing season using three index temperatures (32, 28, and 24 degrees Fahrenheit) at 50 and 70% probabilities.

Livermore gravelly loam and very gravelly coarse sandy loam

The Livermore series are very deep, somewhat excessively drained soils formed in very gravelly alluvium derived from sedimentary and metasedimentary rock. Livermore soils are on low, nearly level terraces and gently sloping alluvial fans. The surface soils are brown (10YR 5/3; dark brown when moist, 10 YR 3/3) very gravelly, very porous, slightly acid coarse sandy loam and up to 21 inches in depth. The subsoil is brown (10YR 5/3; dark brown when moist, 10YR 3/3) very gravelly coarse sandy loam, massive, and slightly hard. The soil classification for this type is loamy-skeletal, mixed, superactive, thermic Typic Haploxerolls (NRCS, 2009). Livermore soils are found on the lower slopes and terraces of the San Antonio Creek valley and along the pipeline corridor west of Calaveras Road.

Riverwash

Riverwash consists of erratically stratified layers of water-deposited sand, gravel, stones, and cobbles. Layers of sandy loam and silt loam are deposited for short periods but are subject to intermittent scouring and removal. Thickness of the strata is variable. Organic matter content varies across strata but is typically low. Riverwash is found in low gradient, active stream channels, on flood plains, and adjacent to drainageways and slopes are typically 0 to 5 percent. These areas are inundated during periods of waterflow and are subject to constant deposition and removal of material. Runoff is slow. The hazard of erosion is slight to very severe, depending on water velocity and sediment size. Riverwash is used as a source of sand and gravel. It is almost devoid of vegetation and has no agricultural use. Within the SABPL Delineation Study Area, this soil type is mapped along the San Antonio Creek channel.

Yolo loam over gravel 0-3% slopes

Yolo soils are well drained, with medium runoff, and moderate permeability. The Yolo loam over gravel 0-3% slopes can be found in almost flat alluvial areas. The surface color is very dark grayish brown (10YR 3/2) silt loam to about two inches, underlain by two layers with varying structure and a color of dark brown (10YR 3/3) silt loam (to at least 19 inches). The soil classification for this type is a fine-silty, mixed, superactive, nonacid, thermic Mollic Xerofluvents (NRCS, 2009). Extensive areas of this soil type were mapped in the former floodplain of Alameda Creek.

Yolo loam, 0-3% slopes and 3-10% slopes

The Yolo soils are very deep, well drained soils formed in alluvium derived from sedimentary rock. The surface layer is grayish brown or brown (2.5 YR, 5/2, 5/3) silt loam, very dark, grayish brown when moist (10 YR 3/2), underlain by brown, grayish brown, or pale brown (10 YR 5/3, 5/2, or 6/3) silt loam or silty clay loam and has thin strata of very fine sandy loam. The soil classification for this type is fine-silty, mixed, nonacid, thermic Mollic Xerorthents (USDA, 1981; NRCS, 2009). This soil type was mapped at the northern portion of the SABPL Delineation Study Area in the Alameda Creek floodplain and on the toe slopes on the south side of San Antonio Creek.

Zamora silt loam, 0-4% slopes

Zamora soils are on nearly level to strongly sloping fans and terraces usually 0 to 9 percent slopes at elevations of 30 to 1,300 feet. The soils formed in alluvium from material weathered from mixed sedimentary rocks. Typically, Zamora soils have grayish brown, slightly acidic loam A horizons; brown silty clay loam, neutral Bt horizons; and yellowish brown C horizons. Zamora soils are well-drained, with slow to medium runoff and moderately slow permeability. The Zamora series is a member of the fine-silty, mixed, thermic family of Mollic Haploxeralfs. This soil type is mapped at the northern spoils site.

2.4 Hydrology

Surface Waters

The study area for this delineation lies within the 700 square mile Alameda Creek watershed. Alameda Creek's headwaters are near Mount Hamilton. Major tributaries to the south are Arroyo Hondo and Calaveras Creek to the south; major tributaries to the north are Vallecitos Creek and Arroyo de la Laguna. San Antonio Creek once a significant tributary, but no longer so due to its altered hydrology, empties into Alameda Creek within the study area. Alameda Creek flows to San Francisco Bay through Niles Canyon, entering the Bay at Fremont.

Alameda Creek's hydrology upstream from the study area has been altered because of construction of Calaveras Dam on Calaveras Creek below Arroyo Hondo, and the Alameda Creek Diversion Dam, which directs winter flows from Alameda Creek into Calaveras Reservoir. Turner Dam impounds San Antonio Creek just above the study area. Alameda Creek is mapped as perennial in its upper reaches and intermittent within the study area. San Antonio Creek is also mapped as intermittent in the study area.

Intermittent Streams

Intermittent streams receive water from direct precipitation and runoff, as well as groundwater, and typically flow throughout the rainy season. Depending on their drainage size these streams may flow into the early summer but run dry as groundwater levels recede in mid-summer through fall. Alameda Creek adjacent to, and San Antonio Creek within, the project study area are mapped as USGS 'blue line' intermittent streams.

Ephemeral Streams

Ephemeral streams are those that carry water originating from direct precipitation and surface runoff. These streams flow only during and closely following rainfall events as they receive no hydrologic input from groundwater. One ephemeral stream was documented within the study area.

Groundwater

The broad Sunol Valley collects and conveys groundwater from the surrounding steep hills and numerous tributaries to Alameda Creek. Within the study area there are deep alluvial deposits along Alameda Creek and groundwater flows through the valley, collecting in the numerous quarry pits located there.

2.5 Vegetation

The vegetation within the study area was classified using *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland, 1986). Upland and riparian natural communities are described briefly below. Wetland communities are described in Section 4.3.

Much of the area within the SABPL Delineation Study Area has been previously disturbed by grading, excavation, nursery and mining operations, and construction of infrastructure. Recently-disturbed areas still support very limited plant cover, and most of it is weedy. Other areas have established annual grasslands dominated by non-native species. San Antonio Creek west of Calaveras Road supports annual grassland and ruderal vegetation, with discontinuous and sparse remnants of mixed riparian woodland occurring within its channelized banks.

Upland Communities

Non-native Grassland

Non-native Grassland consists of a dense to sparse cover of non-native annual grasses and is found on a wide variety of soils and slopes. Dominant species vary from site to site but the most common annual grasses are ripgut brome (*Bromus diandrus*), soft brome (*B. hordeaceus*), wild oats (*Avena fatua*, *A. barbata*), and Italian ryegrass (*Lolium perenne* var. *multiflorum*). Common non-native herbaceous species include stork's bill (*Erodium* spp.) and smooth catsear (*Hypochaeris glabra*). In less disturbed situations, non-native Grassland also supports a variety of native grasses and forbs. Typical native herb species include California poppy (*Eschscholzia californica*), sky lupine (*Lupinus nanus*), and owl's clover (*Castilleja exserta* ssp. *exserta*, *Orthocarpus* spp., and *Triphysaria* spp.). In more disturbed sites, the dominant species are often large, annual, highly competitive and persistent herbs such as shortpod mustard (*Hirschfeldia incana*), Italian thistle (*Carduus pycnocephalus*), milk thistle (*Silybum marianum*), stinkwort (*Dittrichia graveolens*), and yellow star thistle (*Centaurea solstitialis*).

In the SABPL Delineation Study Area, the areas graded long ago support non-native Grassland, dominated by grasses such as Italian ryegrass, ripgut brome, and wild oats, although the species richness tends to be quite low. More recently-disturbed areas tend to support weed-dominated Non-native Grassland, with a high proportion of stinkwort, Italian thistle, yellow star thistle, and milk thistle.

Ruderal

Although not a natural community within the Holland (1986) classification, the term Ruderal is used to describe disturbed areas that eventually develop some vegetative cover. Such areas occupy extensive acreage in the Sunol Valley. They are characterized by low vegetative cover, a predominance of weedy herbs, and limited cover by non-native grasses. The species composition of Ruderal areas is variable and highly dependent on site conditions. Typical species in the study area are Italian thistle, yellow star thistle, milk thistle, stinkwort, wild oats, brome grasses, and a variety of low-growing annual herbs. Ruderal vegetation is found along Calaveras Road, in former nursery areas, and in the aggregate mining areas on berms and slopes.

Riparian Communities

Mixed Riparian Woodland

Mixed Riparian Woodland is a natural community with no single dominant tree. In the study area, this community consists of California sycamore (*Platanus racemosa*), willows (*Salix* spp.), and occasional California buckeye (*Aesculus californica*). The understory is variable, but in the study area consists largely of California blackberry (*Rubus ursinus*), poison-oak (*Toxicodendron diversilobum*), and mugwort (*Artemisia douglasiana*). Within the SABPL Delineation Study Area, this community is found along San Antonio Creek.

Mulefat Scrub

Mulefat Scrub is a very open, rather tall shrub community strongly dominated by mulefat (*Baccharis salicifolia*). It is found primarily in larger stream channels that carry flow in the winter but are typically dry in the summer. Mulefat depends on access to groundwater, so it is usually closely associated with active channels. Other species found in Mulefat Scrub include sandbar willow (*Salix exigua*), arroyo willow (*S. lasiolepis*), California brickellbush (*Brickellia californica*), and many weedy annual species. Within the SABPL Delineation Study Area Mulefat Scrub occurs patchily within San Antonio Creek, and is most dense near the confluence with Alameda Creek.

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CHAPTER 3.0

Methods

3.1 Definitions

Many of the terms used throughout this report have specific meanings with respect to the delineation of Waters of the U.S. These terms are defined below:

Waters of the United States: The Code of Federal Regulations (33 CFR § 328.3[a]; 40 CFR § 230.3[s]) defines ‘waters of the United States’ as:

(1) All waters which are currently used, 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; (2) All interstate waters including interstate wetlands; (3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters which are or could be used by interstate or foreign travelers for recreational or other purposes; or from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or which are used or could be used for industrial purposes by industries in interstate commerce; (4) All impoundments of waters otherwise defined as waters of the United States under the definition; (5) Tributaries of waters identified in paragraphs (1) through (4); (6) Territorial seas; and (7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (1) through (6).

Wetlands: The U.S. Army Corps of Engineers (Corps) and the U.S. Environmental Protection Agency (EPA) define wetlands as, “Those areas that are saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support a prevalence of vegetation typically adapted for the life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.” Corps wetlands must typically exhibit three parameters: 1) wetland hydrology, 2) hydrophytic vegetation, and 3) hydric soils in order to meet the federal definition.

Wetland Hydrology: This term encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. These include both riverine and non-riverine hydrology indicators, such as sediment deposits, drift lines, and oxidized rhizospheres along living roots in the upper 12 inches of the soil. In the Arid West, hydrologic indicators may be absent in any given year due to annual variability in precipitation and in times of drought. The *Arid West Supplement* (Corps, 2008) cites a technical standard that can be used for disturbed or problematic sites that support wetland vegetation and soils but where wetland hydrology is

not apparent. ‘This standard calls for 14 or more consecutive days of flooding, ponding, or a water table 12 inches or less below the soil surface during the growing season at a minimum frequency of 5 years in 10’.

Hydrophytic Vegetation: Hydrophytic vegetation is defined as plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present. Emphasis is placed on the assemblage of plant species that exert a controlling influence on the character of the plant community, rather than on a single indicator species, i.e., there must be a prevalence of hydrophytic vegetation present in order to satisfy this wetland parameter.

Wetland Indicator Status: Refers to the probability that a plant will occur in a wetland or not. Indicator status categories are as follows:

- *Obligate (OBL):* almost always occurs in wetlands
- *Facultative wetland (FACW):* usually occurs in wetlands, sometimes may occur in uplands
- *Facultative (FAC):* equally likely to occur in wetlands or nonwetlands
- *Facultative upland (FACU):* usually occurs in uplands but may occasionally occur in wetlands
- *Obligate upland (UPL):* almost never occurs in wetlands
- *No indicator (NI):* no indicator assigned due to lack of information

Hydric Soil: A soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part. Hydric soils are often characterized by redoximorphic features (such as **redox concentrations**, formerly known as mottles), which form by the reduction, translocation, and/or oxidation of iron and manganese oxides. Hydric soils may lack hydric indicators for a number of reasons. In such cases the same standard used to determine wetland hydrology when indicators are lacking can be used.

Ordinary High Water Mark: Ordinary high water mark (OHWM) is defined in 33 CFR § 328.3[e] as ‘...that line on the shore established by the fluctuations of water and indicated by physical characteristics, such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter or debris, or other appropriate means that consider the characteristics of the surrounding area’.

Other Waters: The term “other waters of the United States” includes water bodies, such as rivers and streams, that may not meet the full criteria for wetlands designation but that do exhibit evidence of an OHWM and are navigable or hydrologically connected to a navigable water body. Under the latest regulatory guidance, all such waters must have a significant nexus to a navigable water body to be considered jurisdictional by the Corps.

Wetland Tributary: According to recent guidance from the Corp’s S.F. District (Corps, 2007) when a stream or a portion of a stream has both an OHWM and wetland characteristics it should be identified as both a stream and a wetland and the areal extent should be classified as wetland

for impact analysis. Further guidance from Corps staff (D. Martel, personal communication, 2006) is that a minimum of five percent wetland cover is needed in order to classify a stream or portion of a stream as a wetland tributary.

Traditionally Navigable Waters: Traditionally navigable waters (TNW) are all waters 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.

Relatively Permanent Waters: Relatively permanent waters (RPW) are non-navigable tributaries of traditional navigable waters that are relatively permanent, meaning they typically flow year-round or have continuous flow at least seasonally (e.g., typically three months).

Non-Relatively Permanent Waters: Non-relative permanent waters (NRPW) include non-navigable tributaries with ephemeral or seasonal flows lasting less than three months.

Significant Nexus: This term refers to the hydrologic and ecologic connection between a TNW and its tributaries. Under recent guidance from the Corps and EPA certain wetlands and waters must have a significant nexus with a TNW in order to be considered jurisdictional.

Growing Season: The growing season is that part of the year when soil temperatures at 19.7 inches below the soil surface are higher than biologic zero (5°C/41° F). Growing season dates should be determined through onsite observations whenever possible. Since onsite data gathering is often not possible growing season dates can be approximated by using WETS tables from the nearest appropriate WETS station. The WETS table 70% probability average beginning and ending dates for 28° F temperatures can be used to represent the "normal" growing season for wetland determinations (NRCS, 1995). According to the Livermore WETS Station data (see Appendix G) the normal growing season for the Sunol Valley region would be 365 days.

3.2 Regulatory Setting

Wetlands and other waters (e.g., rivers, streams, and natural ponds) are a subset of waters of the U.S. and receive protection under Section 404 of the Clean Water Act (CWA). The Corps has primary federal responsibility for administering regulations that concern waters of the U.S. and requires a permit if a project proposes placement of structures within navigable waters and/or alteration of waters of the EPA has the ultimate authority under the CWA and can veto the Corps' issuance of a permit to fill jurisdictional waters of the U.S.

In recent years several Supreme Court cases have challenged the scope and extent of the Corps' jurisdiction over waters of the United States and have led to several reinterpretations of that authority. The most recent of these decisions are the case of *Solid Waste Agency of Northern Cook County (SWANCC) v. the Army Corps of Engineers* (January 9, 2001) and *Rapanos v. United States* (June, 2006). The SWANCC decision found that jurisdiction over non-navigable, isolated, intrastate waters could not be based solely on the use of such waters by migratory birds. The reasoning behind the SWANCC decision could be extended to suggest that waters need a

demonstrable connection with a ‘navigable water’ to be protected under the CWA. The introduction of the term isolated has led to the consideration of the relative connectivity between waters and wetlands as a jurisdictionally relevant factor. The more recent Rapanos case further questioned the definition of “waters of the United States” and the scope of federal regulatory jurisdiction over such waters but resulted in a split decision which did not provide definitive answers but expanded on the concept that a ‘significant nexus’ with traditional navigable waters was needed for certain waters to be considered within the jurisdiction of the Corps.

On June 5, 2007 the EPA and the Corps released guidance on CWA jurisdiction in response to the Rapanos Supreme Court decisions, which can be used to support a finding of CWA coverage for a particular water body when either a) there is a significant nexus between the stream or wetland in question and navigable waters in the traditional sense; or b) a relatively permanent water body is hydrologically connected to traditional navigable waters and/or a wetland has a surface connection with that water. According to this guidance the Corps and the EPA will take jurisdiction over the following waters: 1) Traditional navigable waters; 2) Wetlands adjacent to traditional navigable waters, including adjacent wetlands that do not have a continuous surface connection to traditional navigable waters; 3) Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months); 4) Wetlands adjacent to non-navigable tributaries, as defined above, that have a continuous surface connection to such tributaries (e.g. they are not separated by uplands, a berm, dike, or similar feature).

The EPA and the Corps will claim jurisdiction over the following waters, based on a fact-specific determination of significant nexus, as defined below, to a traditional navigable water: non-navigable tributaries that are not relatively permanent; wetlands adjacent to non-navigable tributaries that are not relatively permanent; and wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary.

The EPA and the Corps generally do not assert jurisdiction over the following features: swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow); ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

The EPA and the Corps have defined the significant nexus standard as follows:

A significant nexus analysis assesses the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream traditional navigable waters.

Significant nexus analysis includes consideration of hydrologic and ecologic factors including: volume, duration, and frequency of flow; proximity to a traditional navigable water; size of the watershed; average annual rainfall; average annual winter snow pack; potential of tributaries to carry pollutants and flood waters to traditional navigable waters; provision of aquatic habitat that

supports a traditional navigable water; potential of wetlands to trap and filter pollutants or store flood waters; and maintenance of water quality in traditional navigable waters.

3.3 Office Preparation

Literature Review

ESA reviewed the following information relevant to this delineation:

- *The Jepson Manual: Higher Plants of California* (Hickman, 1993);
- San Francisco Public Utilities Commission's Water System Improvement Program, Draft Program EIR (SF Planning Department, 2007);
- San Francisco Public Utilities Commission, Alameda Watershed Management Plan (SFPUC, 2001);
- SFPUC Delineation of Waters of the United States: New Irvington Tunnel and Alameda Siphons Projects, 2007 (updated and verified 02/2009);
- High resolution aerial photographs of the Project site and vicinity (SFPUC, 2008);
- U.S.D.A. Soil Survey for Alameda County (online web application);
- *National List of Plant Species That Occur in Wetlands* (USFWS, 1988; 1996); and
- Standard biological references and field guides.

3.4 Field Survey Methods

Dates

ESA+Orion and EMPSi biologists B. Leitner and T. Brookheart conducted a routine delineation of waters of the U.S. within the wetland delineation study area during March 16-18, and April 13, 2009. Follow-up investigations were conducted by ESA+Orion biologist M. Lowe on April 21 and May 4, 2009.

Field Delineation Methods

Data Collection

Field preparation included production of high resolution aerials for each site. All wetland and drainage signatures on the aerials were investigated within each study area, as well as all wetlands and streams mapped on USGS topographic maps for each site. Each study area was walked or driven such that visual coverage was 100%. All waters of the U.S. within the study areas and immediately adjacent were delineated. Data were collected at 19 data points within the study area. In accordance with Corp's S.F. District guidance, sample points were taken at sites representative

of the vegetation, hydrology, and physical characteristics across the various wetland types and at adjacent upland areas. Results were extrapolated to nearby wetlands exhibiting similar vegetation and hydrologic conditions. Multiple exploratory soil pits were also dug to check soils for hydric indicators at various locations. Paired sample points were established except in cases where upland vegetation and soils were homogenous across sample points and/or wetland boundaries were easily determined. Arid West data sheets were used to record information at each data point.

Determination of Hydrophytic Vegetation

At each data point vegetation was analyzed within a five foot radius for herbaceous species, 10 feet for shrub species, and a 30 foot radius for trees. Shrubs and trees were only recorded if they were rooted within the proposed wetland area. All species noted within the study plots were recorded on the data sheets. The indicator status of each species was confirmed in the field, to the extent feasible, with the *National List of Plant Species That Occur in Wetlands*, for Region 0 (California) (USFWS, 1988) and dominance and/or prevalence calculations were generally performed in the field as well. For species not listed in the 1988 U.S. Fish and Wildlife Service (USFWS) list, either the 1996 *National List* (USFWS, 1996) or taxonomic literature and local knowledge was used to determine if the species is associated with wetland or non-wetland conditions. For species listed as no indicator (NI), the National Wetlands Inventory (NWI) species lists for adjacent regions were consulted, and that status (if any) was used. When the vegetation passed either the dominance or prevalence test the point was considered to have hydrophytic vegetation.

Determination of Hydric Soils

Soils were analyzed in accordance with the Corps' *Arid West Manual* (2008). Soil pits were excavated to the maximum depth possible and soil color was matched against a standard color chart (Munsell, 2000). Soils were also inspected for redoximorphic features and soil texture was determined. It was then possible to determine if the soils met any of the hydric soils criteria listed on the Arid West data sheets. Where soils did not exhibit hydric soil criteria consideration was given as to whether the data point in question had the potential to be saturated, ponded or have a water table within 12 inches of the surface for 14 or more consecutive days during the growing season. With the presence of wetland vegetation and hydrology, this technical standard can be used to characterize a soil as hydric (Corps, 2008).

Determination of Wetland Hydrology

Hydrology was assessed using the Corps' 2008 *Arid West Manual's* revised hydrology indicators (e.g., oxidized rhizospheres along living roots, aquatic invertebrates, drift deposits in a riverine). Most wetland areas encountered were saturated and/or had standing water at the time of the delineation field work. An additional indicator was used—the presence of cow hoofprints. These were reliably notable in areas supporting wetland vegetation and hydric soils and were considered an indicator that soils in these locations are saturated for some period of time during the rainy season. Where hydrology indicators were weak or duration of flow unknown, consideration was

given as to whether the technical standard quoted above for hydrology and soils might reasonably be applied to a given site.

Mapping and Acreage Calculations

Stream ordinary high water marks and wetland boundaries were recorded in the field using a Trimble Geo-XT global positioning unit (GPS) with sub-meter accuracy (after post-processing differential correction). Attribute data was also collected, including wetland type and ordinary high water mark (OHWM) measurements. Occasionally features were mapped by hand using high resolution aeriels and field notes were taken on the characteristics of each feature (vegetation type and quality, disturbance levels, etc.). Field data was overlayed on digital ortho-rectified aerial photographs covering the study areas and used to map the delineation results. This included correction of original data as well as heads up digitizing using field maps and notes. Stream length and area calculations for other waters of the U.S. and wetlands were computed using ArcGIS 9.2.

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CHAPTER 4.0

Results

4.1 Organization

Field delineation results for the SABPL Delineation Study Area are presented below. Delineation maps and datasheets for the SABPL Delineation Study Area, and other supporting information, such as jurisdictional determination analysis maps, soils information, and representative photographs for the entire wetland study area are presented in Appendices A through F. See **Figure 4-1** for an overview of the delineated features in both the SABPL Delineation Study Area and the East Delineation Study Area. Results for the East Delineation Study Area are presented in Appendix G.

4.2 Results

A total of 0.912 acre (39,738.73 square feet) and 3,308 linear feet of jurisdictional Waters of the U.S. occur within the San Antonio Backup Pipeline Delineation Study Area. A total of 0.223 acre (10,025.98 square feet) and 890 linear feet of jurisdictional Waters of the U.S. occur within the project footprint. **Table 4-1** below presents all delineated features within the SABPL Delineation Study Area and summarizes estimated Corps jurisdictional areas for each feature type, as well as subtotals for wetlands and other waters within this study area. Table 4-1 also presents estimates for Waters of the U.S. within the project footprint only. All features and areas in this delineation have been reviewed and verified by the Corps.

4.3 Other Waters of the U.S.

Perennial Drainages

There are no perennial streams found within the SABPL Delineation Study Area. Alameda Creek lies just to the west of the project area and is the major receiving body for all waters flowing west from the foothill areas east of Calaveras Road. This includes San Antonio Creek. Flow in these reaches of Alameda Creek is intermittent.

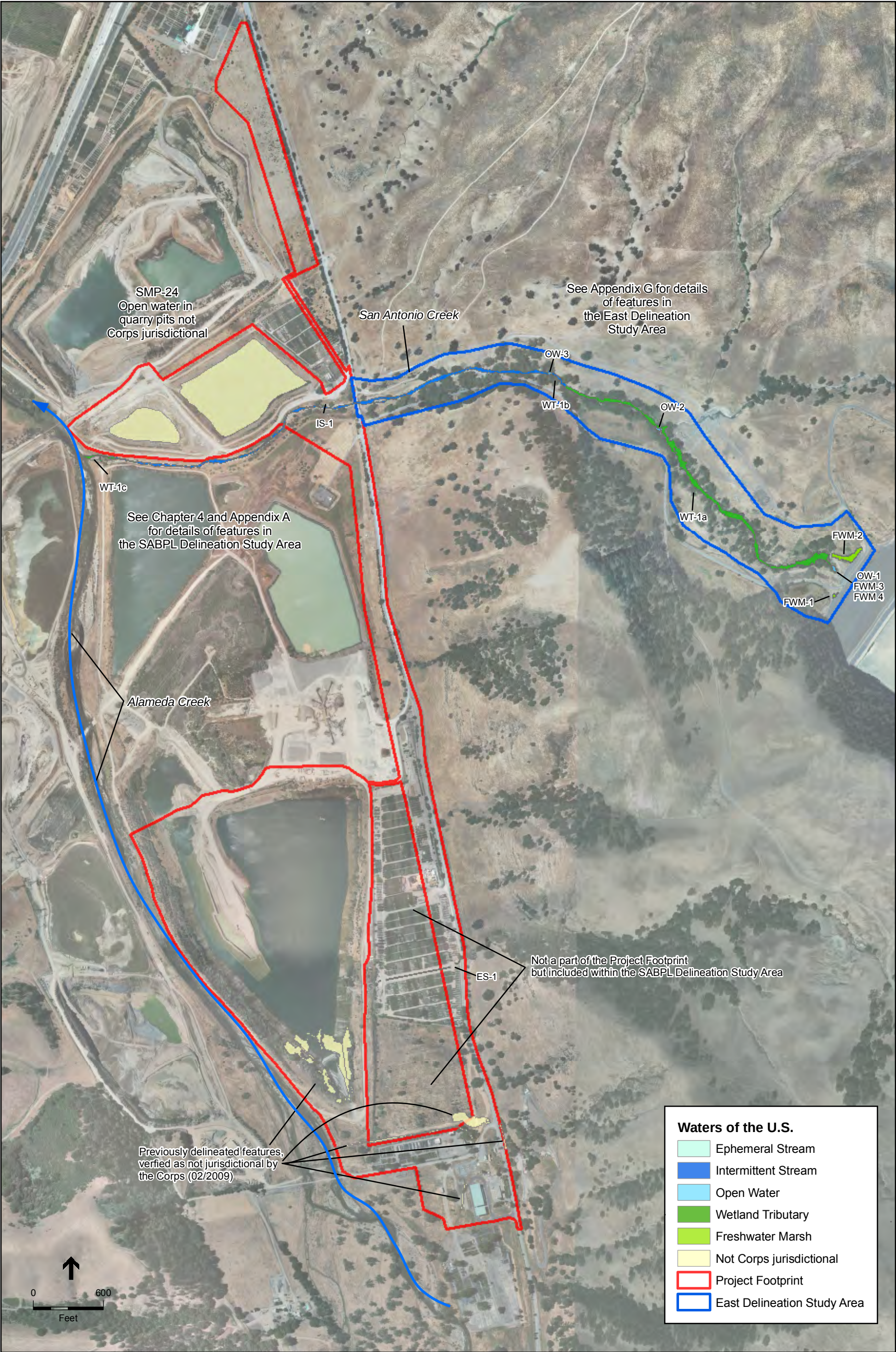
Intermittent Drainages

San Antonio Creek is the only “blue line” stream in the SABPL Delineation Study Area and is characterized as intermittent (IS-1). It is also characterized as a wetland tributary (see discussion below). The reach of San Antonio Creek characterized solely as an intermittent stream extends

**TABLE 4-1
WATERS OF THE U.S. WITHIN AND ADJACENT TO THE
SAN ANTONIO BACKUP PIPELINE DELINEATION STUDY AREA**

Project Site/Feature Type	Feature	Totals within SABPL Study Area			Totals within Project Footprint			Datapoint	Map #
		Linear ft.	Area (sq ft)	Area (ac)	Linear ft.	Area (sq ft)	Area (ac)		
Other Waters									
Ephemeral stream (ES)	ES-1	730	6,004.46	0.138	180	1,258	0.022	N/A	3
	Subtotal	730	6,004.46	0.138	180	1,258.22	0.022		
Intermittent stream (IS)	IS-1	2,260	30,015.99	0.689	710	8,767.76	0.201	N/A	1, 2
	Subtotal	2,260	30,015.99	0.689	710	8,767.76	0.201		
	Total Other Waters	2,990	36,020.45	0.827	890	10,025.98	0.223		
Wetlands									
Wetland tributary (WT)	WT-1c	318	3,718.28	0.085	--	--	--	8	1
	Subtotal	318	3,718.28	0.085	--	--	--		
	Total Wetlands	318	3,718.28	0.085	--	--	--		
Total Waters of the U.S.		3,308	39,738.73	0.912	890	10,025.98	0.223		

SOURCE: ESA+Orion, 2009



SOURCE: SFPUC, 2009; ESA+Orion, 2009

San Antonio Backup Pipeline Project . 206166.04

Figure 4-1
SABPL Wetland Delineation Overview

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from approximately 320 feet upstream from the confluence of San Antonio Creek and Alameda Creek to Calaveras Road. The creek west of Calaveras Road has been channelized as it passes through areas of aggregate mining. Several common elderberry and California buckeye (*Aesculus californica*) are found on the upper banks. The streambed shows obvious signs of scour from periods of high flow and drift lines are evident.

Ephemeral Drainages

One jurisdictional ephemeral drainage was identified in the study area (ES-1). This drainage conveys water from the foothill areas east of Calaveras Rd through a culvert and into a large stone lined plunge pool. There is no vegetation present. From the pool, a concrete rubble lined channel is routed straight west through a nursery before entering another culvert and pipeline that directs water into SMP-30. Because the quarry pit has a direct hydrological connection with Alameda Creek via groundwater exchange, this drainage is considered jurisdictional.

Open Water

Three quarry pits are found within the project study area. One of these, SMP-30, is an active mining site for the collection of construction aggregates. The two northern quarry pits within SMP-24, (Pit F3-East and Pit F3-West), are no longer actively mined, but collect groundwater, which is used by Hansen Aggregates for their operations and discharged to Alameda Creek. Willows and mulefat are found at the OHWM of Pit F3-East and Pit F3-West but do not extend up the steep banks. Wetlands and other waters in SMP-30 were not considered jurisdictional by the Corps (SFPUC, 2009). Similarly, the open waters within Pit F3-East and Pit F3-West (OW-4 and OW-5, respectively, 13.45 acres; 585,859.44 square feet) in SMP-24 have been declared not jurisdictional by the Corps (M. Weinand, personal communication, 2009). They are not considered waters of the U.S. because they were created in dry lands, incidental to construction or excavation activities for the purpose of obtaining fill, sand, or gravel and, although excavation has ceased, they are still considered part of an active mining operation.

4.4 Wetlands

The delineation field work was conducted in the spring after a slightly above average seasonal rainfall in late 2008 - early 2009 (USGS, 2009).

Wetland Tributaries

San Antonio Creek is characterized, in part, as a 'wetland tributary' in this report and has both an OHWM and in this reach (WT-1c) the stream supports wetland characteristics and an OHWM. The primary hydrologic input for the seasonal wetlands at WT-1c is discharged from the CEMEX quarry operation located to the south of San Antonio Creek. While flow here is likely not perennial, it is suspected that, under normal conditions, the area is flooded for the 14 consecutive days required to fulfill the technical standard for wetland hydrology and soils (see Section 3.1, *Definitions*).

Freshwater Marsh

Freshwater marsh was documented at one location in the SABPL Delineation Study Area. Fresh water marsh is typically indicative of wetland areas that hold water most of the year is dominated by perennial species such as cattails (*Typha latifolia*; OBL), curly dock (*Rumex crispus*; FACW), duckweed (*Azolla filiculoides*; OBL), and iris-leaved rush (*Juncus xiphioides*, OBL). This freshwater marsh has recently emerged in the project area and is found in the southern portion of the project footprint. The water source for this wetland is provided from a pump diversion that directs water (presumably from a leak associated with a pipeline) into the storm drain on the east side of Calaveras Road which drains through a culvert and onto the hillside. This wetland was previously delineated for the Alameda Siphons Project and considered non-jurisdictional because of its artificial water source (SFPUC, 2009).

Seasonal Wetland

A seasonal wetland surrounds the freshwater marsh that is found in the southern portion of the project site. This area has only recently become a wetland feature. Species present at this site include a few cattails (*Typha* sp.; OBL), duckweed (*Azolla filiculoides*; OBL), dock (*Rumex conglomeratus*; FACW), and tall flatsedge (*Cyperus eragrostis*, FACW). This seasonal wetland was delineated previously for the Alameda Siphons project and declared non-jurisdictional at that time (SFPUC, 2009). It was reconsidered for the current delineation because it had grown substantially. However, it is still considered non-jurisdictional because it was created by an artificial water source and lacks a hydrologic connection with Alameda Creek.

A seasonal wetland was also found within the OHWM of San Antonio Creek at its confluence with Alameda Creek and was mapped as a wetland tributary (WT-1c, see discussion above for details).

Several roadside ditches are found draining the foothills just east of Calaveras Road. The ditches do convey water during storm events, but lack an OHWM and wetland vegetation and are presumed to carry only ephemeral flow. These small ditches were not delineated.

4.5 Clean Water Act Analysis

Jurisdictional Determination Analysis Maps are presented in Appendix C. This section provides a brief summary of the Section III Clean Water Act Analysis (CWA Analysis), Parts A and B for all delineated features, which is supplemental information requested by the Corp's SF District. Information used to support the CWA Analysis presented herein includes the following: Review of U.S. Geological Survey (USGS) topographic quadrangles and high resolution aerials covering the project study areas; review of previous delineations covering areas adjacent to or in the vicinity of the current delineation; and field studies conducted in March through May 2009. Proposed classification of waters as relatively permanent waters (RPWs) and non-relatively permanent waters (NRPWs) are based on results of the literature review and field surveys in connection with the delineation and biological reconnaissance of the study area. There are a

number of potential biological, chemical, and physical processes being performed by the tributaries and wetlands included in this delineation. These include transport of water and nutrients to downstream waters, processing of organic wastes, attenuation of downstream flooding through interception of surface runoff and water storage onsite, reduction of suspended sediment delivered to downstream waters, groundwater replenishment, provision of spawning and rearing habitat for special-status wildlife, and supporting biodiversity at the site and watershed levels through provision of wetland and riparian habitat. No specific studies regarding duration of flow, groundwater measurement, or ecological function and values of streams and wetlands covered in this delineation were conducted. However, the USGS does maintain a monitoring station on San Antonio Creek. This station is approximately 0.25 miles east of Calaveras Road, located at a concrete weir and shows that flows are perennial to near perennial in the reach upstream. The magnitude at which these functions are being performed is also, for the most part, unknown, particularly for an individual tributary or feature. The cumulative functions of headwater streams and their associated wetlands are recognized as critically important in maintaining water quality and nutrient status of downstream waters (Alexander et al., 2007).

San Antonio Creek is mapped as a USGS blue line intermittent stream, with direct hydrologic connection to Alameda Creek, which flows directly, and for approximately 20 stream miles from the project site, to San Francisco Bay, a traditionally navigable water (TNW). The project site is located downstream of San Antonio Reservoir, a TNW. The downstream portions of the study reach may have perennial to near perennial flow but the upper reach does not. Therefore, overall, the reaches of San Antonio Creek within the SABPL Delineation Study Area are considered to be relatively permanent waters (RPW).

While San Antonio Creek is generally thought of as an intermittent stream, the reach just upstream from the confluence with Alameda Creek was actually mapped as a wetland tributary and can be characterized as seasonal wetland. The natural flow of San Antonio Creek has been highly altered by the presence of Turner Dam which was built in 1964. Downstream of the dam flows are no longer subject to high fluctuations as the dam and reservoir capture upstream flows. The SFPUC does not regularly release water through the blow-off valve and the reservoir has only overtopped the spillway three times since construction. Perennial flows in the creek resulting from dam seepage extend only just downstream of the USGS stream gauge weir.

As the watershed size increases with increasing distance from Turner Dam, the western section of the stream (from Calaveras Road to the confluence with Alameda Creek) has increased evidence of more irregular and higher energy flows. Drift lines are visible in places and obvious scour can be seen in the stream bed. As already mentioned, the reach just upstream from the confluence with Alameda Creek has perennial to near perennial flow.

Even with its altered hydrology San Antonio Creek and its instream wetlands in the study area still perform all the basic stream functions noted above. In particular, the creek supports special-status wildlife, including California red-legged frog and western pond turtle, in the reaches upstream of the SABPL Delineation Study Area. San Antonio Creek is considered jurisdictional by the Corps.

The ephemeral stream (ES-1), lacks a direct hydrologic connection with Alameda Creek. ES-1, while a natural, intermittent drainage of reasonable size upstream from the project area, becomes ephemeral and a non-relatively permanent water (NRPW) on the project site and has been channelized and directed into SMP-30. However, its waters likely seep from there into the groundwater flow of Alameda Creek and, in addition this stream supports western toad and Pacific tree-frog and provides water and habitat for other wildlife species. So ES-1 is considered jurisdictional by the Corps, since its contribution to downstream waters is significant.

Pit F3-East and Pit F3-West in SMP-24 (OW-4 and OW-5 respectively) receive and collect groundwater from the San Antonio and Alameda Creek basins and water is discharged from the pits to Alameda Creek. So there is a basic hydrologic connection between these features and the creeks. These pits are no longer being mined but are still part of an active mining operation and the Corps has indicated that they are not considered jurisdictional.

CHAPTER 5.0

Report Preparation and References

5.1 Report Preparation

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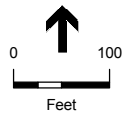
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APPENDIX A

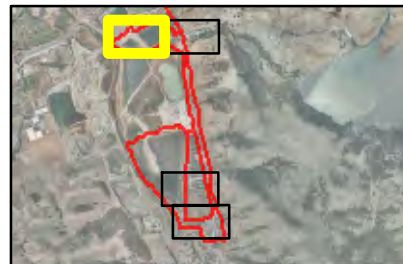
Delineation Maps



- Data Points
- Project Footprint

Waters of the U.S.

- Ephemeral Stream
- Intermittent Stream
- Open Water
- Wetland Tributary
- Freshwater Marsh
- Seasonal Wetland
- Not Corps jurisdictional

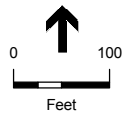


Appendix A SFPUC San Antonio Backup Pipeline Project Delineation of Waters of the U.S.: Map 1 of 4

Waters overlaid with white crosshatching are within the Project Footprint
For contiguous features see adjacent maps for feature information

Map scale: 1:2400

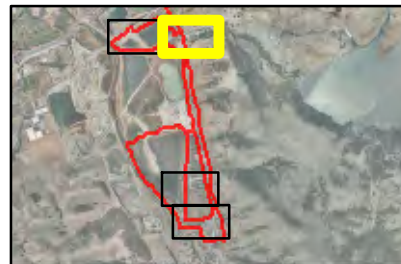
Source: SFPUC, 2009; ESA+Orion, 2009; Jones and Stokes, 2009



- Data Points
- Project Footprint

Waters of the U.S.

- Ephemeral Stream
- Intermittent Stream
- Open Water
- Wetland Tributary
- Freshwater Marsh
- Seasonal Wetland
- Not Corps jurisdictional

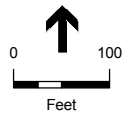


Appendix A SFPUC San Antonio Backup Pipeline Project Delineation of Waters of the U.S.: Map 2 of 4

Waters overlaid with white crosshatching are within the Project Footprint
For contiguous features see adjacent maps for feature information

Map scale: 1:2400

Source: SFPUC, 2009; ESA+Orion, 2009; Jones and Stokes, 2009

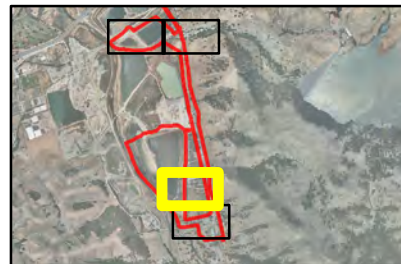


- Data Points
- ▭ Project Footprint

Waters of the U.S.

- ▭ Ephemeral Stream
- ▭ Intermittent Stream
- ▭ Open Water

- ▭ Wetland Tributary
- ▭ Freshwater Marsh
- ▭ Seasonal Wetland
- ▭ Not Corps jurisdictional

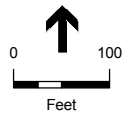


Appendix A SFPUC San Antonio Backup Pipeline Project Delineation of Waters of the U.S.: Map 3 of 4

Waters overlaid with white crosshatching are within the Project Footprint
For contiguous features see adjacent maps for feature information

Map scale: 1:2400

Source: SFPUC, 2009; ESA+Orion, 2009; Jones and Stokes, 2009

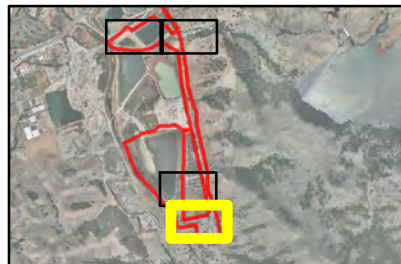


- Data Points
- ▬ Project Footprint

Waters of the U.S.

- ▬ Ephemeral Stream
- ▬ Intermittent Stream
- ▬ Open Water

- ▬ Wetland Tributary
- ▬ Freshwater Marsh
- ▬ Seasonal Wetland
- ▬ Not Corps jurisdictional



Appendix A
SFPUC San Antonio Backup Pipeline Project
Delineation of Waters
of the U.S.: Map 4 of 4

Waters overlaid with white crosshatching are within the Project Footprint
For contiguous features see adjacent maps for feature information

Map scale: 1:2400

Source: SFPUC, 2009; ESA+Orion, 2009; Jones and Stokes, 2009

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APPENDIX B

Wetland Datasheets

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Antonio Backup Pipeline City/County: Alameda County, CA Sampling Date: 3/17/09
 Applicant/Owner: San Francisco Public Utilities Commission State: CA Sampling Point: 15
 Investigator(s): T Brookhart and B Leitner Section, Township, Range: CA T4S R4E
 Landform (hillslope, terrace, etc.): slope on roadside Local relief (concave, convex, none): convex Slope (%): 3
 Subregion (LRR): C - Mediterranean California Lat: 37°33'36.01824"N Long: 121°51'39.66287"W Datum: NAD83
 Soil Map Unit Name: Yolo loam over gravel NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ 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 ☒	No ☐	Is the Sampled Area within a Wetland? Yes ☒ No ☐
Hydric Soil Present?	Yes ☒	No ☐	
Wetland Hydrology Present?	Yes ☒	No ☐	
Remarks: This is a fairly recent wetland that has been created by the diversion of water from a leak in the pipeline system. The water is conveyed to this location by the use of an electric pump and hose that can be found on the east side of Calaveras Road. The water is then directed into the storm drain where it crosses the road in a culvert and empties into the sample site.			

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)			
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)			
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0 %</u> (A/B)			
4. _____	_____	_____	_____	Prevalence Index worksheet:			
Total Cover: _____ %				Total % Cover of: _____ Multiply by: _____			
Sapling/Shrub Stratum				OBL species <u>48</u> x 1 = <u>48</u>			
1. _____	_____	_____	_____	FACW species <u>27</u> x 2 = <u>54</u>			
2. _____	_____	_____	_____	FAC species _____ x 3 = <u>0</u>			
3. _____	_____	_____	_____	FACU species _____ x 4 = <u>0</u>			
4. _____	_____	_____	_____	UPL species _____ x 5 = <u>0</u>			
5. _____	_____	_____	_____	Column Totals: <u>75</u> (A) <u>102</u> (B)			
Total Cover: _____ %				Prevalence Index = B/A = <u>1.36</u>			
Herb Stratum				Hydrophytic Vegetation Indicators:			
1. <i>Azolla filiculoides</i>	<u>45</u>	<u>Yes</u>	<u>OBL</u>	☒ Dominance Test is >50%			
2. <i>Cyperus eragrostis</i>	<u>25</u>	<u>Yes</u>	<u>FACW</u>	☒ Prevalence Index is ≤3.0 ¹			
3. <i>Typha (sp)</i>	<u>3</u>	<u>No</u>	<u>OBL</u>	☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
4. <i>Anagallis minima</i>	<u>2</u>	<u>No</u>	<u>FACW</u>	☐ Problematic Hydrophytic Vegetation ¹ (Explain)			
5. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present.			
6. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes ☒ No ☐			
7. _____	_____	_____	_____				
8. _____	_____	_____	_____				
Total Cover: <u>75 %</u>							
Woody Vine Stratum							
1. _____	_____	_____	_____				
2. _____	_____	_____	_____				
Total Cover: _____ %							
% Bare Ground in Herb Stratum <u>15 %</u> % Cover of Biotic Crust _____ %							
Remarks: Plot is just below an area of very tall Typha (sp) and has some open water areas (15%). Water is slow moving, but draining downhill.							

SOIL

Sampling Point: 15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐	Histosol (A1)	☐	Sandy Redox (S5)
☐	Histic Epipedon (A2)	☐	Stripped Matrix (S6)
☐	Black Histic (A3)	☐	Loamy Mucky Mineral (F1)
☒	Hydrogen Sulfide (A4)	☐	Loamy Gleyed Matrix (F2)
☐	Stratified Layers (A5) (LRR C)	☐	Depleted Matrix (F3)
☒	1 cm Muck (A9) (LRR D)	☐	Redox Dark Surface (F6)
☐	Depleted Below Dark Surface (A11)	☐	Depleted Dark Surface (F7)
☐	Thick Dark Surface (A12)	☐	Redox Depressions (F8)
☐	Sandy Mucky Mineral (S1)	☐	Vernal Pools (F9)
☐	Sandy Gleyed Matrix (S4)		

Indicators for Problematic Hydric Soils:

- ☐ 1 cm Muck (A9) (**LRR C**)

☐ 2 cm Muck (A10) (**LRR B**)

☐ Reduced Vertic (F18)

☐ Red Parent Material (TF2)

☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Aggregate layer

Depth (inches): 6"

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☒ Surface Water (A1)	☐ Salt Crust (B11)
☐ High Water Table (A2)	☐ Biotic Crust (B12)
☒ Saturation (A3)	☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) (Nonriverine)	☐ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)
☐ Water-Stained Leaves (B9)	

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 ☐ Depth (inches):

Water Table Present? Yes ☒ No ☐ Depth (inches): _____

Saturation Present? Yes ☒ No ☐ Depth (inches): _____

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

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 Applicant/Owner: San Francisco Public Utilities Commission State: CA Sampling Point: 16
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 Subregion (LRR): C - Mediterranean California Lat: 37°33'35.82938"N Long: 121°51'39.64853"W Datum: NAD83
 Soil Map Unit Name: Yolo loam over gravel NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ 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 ☐	No ☒	Is the Sampled Area within a Wetland?	Yes ☐	No ☒
Hydric Soil Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☐	No ☒			
Remarks: This is a fairly recent wetland that has been created by the diversion of water from a leak in the pipeline system. The water is conveyed to this location by the use of an electric pump and hose that can be found on the east side of Calaveras Road. The water is then directed into the storm drain where it crosses the road in a culvert and empties into the sample site.					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>1</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>33.3 %</u> (A/B)
4. _____	_____	_____	_____		
Total Cover: _____ %					
Sapling/Shrub Stratum				Prevalence Index worksheet:	
1. _____	_____	_____	_____	Total % Cover of:	Multiply by:
2. _____	_____	_____	_____	OBL species	x 1 = <u>0</u>
3. _____	_____	_____	_____	FACW species	x 2 = <u>4</u>
4. _____	_____	_____	_____	FAC species	x 3 = <u>57</u>
5. _____	_____	_____	_____	FACU species	x 4 = <u>120</u>
Total Cover: _____ %				UPL species	x 5 = <u>50</u>
Herb Stratum				Column Totals:	<u>61</u> (A) <u>231</u> (B)
1. <i>Bromus diandrus</i>	<u>10</u>	<u>Yes</u>	<u>UPL</u>	Prevalence Index = B/A = <u>3.79</u>	
2. <i>Cirsium vulgare</i>	<u>30</u>	<u>Yes</u>	<u>FACU</u>		
3. <i>Vicia (sp)</i>	<u>5</u>	<u>No</u>	<u>FAC</u>		
4. <i>Anagallis minima</i>	<u>2</u>	<u>No</u>	<u>FACW</u>		
5. <i>Picris echioides</i>	<u>4</u>	<u>No</u>	<u>FAC</u>		
6. <i>Lolium perenne var. multiflorum</i>	<u>10</u>	<u>Yes</u>	<u>FAC*</u>		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
Total Cover: <u>61 %</u>					
Woody Vine Stratum				Hydrophytic Vegetation Indicators:	
1. _____	_____	_____	_____	☒ Dominance Test is >50%	
2. _____	_____	_____	_____	☒ Prevalence Index is ≤3.0 ¹	
Total Cover: _____ %				☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
% Bare Ground in Herb Stratum <u>15 %</u>			% Cover of Biotic Crust _____ %	☐ Problematic Hydrophytic Vegetation ¹ (Explain)	
¹ Indicators of hydric soil and wetland hydrology must be present.					
Remarks: Plot is directly upland of site 15 (which is in a wetland).				Hydrophytic Vegetation Present? Yes ☐ No ☒	

SOIL

Sampling Point: 16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Loc ²	Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
6	10 YR 3/2	100					clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐ Histosol (A1)	☐ Sandy Redox (S5)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)
☐ Stratified Layers (A5) (LRR C)	☐ Depleted Matrix (F3)
☐ 1 cm Muck (A9) (LRR D)	☐ Redox Dark Surface (F6)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)
☐ Sandy Mucky Mineral (S1)	☐ Vernal Pools (F9)
☐ Sandy Gleyed Matrix (S4)	

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Aggregate layer

Depth (inches): 6"

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☐ Surface Water (A1)	☐ Salt Crust (B11)
☐ High Water Table (A2)	☐ Biotic Crust (B12)
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) (Nonriverine)	☐ Hydrogen Sulfide Odor (C1)
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☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)
☐ Water-Stained Leaves (B9)	

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
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☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches):Water Table Present? Yes ☐ No ☒ Depth (inches):Saturation Present? Yes ☐ No ☒ Depth (inches):
(includes capillary fringe)Wetland Hydrology Present? Yes ☐ No ☒

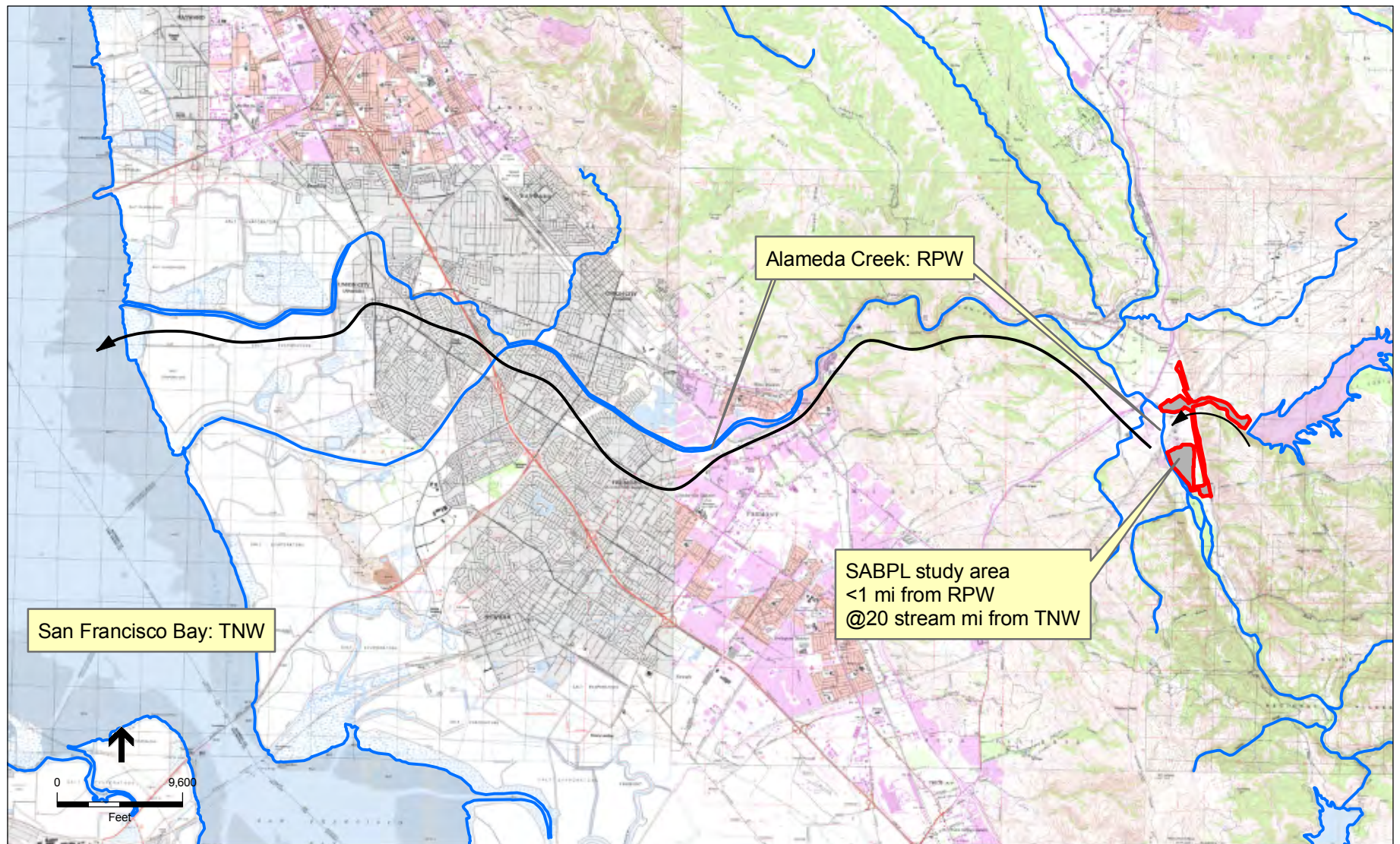
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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APPENDIX C

Jurisdictional Determination Analysis Maps



SOURCE: SFPUC, 2009; ESA+Orion, 2009

SFPUC San Antonio Backup Pipeline. 206166.04

Figure C.1

Jurisdictional Determination Map: Connection to TNW



SOURCE: SFPUC, 2009; ESA+Orion, 2009

San Antonio Backup Pipeline Project . 206166.04

Figure C.2
Jurisdictional Determination Analysis Map for SABPL Project and San Antonio Creek East of Calaveras Road

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APPENDIX D

Soils

Soil Map—Alameda Area, California
(SABPL Study Area)



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Units

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot
-  Spoil Area
-  Stony Spot



Very Stony Spot



Wet Spot



Other

Special Line Features



Gully



Short Steep Slope



Other

Political Features



Cities

Water Features



Oceans



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

MAP INFORMATION

Map Scale: 1:17,800 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>

Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Alameda Area, California

Survey Area Data: Version 5, Jul 22, 2008

Date(s) aerial images were photographed: 6/13/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Alameda Area, California (CA609)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DaB	Danville silty clay loam, 3 to 10 percent slopes	22.3	6.6%
Lg	Livermore gravelly loam	16.5	4.9%
Lm	Livermore very gravelly coarse sandy loam	7.2	2.1%
LpF2	Los Gatos-Los Osos complex, 45 to 75 percent slopes, eroded	1.6	0.5%
PoC2	Positas gravelly loam, 2 to 20 percent slopes, eroded	3.0	0.9%
PoE2	Positas gravelly loam, 20 to 40 percent slopes, eroded	1.1	0.3%
PoF2	Positas gravelly loam, 40 to 60 percent slopes, eroded	4.6	1.4%
Rh	Riverwash	43.4	12.8%
YmA	Yolo loam, 0 to 3 percent slopes	19.6	5.8%
YmB	Yolo loam, 3 to 10 percent slopes	11.6	3.4%
Yo	Yolo loam over gravel, 0 to 3 percent slopes	180.8	53.2%
Za	Zamora silt loam, 0 to 4 percent slopes	28.0	8.2%
Totals for Area of Interest		339.8	100.0%

Hydric Soils (CA)

This table lists the map unit components and their hydric status in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2B3). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
 - A. are somewhat poorly drained and have a water table at the surface (0.0 feet) during the growing season, or
 - B. are poorly drained or very poorly drained and have either:
 - i. a water table at the surface (0.0 feet) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 20 inches, or
 - ii. a water table at a depth of 0.5 foot or less during the growing season if saturated hydraulic conductivity (Ksat) is equal to or greater than 6.0 in/hr in all layers within a depth of 20 inches, or
 - iii. a water table at a depth of 1.0 foot or less during the growing season if saturated hydraulic conductivity (Ksat) is less than 6.0 in/hr in any layer within a depth of 20 inches.
3. Soils that are frequently ponded for long or very long duration during the growing season.
4. Soils that are frequently flooded for long or very long duration during the growing season.

Hydric Condition: Food Security Act information regarding the ability to grow a commodity crop without removing woody vegetation or manipulating hydrology.

References:

- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.
- Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.
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- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

Report—Hydric Soils (CA)

Hydric Soils (CA)— CA609 - Alameda Area, California							
Map symbol and map unit name	Component/Local Phase	Hydric status	Landform	Hydric criteria met (code)	Farmable condition	Comp. pct.	Altered hydrology notes
DaB: Danville silty clay loam, 3 to 10 percent slopes	(C) - Danville-	No	Fan terraces,fans	—	—	85	—
	(I) - Los Osos-	No	—	—	—	0-10	—
	(I) - Los Gatos-	No	—	—	—	0-5	—
Lg: Livermore gravelly loam	(C) - Livermore-	No	Fluvial terraces,alluvial fans	—	—	85	—
	(I) - Positas-	No	—	—	—	0-5	—
	(I) - Yolo-	No	—	—	—	0-5	—
	(I) - Pleasanton-	No	—	—	—	0-5	—
Lm: Livermore very gravelly coarse sandy loam	(C) - Livermore-	No	Alluvial fans,fluvial terraces	—	—	85	—
	(I) - Yolo-	No	—	—	—	0-5	—
	(I) - Pleasanton-	No	—	—	—	0-5	—
	(I) - Positas-	No	—	—	—	0-5	—
LpF2: Los Gatos-Los Osos complex, 45 to 75 percent slopes, eroded	(C) - Los Gatos-	No	Hills	—	—	40	—
	(C) - Los Osos-	No	Hills	—	—	40	—
	(I) - Gaviota-	No	—	—	—	0-10	—
	(I) - Millsholm-	No	—	—	—	0-5	—
	(I) - Henneke-	No	—	—	—	0-5	—
PoC2: Positas gravelly loam, 2 to 20 percent slopes, eroded	(C) - Positas-	No	Fluvial terraces	—	—	85	—
	(I) - Perkins-	No	—	—	—	0-5	—
	(I) - Azule-	No	—	—	—	0-5	—
	(I) - Pleasanton-	No	—	—	—	0-5	—
PoE2: Positas gravelly loam, 20 to 40 percent slopes, eroded	(C) - Positas-	No	Fluvial terraces	—	—	85	—
	(I) - Azule-	No	—	—	—	0-5	—
	(I) - Pleasanton-	No	—	—	—	0-5	—
	(I) - Perkins-	No	—	—	—	0-5	—

Hydric Soils (CA)– CA609 - Alameda Area, California							
Map symbol and map unit name	Component/Local Phase	Hydric status	Landform	Hydric criteria met (code)	Farmable condition	Comp. pct.	Altered hydrology notes
PoF2: Positas gravelly loam, 40 to 60 percent slopes, eroded	(C) - Positas-	No	Fluvial terraces	—	—	85	—
	(I) - Azure-	No	—	—	—	0-5	—
	(I) - Pleasanton-	No	—	—	—	0-5	—
	(I) - Perkins-	No	—	—	—	0-5	—
Rh: Riverwash	(C) - Riverwash-	Yes	Channels	4	Neither wooded nor farmable under natural conditions	100	—
YmA: Yolo loam, 0 to 3 percent slopes	(C) - Yolo-	No	Fans, valley floors	—	—	85	—
	(I) - Unnamed-	Yes	Depressions	2B3	Farmable under natural conditions	0-5	—
	(I) - Livermore-	No	—	—	—	0-5	—
	(I) - Sycamore-	No	—	—	—	0-5	—
YmB: Yolo loam, 3 to 10 percent slopes	(C) - Yolo-	No	Fans	—	—	85	—
	(I) - Unnamed-	Yes	Depressions	2B3	Farmable under natural conditions	0-5	—
	(I) - Livermore-	No	—	—	—	0-5	—
	(I) - Sycamore-	No	—	—	—	0-5	—
Yo: Yolo loam over gravel, 0 to 3 percent slopes	(C) - Yolo-	No	Valley floors	—	—	85	—
	(I) - Unnamed-	Yes	Depressions	2B3	Farmable under natural conditions	0-5	—
	(I) - Livermore-	No	—	—	—	0-5	—
	(I) - Sycamore-	No	—	—	—	0-5	—
Za: Zamora silt loam, 0 to 4 percent slopes	(C) - Zamora-	No	Flood plains	—	—	85	—
	(I) - Pleasanton-	No	—	—	—	0-10	—
	(I) - Rincon-	No	—	—	—	0-5	—

Data Source Information

Soil Survey Area: Alameda Area, California

Survey Area Data: Version 5, Jul 22, 2008

APPENDIX E

WETS Table for Livermore, Alameda County

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Alameda County WETS Tables.txt

WETS Station : LIVERMORE, CA4997 Creation Date: 08/29/2002
 Latitude: 3740 Longitude: 12146 Elevation: 00480
 State FIPS/County(FIPS): 06001 County Name: Alameda
 Start yr. - 1971 End yr. - 2000

Month	Temperature (Degrees F.)			Precipitation (Inches)				
	avg daily max	avg daily min	avg	avg	30% chance will have		avg # of days w/.1 or more	avg total snow fall
					less than	more than		
January	57.0	37.4	47.2	2.99	1.39	3.66	6	0.0
February	61.9	40.3	51.1	2.73	1.28	3.34	6	0.0
March	65.6	42.3	53.9	2.44	1.00	2.97	6	0.0
April	71.3	44.2	57.8	0.95	0.50	1.17	3	0.0
May	77.1	48.5	62.8	0.43	0.05	0.51	1	0.0
June	84.1	52.5	68.3	0.09	0.00	0.12	0	0.0
July	89.1	54.9	72.0	0.03	0.00	0.00	0	0.0
August	88.8	54.9	71.9	0.08	0.00	0.00	0	0.0
September	86.0	53.2	69.6	0.24	0.00	0.24	0	0.0
October	78.2	48.3	63.3	0.82	0.25	1.00	1	0.0
November	65.1	41.8	53.5	1.75	0.54	2.08	4	0.0
December	57.1	36.9	47.0	2.04	1.02	2.49	4	0.0
Annual	-----	-----	-----	-----	10.76	16.37	--	----
Average	73.5	46.3	59.9	-----	-----	-----	--	----
Total	-----	-----	-----	14.61	-----	-----	31	0.0

GROWING SEASON DATES

Probability	Temperature		
	24 F or higher	28 F or higher	32 F or higher
	Beginning and Ending Dates Growing Season Length		
50 percent *	> 365 days > 365 days	1/ 9 to 12/29 355 days	2/26 to 11/27 276 days
70 percent *	> 365 days > 365 days	> 365 days > 365 days	2/14 to 12/ 9 299 days

* Percent chance of the growing season occurring between the Beginning and Ending dates.

total 1930-2002 prcp

Station : CA4997, LIVERMORE
 ----- Unit = inches

yr jan feb mar apr may jun jul aug sep oct nov dec annl
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Alameda County WETS Tables.txt

30				0.63									0.63
31	3.45	1.67	M0.57	0.36	0.93	0.11	0.00	0.00	M0.00	0.27	1.89	5.63	14.88
32	1.29	3.15	0.19	0.41	0.37	0.00	0.00	0.00	0.00	0.00	0.51	2.03	7.95
33	4.51	0.44	2.09	0.13	0.70	0.03	0.00	0.00	0.01	0.75	0.00	3.69	12.35
34	1.29	2.86	0.00	0.13	0.60	0.53	0.00	0.00	0.27	0.62	2.71	2.32	11.33
35	3.53	0.52	3.16	3.28	0.00	0.00	0.00	0.04	0.00	0.79	0.21	1.53	13.06
36	3.28	6.76	0.71		0.46	0.10	0.00	0.00	0.00	0.40	0.02	3.26	14.99
37	3.38	4.13	5.07	0.68	0.17	0.20	0.00	0.00	0.00	0.55	2.46	4.57	21.21
38	2.40	6.14	4.09	0.90	0.02	0.00	0.00	0.00	0.00	1.00	1.08	0.52	16.15
39	2.40	1.57	2.18	0.53	0.18	0.00	M0.00	0.00	0.16	1.23	0.15	0.78	9.18
40	8.13	M4.54	2.60	0.35	0.14	0.00	0.00	0.00	0.25	0.50	0.43	4.63	21.57
41	3.24	4.19	2.07	2.76	0.23	0.00	0.00	0.03	0.00	0.72	0.89	5.34	19.47
42	3.89	1.68	1.42	3.10	1.00	0.00	0.00	0.00	0.09	1.08	3.05	1.73	17.04
43	4.48	1.68	2.39	1.14	0.00	0.06	0.00	0.00	0.00	0.30	0.53	1.23	11.81
44	2.36	4.89	1.01	M0.94	0.73	0.00	0.00	0.00	0.00	0.77	3.41	2.03	16.14
45	0.87	3.68	3.19	0.20	0.17	0.00	0.00	0.02	0.00	1.07	2.07	M2.98	14.25
46	0.76	1.23	1.69	0.02	0.61	0.00	0.24	0.00	0.02	0.02	2.93	2.07	9.59
47	0.69	1.45	2.34	0.53	0.17	0.36	0.00	0.00	0.00	1.84	0.85	0.51	8.74
48	0.20	1.11	2.79	2.50	1.03	M0.16	0.03	M0.00	M0.00	M0.46	0.34	M2.71	11.33
49	M1.39	2.47	3.38	0.02	M0.34	M0.00	0.03	0.16	0.05	0.08	1.20	M1.21	10.33
50	4.65	1.54	1.44	M0.85	M0.59	0.01	M0.00	0.00	0.08	M1.84	M5.95	4.95	21.90
51	2.23	M1.81	M1.82	0.55	M0.35	M0.06	M0.00	M0.00	0.00	1.04	M3.01	6.07	16.94
52	7.60	1.40	M2.36	2.20	M0.16	0.04	M0.00	0.00	M0.10	0.01	2.11	6.33	22.31
53	2.07	0.05	M1.12	M1.42	0.61	0.59	M0.00	M0.15	0.00	M0.21	M1.33	M0.64	8.19
54	2.19	2.27	M3.00	0.73	0.16	M0.27	0.00	0.00	M0.04	M0.00	1.68	M3.33	13.67
55	M2.45	1.69	M0.38	M1.28	0.65	0.00	0.00	M0.01	0.01	M0.01	M1.31	10.15	17.94
56	5.49	M1.15	0.14	1.92	M0.63	0.00	0.00	0.00	M0.63	0.79	0.03	0.48	11.26
57	2.65	M2.23	1.30	1.14	M2.65	M0.04	0.00	0.00	M0.05	1.06	0.37	M1.62	13.11
58	3.16	5.37	4.44	3.74	0.66	0.41	0.00	0.00	0.02	0.09	0.14	0.86	18.89
59	2.45	3.59	0.29	0.35	0.00	0.00	0.00	0.07	1.89	0.00	0.00	0.75	9.39
60	2.98	4.12	0.60	0.48	0.42	0.00	0.02	0.00	0.01	0.05	2.92	1.25	12.85
61	2.08	1.04	1.92	1.03	0.69	0.19	0.00	0.13	0.16	0.15	2.24	0.82	10.45
62	0.73	5.61	1.82	0.22	0.00	0.00	0.00	0.00	0.00	3.64	0.28	1.55	13.85
63	1.40	4.50	2.60	3.47	M0.70	0.00	0.00	0.00	0.33	0.93	3.18	0.19	17.30
64	2.37	0.08	1.57	0.21	0.48	0.32	0.00	0.12	0.04	0.85	2.44	4.91	13.39
65	2.11	0.59	1.73	1.53	0.00	0.00	0.00	0.21	0.00	0.03	4.22	3.23	13.65
66	1.05	1.17	0.17	0.33	0.10	0.12	0.17	0.00	0.11	0.00	3.43	2.35	9.00
67	6.14	0.29	4.15	4.65	0.19	0.48	0.00	0.00	0.02	0.24	0.88	1.62	18.66
68	3.93	0.90	2.40	0.43	0.15	0.00	0.00	0.00	0.00	0.43	2.48	3.04	13.76
69	6.28	4.76	0.55	1.24	0.08	0.00	0.00	0.00	0.00	1.10	0.49	2.34	16.84
70	5.38	1.18	1.42	0.40	0.07	0.32	0.00	0.00	0.00	0.41	5.24	5.27	19.69
71	1.19	0.33	1.75	1.37	0.54	0.00	0.00	0.00	0.13	0.04	0.46	3.27	9.08
72	0.90	0.79	0.14	0.64	0.00	0.04		0.00	0.58	2.98		2.22	8.29
73	5.50			0.29	0.03	0.00	0.00	0.00	0.08	2.08	3.71	3.80	15.49
74	1.50	0.71	2.69	1.62	0.00	0.00	0.00	0.00	0.00	0.50	0.66		7.68
75	0.84	3.65	5.24	1.42	0.00	0.06	0.10	0.35	0.00	1.27	0.08	0.21	13.22
76	0.30	1.46	0.48	0.39	0.00	0.18	0.00	0.91	0.95	0.50	0.50	0.73	6.40
77	1.15	0.83	0.82	0.16	1.01	0.00	0.10	0.00	0.22	0.13		3.07	7.49
78	5.44	2.95		2.49	0.01	0.00	0.00	0.00	0.04	0.00	2.16	0.58	13.67
79	4.52	3.19	1.86	0.88	0.34	0.00	0.06	0.00	0.00	1.51	1.13	2.66	16.15
80	4.16	4.24	1.36	1.32	0.48	0.00	0.70	0.00	0.00	0.04	0.28	1.18	13.76
81	3.97	1.11	2.94	0.61	0.11	0.00	0.00	0.00	0.06	2.07	3.44	2.57	16.88
82	5.29	2.16	5.58	1.50	0.00	0.28	0.00	0.01	1.48	2.24	3.72	2.80	25.06
83	6.28	5.56	6.14	3.51	0.21	0.00	0.00	0.50	1.02	0.27	5.44	3.44	32.37
84	0.33	1.87	1.00	0.53	0.01	0.03	0.00	0.00	0.04	1.25	4.71	1.51	11.28
85	0.48	1.25	2.62	0.32	0.07	0.22	0.00	0.03	0.13	0.89	2.69	1.97	10.67
86	2.04	7.11	4.09	0.40	0.14	0.00	0.01	0.00	0.45	0.04	0.08	0.92	15.28
87	1.83	3.47	2.30	0.16	0.09		0.00	0.00	0.00	0.87	1.40	2.30	12.42
88	1.78	0.38	0.26	1.15	0.45	0.10	0.00	0.00	0.00	0.11	1.92	2.03	8.18
89	0.81	0.95	2.94	0.88	0.08	0.10	0.00	0.00	1.33	1.13	1.02	0.10	9.34
90	1.54	2.46	0.87	0.37	1.78	0.00	0.02	0.00	0.06	0.08	0.39	1.45	9.02
91	0.31	2.20	5.87	0.34	0.35	0.08	0.00	0.21	0.04	1.65	0.31	1.19	12.55

Alameda County WETS Tables.txt

92 1.39 4.61 1.97 0.43 0.00 0.09 0.00 0.00 0.00 0.90 0.15 4.79 14.33
 93 6.41 4.53 2.91 0.63 0.51 0.30 0.00 0.00 0.00 0.57 2.00 1.81 19.67
 94 0.94 3.33 0.15 1.20 1.78 0.04 0.00 0.00 0.00 0.58 1.36 9.38
 95 6.64 0.33 6.66 1.02 0.92 0.70 0.00 0.00 0.00 0.00 0.01 5.37 21.65
 96 5.17 4.10 2.34 1.91 1.05 0.00 0.00 0.00 0.00 1.08 2.55 4.43 22.63
 97 5.81 0.15 0.06 0.15 0.29 0.17 0.00 0.42 0.00 0.28 4.23 1.95 13.51
 98 5.47 7.30 2.37 1.37 2.00 0.13 0.00 0.00 0.18 0.54 2.48 0.73 22.57
 99 3.23 3.33 1.67 0.99 0.08 0.01 0.00 0.03 0.04 0.15 1.26 0.25 11.04
 0 4.61 4.87 1.25 0.59 0.69 0.18 0.00 0.01 0.24 0.49 0.45 13.38
 1 1.92 2.89 1.22 1.80 0.00 0.12 0.00 0.00 0.09 0.37 1.92 5.09 15.42
 2

WETS Station : NEWARK, CA6144
 Latitude: 3731 Longitude: 12202 Elevation: 00010
 State FIPS/County(FIPS): 06001 County Name: Alameda
 Start yr. - 1971 End yr. - 2000

Month	Temperature (Degrees F.)			Precipitation (Inches)				
	avg daily max	avg daily min	avg	avg	30% chance will have		avg # of days w/.1 or more	avg total snow fall
					less than	more than		
January	57.6	42.0	49.8	2.96	1.35	3.62	6	0.0
February	61.1	45.2	53.1	2.81	1.27	3.43	6	0.0
March	63.7	47.3	55.5	2.39	1.03	2.92	6	0.0
April	67.2	49.8	58.5	2.62	0.40	2.83	2	0.0
May	70.4	52.9	61.7	0.42	0.03	0.47	1	0.0
June	74.5	56.0	65.3	0.12	0.00	0.12	0	0.0
July	76.7	57.7	67.2	0.03	0.00	0.00	0	0.0
August	77.1	58.4	67.7	0.07	0.00	0.01	0	0.0
September	76.8	57.5	67.2	0.20	0.00	0.24	0	0.0
October	72.8	53.8	63.3	0.90	0.29	1.10	2	0.0
November	64.1	47.1	55.6	1.84	0.61	2.20	4	0.0
December	57.7	41.7	49.7	2.08	1.16	2.57	5	0.0
Annual	-----	-----	-----	-----	11.48	19.40	--	----
Average	68.3	50.8	59.6	-----	-----	-----	--	----
Total	-----	-----	-----	16.44	-----	-----	32	0.0

GROWING SEASON DATES

Probability	Temperature		
	24 F or higher	28 F or higher	32 F or higher
	Beginning and Ending Dates Growing Season Length		
50 percent *	----- > 365 days	12/30 to 12/30 > 365 days	> 365 days > 365 days

Alameda County WETS Tables.txt

70 percent *	-----	12/30 to 12/30	> 365 days
	> 365 days	> 365 days	> 365 days

* Percent chance of the growing season occurring between the Beginning and Ending dates.

total 1948-2002 prcp

Station : CA6144, NEWARK

Unit = inches

yr	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	annl
48							0.00	0.00	0.00	0.59	0.17	3.10	3.86
49	0.97	2.45	4.33	0.00	0.19	0.01	0.03	0.08	0.00	0.26	1.22	1.67	11.21
50	5.18	M1.49	1.76	0.96	0.15	0.00	0.03	0.00	0.05	M0.80	M3.15	M3.94	17.51
51	2.42	1.88	1.83	0.75	0.41	0.04	0.00	0.01	0.00	M0.86	3.14	M6.44	17.78
52	6.63	1.15	M4.00	1.38	0.04	M0.17	0.00	0.00	0.00	0.05	2.29	M6.05	21.76
53	2.02	0.00	0.93	1.23	M0.63	0.16	0.00	0.12	0.02	M0.25	1.77	1.04	8.17
54	M2.42	M1.37	2.84	0.74	M0.16	M0.29	0.00	0.00	0.00	0.06	M1.20	M2.97	12.05
55	M4.44	M1.75	0.17	M0.87	M0.80	0.00	0.00	0.00	0.01	0.00	1.29	M7.93	17.26
56	M6.27	0.97	M0.04	1.35	0.83	0.00	0.00	0.00	0.25	0.69	0.02	0.32	10.74
57	M2.31	M1.96	1.63	1.26	M2.38	0.00	0.00	0.00	M0.25	M1.61	M0.51	3.34	15.25
58	4.27	M5.45	M4.36	M3.23	0.63	M0.02	0.02	0.00	0.05	M0.04	M0.16	M0.85	19.08
59	M2.78	M2.50	0.30	0.06	0.00	0.00	0.00	0.00	M0.75	0.05	0.00	M0.45	6.89
60	5.33	M3.41	M0.98	M0.35	0.45	0.00	0.00	0.00	0.02	0.17	M3.82	M1.06	15.59
61	M3.27	M1.04	M1.19	0.82	M0.56	0.18	0.00	0.09	0.30	0.05	M2.95	M0.91	11.36
62	M1.20	M6.62				0.00	0.00	0.00	0.00	M4.53	0.34	2.20	14.89
63	1.51	M2.88	M3.09	4.19	0.57	0.08	0.00	0.01	0.09	1.21	M2.93	0.24	16.80
64	3.54	0.00	1.31	0.07	0.45	0.41	0.00	0.09	0.00	0.67	M1.99	M4.23	12.76
65	M1.45	0.50	1.55	1.77	0.00	0.00	0.00	0.18	0.00	0.11	M4.21	2.84	12.61
66	1.54	1.27	0.32	0.36	0.05	0.11	0.24	0.00	0.13	0.00	2.71	2.28	9.01
67	M5.63	0.25	M2.84	M3.57	0.11	0.51	0.00	0.00	0.00	0.22	1.02	2.18	16.33
68	3.77	M0.56	M2.17	0.76	0.18	0.00	0.00	0.72	0.00	0.27	M2.48	M2.26	13.17
69	6.24	M3.96	1.38	M1.15	0.02	0.00	0.00	0.00	0.05	0.47	0.36	1.23	14.86
70	5.36	0.93	1.51	0.20	0.01	0.20	0.00	0.00	0.00	0.56	5.90	4.87	19.54
71	0.73	M0.79	1.43	1.25	0.12	0.00	0.00	0.09	0.12	0.01	0.81	2.90	8.25
72	0.77	0.65	0.04	0.38	0.00	0.20	0.00	0.00	0.58	M2.87	M5.90	1.70	13.09
73	3.79	M5.33	2.05	0.39	0.03	0.00	0.00	0.00	0.04	M1.63	M2.99	M3.84	20.09
74	M2.41	0.88	M2.23	M1.66	0.00	0.63	0.15	0.00	0.00	M0.89	0.61	1.38	10.84
75	0.84	M2.21	M3.28	M1.67	0.02	0.00	0.13	0.43	0.01	1.12	0.27	0.18	10.16
76	0.27	0.90	1.41	0.57	0.01	0.08	0.09	0.65	0.68	0.52	M0.82	0.89	6.89
77	0.81	0.63	1.64	0.18	1.09	0.00	0.14	0.00	0.44	0.22	M0.92	3.04	9.11
78	M6.26	3.07	M3.60	2.96	0.00	0.00	0.00	0.00	0.05	0.00	2.12	0.48	18.54
79	4.09	3.26	1.79	0.54	0.19	0.00	0.07	0.01	0.00	1.71	1.14	2.66	15.46
80	2.89	5.87	1.54	0.84	0.06	0.00	0.38	0.00	0.00	0.02	0.17	1.20	12.97
81	3.41	1.39	2.66	0.37	0.08	0.01	0.00	0.00	0.02	2.01	3.04	1.89	14.88
82	4.26	2.90	4.39	2.12	0.00	0.10	0.00	0.09	0.86	1.95	2.85	2.42	21.94
83	5.97	3.67	7.17	3.50	0.42	0.00	0.00	0.04	0.60	0.51	6.04	3.60	31.52
84	0.14	2.04	1.15	51.00	0.00	0.10	0.00	0.04	0.24	1.74	4.33	1.68	62.46
85	0.86	1.04	2.43	0.05	0.25	0.03	0.03	0.00	0.40	1.02	2.41	1.95	10.47
86	1.82	5.30	3.48	0.59	0.27	0.00	0.00	0.00	0.62	0.07	0.06	0.98	13.19
87	2.13	2.72	1.54	0.15	0.02	0.00	0.00	0.00	0.00	0.87	0.97	2.16	10.56
88	2.46	0.31	0.06	1.00	0.47	0.05	0.00	0.00	0.01	0.16	1.81	2.92	9.25
89	0.93	1.07	2.66	0.56	0.09	0.00	0.00	0.00	0.63	2.05	0.87	0.00	8.86
90	1.78	1.90	0.93	0.26	1.88	0.00	0.00	0.00	0.09	0.12	0.51	1.75	9.22
91	0.28	2.31	5.37	0.35	0.19	0.12	0.00	0.11	0.07	1.62	0.33	1.88	12.63
92	1.41	5.33	3.56	0.48	0.00	0.16	0.00	0.00	0.00	0.79	0.13	4.79	16.65
93	6.90	4.72	2.50	0.79	0.50	0.38	0.00	0.00	0.00	0.54	2.92	2.15	21.40
94	1.85	3.24	0.18	1.05	1.69	0.05	0.00	0.00	0.14	0.31	2.98	1.46	12.95
95	8.36	0.16	6.25	1.09	0.99	1.10	0.00	0.00	0.00	0.00	0.01	4.60	22.56
96	4.32	3.95	1.89	1.00	1.11	0.00	0.00	0.00	0.00	0.60	1.40	5.67	19.94

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Alameda County WETS Tables.txt

97 5.37 0.28 0.14 0.17 0.29 0.37 0.00 0.48 0.00 0.59 5.29 1.98 14.96
 98 5.90 10.79 2.57 1.74 2.06 0.01 0.00 0.00 0.09 0.62 1.95 1.27 27.00
 99 3.22 3.82 1.85 1.21 0.03 0.03 0.00 0.00 0.27 0.35 1.01 0.33 12.12
 0 4.72 6.26 2.03 0.65 0.69 0.29 0.00 0.03 0.17 1.94 0.44 0.54 17.76
 1 2.08 3.32 1.25 1.32 0.00 0.15 0.00 0.01 0.04 0.27 1.97 4.68 15.09
 2

WETS Station : OAKLAND MUSEUM, CA6336 Creation Date: 08/29/2002
 Latitude: 3748 Longitude: 12216 Elevation: 00030
 State FIPS/County(FIPS): 06001 County Name: Alameda
 Start yr. - 1971 End yr. - 2000

Month	Temperature (Degrees F.)			Precipitation (Inches)				
	avg daily max	avg daily min	avg	avg	30% chance will have		avg # of days w/.1 or more	avg total snow fall
					less than	more than		
January	57.3	44.6	51.0	4.85	2.24	5.93	7	0.0
February	61.6	47.9	54.7	4.40	1.83	5.35	7	0.0
March	63.3	49.1	56.2	3.56	1.54	4.34	6	0.0
April	66.5	50.6	58.5	1.35	0.53	1.66	3	0.0
May	69.0	53.4	61.2	0.59	0.05	0.65	1	0.0
June	71.7	55.7	63.7	0.12	0.00	0.12	0	0.0
July	72.5	56.9	64.7	0.07	0.00	0.00	0	0.0
August	73.5	58.3	65.9	0.10	0.00	0.01	0	0.0
September	74.7	58.3	66.5	0.31	0.00	0.36	0	0.0
October	72.1	55.4	63.8	1.38	0.53	1.69	2	0.0
November	63.9	49.5	56.7	3.24	1.30	3.93	5	0.0
December	57.7	44.6	51.1	3.13	1.71	3.88	5	0.0
Annual	-----	-----	-----	-----	16.81	25.64	--	----
Average	67.0	52.0	59.5	-----	-----	-----	--	----
Total	-----	-----	-----	23.10	-----	-----	36	0.0

GROWING SEASON DATES

Probability	Temperature		
	24 F or higher	28 F or higher	32 F or higher
	Beginning and Ending Dates Growing Season Length		
50 percent *	----- > 365 days	----- > 365 days	> 365 days > 365 days
70 percent *	----- > 365 days	----- > 365 days	> 365 days > 365 days

* Percent chance of the growing season occurring between the Beginning

Alameda County WETS Tables.txt

and Ending dates.

total 1971-2002 prcp

Station : CA6336, OAKLAND MUSEUM

----- Unit = inches

yr	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	annl
71	1.73	0.43	2.80	0.93	0.13	0.00	0.00	0.00	0.26	0.10	2.04	4.19	12.61
72	1.32	1.58	0.18	1.02		0.34	0.00	0.01	0.90	4.25	6.39	3.20	19.19
73	10.43	6.31	2.95	0.02	0.04	0.00	0.00	0.00	0.64	1.77	9.67	5.39	37.22
74	3.39	1.76	5.15	3.33	0.00	0.15	1.19	0.00	0.00	M1.16	0.78	2.52	19.43
75	2.29	3.88	5.68	2.25	0.01	0.08	0.21	0.05	0.03	3.85	0.56	0.52	19.41
76	0.31	2.01	1.08	0.89	0.00	0.04	0.00	1.09	0.61	0.57	1.09	2.30	9.99
77	1.55	0.77	2.10	0.00	0.54	0.00	0.01	0.00	0.68	0.21	2.83		8.69
78	7.87	4.80	6.89	3.76	0.00	0.00	0.00	0.00	0.59	0.00	1.64	0.70	26.25
79	7.18	5.52	2.82	1.04	0.10	0.00	0.43	0.00	0.00	2.37	3.96	5.77	29.19
80	4.81	7.63	M1.82	1.66	0.44	0.00		0.00	0.00	0.13	0.20	2.42	19.11
81	6.15	1.33	4.41	0.30	0.10	0.00	0.00	0.00	0.08	2.80	5.93	4.65	25.75
82	10.75	3.80	8.55	4.13	0.00	0.19	0.03	0.00	M0.00	2.89	5.31	3.11	38.76
83	7.22	8.08	9.83	3.87	0.42		0.00	0.05	0.61	0.23	7.12	6.84	44.27
84	0.33	2.28	1.60	0.98	0.09	M0.00	0.00	0.17	0.31	2.99	M6.89		15.64
85	0.77	2.08	3.65	0.15	0.04			0.00	0.53	1.18	M3.26	1.67	13.33
86	5.24	8.92	5.89	0.70	0.13	0.00	0.03	0.00	1.54	0.14	0.32	1.47	24.38
87	3.60	4.93	2.32	0.20	0.04	0.00	0.00	0.00	0.00	1.57	2.34	4.29	19.29
88	3.83	0.49	0.03	2.77	0.98	0.44	0.00	0.01	0.00	0.37	2.49	3.81	15.22
89	1.27		5.16	0.63	0.04	0.04	0.00	0.00	1.45	1.73	1.25	0.00	11.57
90	4.41		1.21	0.24	2.92	0.01	0.00	0.00	0.06	0.35	0.49	1.58	11.27
91	0.42	3.49	7.04	0.72	0.20	0.24	0.00	0.19	0.00	M1.20	0.36	2.22	16.08
92	1.71	7.53	4.54	0.26	0.00	0.30	0.00	0.03	0.00	2.49	0.30	6.82	23.98
93	8.90	3.94	2.61	0.60	0.94	0.11	0.00	0.00	0.00	0.62	2.08	3.01	22.81
94	2.56	4.52	0.28	1.69	1.54	0.00	0.00	0.00	0.04	0.40	9.37	3.23	23.63
95	M9.77	0.21	7.60	1.86	1.07	0.92	0.00	0.00	0.00				21.43
96	6.40	M5.87	2.01		2.67	0.00					3.44	8.90	29.29
97	7.80	0.22	0.56	0.57	0.27	0.28	0.00	1.25	0.01	1.18	M6.79	3.36	22.29
98	12.45	15.14	2.76	1.83	2.98	0.01	0.00	0.00	0.04	0.81	3.82	1.23	41.07
99	4.04	7.17	2.89	1.80	0.09	0.03	0.00	0.06	0.13	0.50	2.55	0.48	19.74
0	7.13	9.94	2.45	1.01	1.21		0.00	0.00	0.26	2.75	M0.70	0.77	26.22
1	3.27	7.39	1.27	1.69	0.00	0.07	0.00	0.00	0.26	0.54	4.41	9.40	28.30
2													

WETS Station : TRACY PUMPING PLANT, CA9001

Creation Date: 08/29/2002

Latitude: 3748

Longitude: 12135

Elevation: 00060

State FIPS/County(FIPS): 06001

County Name: Alameda

Start yr. - 1971 End yr. - 2000

Month	Temperature (Degrees F.)			Precipitation (Inches)				
	avg daily max	avg daily min	avg	avg	30% chance will have		avg # of days w/.1 or more	avg total snow fall
					less than	more than		
January	54.8	38.5	46.7	2.68	1.16	3.26	6	0.0
February	61.6	41.9	51.8	2.29	1.01	2.79	5	0.0
March	66.4	45.0	55.7	1.98	0.80	2.40	5	0.0
April	72.8	48.0	60.4	0.73	0.39	0.90	2	0.0
May	80.0	53.4	66.7	0.45	0.00	0.46	1	0.0

Alameda County WETS Tables.txt

June	87.4	57.5	72.4	0.09	0.00	0.07	0	0.0
July	92.1	60.4	76.3	0.04	0.00	0.00	0	0.0
August	91.6	60.3	76.0	0.06	0.00	0.00	0	0.0
September	87.4	58.5	72.9	0.25	0.00	0.19	0	0.0
October	78.5	52.2	65.4	0.72	0.22	0.91	1	0.0
November	64.6	44.1	54.3	1.63	0.58	2.03	4	0.0
December	55.3	38.0	46.7	1.55	0.75	1.89	4	0.0
-----	-----	-----	-----	-----	-----	-----	-----	-----
Annual	-----	-----	-----	-----	8.76	13.96	--	-----
Average	74.4	49.8	62.1	-----	-----	-----	--	-----
Total	-----	-----	-----	12.48	-----	-----	28	0.0
-----	-----	-----	-----	-----	-----	-----	-----	-----

GROWING SEASON DATES

Probability	Temperature		
	24 F or higher	28 F or higher	32 F or higher
	Beginning and Ending Dates Growing Season Length		
50 percent *	----- > 365 days	12/30 to 12/30 > 365 days	1/17 to 12/20 338 days
70 percent *	----- > 365 days	12/30 to 12/30 > 365 days	> 365 days > 365 days

* Percent chance of the growing season occurring between the Beginning and Ending dates.

total 1955-2002 prcp

Station : CA9001, TRACY PUMPING PLANT
----- Unit = inches

yr	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	annl
55		0.87	0.59	1.24	0.36	0.00	0.00	0.00	0.00	0.12	1.07	6.33	10.58
56	4.13	0.48	0.00	1.35	0.46	0.00	0.00	0.00	0.68	0.32	0.04	0.21	7.67
57	1.78	2.38	0.93	M0.92	M1.32	0.02	0.00	0.00	0.17	M0.70	0.21	1.81	10.24
58	3.19	4.68	3.78	3.03	0.67	0.15	0.00	0.09	0.06	0.00	0.00	0.59	16.24
59	2.53	3.05	0.11	0.10	0.05	0.00	0.00	0.00	2.60	0.00	0.00	0.79	9.23
60	2.27	2.39	0.27	0.24	0.25	0.00	0.01	0.00	0.01	0.07	2.91	0.40	8.82
61	2.21	0.58	1.13	0.69	0.89	0.00	0.00	0.06	0.19	0.03	2.50	0.55	8.83
62	0.60	5.93	1.02	0.01	0.00	0.00	0.00	0.00	0.05	2.87	0.18	1.35	12.01
63	1.90	2.45	1.84	2.27	0.30	0.00	0.00	0.00	0.17	0.68	3.21	0.11	12.93
64	1.48	0.01	0.80	0.17	0.15	1.80	0.02	0.30	0.00	1.03	1.95	3.74	11.45
65	1.90	0.50	1.19	1.16	0.00	0.00	0.05	0.36	0.00	0.02	3.14	2.23	10.55
66	0.82	1.19	0.11	0.42	0.15	0.00	0.25	0.00	0.06	0.00	3.21	2.93	9.14
67	5.27	0.24	3.11	2.53	0.02	0.55	0.00	0.00	0.00	0.09	0.66	0.92	13.39
68	3.32	1.33	1.64	0.44	0.00	0.00	0.00	0.60	0.00	0.19	2.22	2.44	12.18
69	5.02	3.88	0.29	0.65	0.00	0.00	0.00	0.00	0.04	0.95	0.36	1.97	13.16
70	5.40	1.70	1.17	0.21	0.00	0.19	0.00	0.00	0.00	0.64	4.42	3.62	17.35
71	0.81	0.28	1.11	1.00	1.32	0.00	0.00	0.00	0.03	0.00	0.36	2.06	6.97
72	0.51	0.62	0.05	0.30	0.03	0.02	0.00	0.00	0.69	1.77	4.15	1.17	9.31
73	4.38	3.97	2.35	0.41	0.00	0.00	0.00	0.00	0.00	1.35	3.36	2.80	18.62

Alameda County WETS Tables.txt

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74 2.03 0.26 1.82 1.23 0.00 0.05 0.10 0.00 0.00 0.63 0.31 1.96 8.39
75 0.33 3.04 3.40 0.92 0.00 0.00 0.18 0.32 0.00 0.98 0.28 0.30 9.75
76 0.25 1.17 0.25 0.55 0.00 0.03 0.00 0.73 0.89 0.43 0.45 0.69 5.44
77 0.52 0.66 0.74 0.63 0.83 0.00 0.01 0.00 0.24 0.13 1.71 2.45 7.92
78 5.61 2.87 3.11 1.14 0.00 0.00 0.00 0.00 0.07 0.00 1.93 0.25 14.98
79 3.68 2.53 2.05 0.62 0.00 0.00 0.20 0.00 0.00 1.30 0.92 2.24 13.54
80 3.46 3.28 1.02 0.98 0.13 0.00 0.62 0.00 0.00 0.03 0.17 0.85 10.54
81 3.16 0.75 2.11 0.27 0.02 0.00 0.00 0.00 0.08 1.29 3.12 2.09 12.89
82 5.46 1.47 4.10 1.45 0.00 0.29 0.00 0.00 2.20 1.64 3.87 1.99 22.47
83 5.12 3.89 5.89 2.91 0.16 0.00 0.00 0.51 0.76 0.43 4.93 2.88 27.48
84 0.45 1.48 0.45 0.30 0.01 0.01 0.00 0.00 0.00 1.41 3.80 1.25 9.16
85 0.42 0.81 1.20 0.21 0.00 0.40 0.00 0.00 0.00 0.48 2.89 6.41
86 1.66 5.10 4.74 0.31 0.07 0.00 0.03 0.00 0.71 0.00 0.00 0.87 13.49
87 1.48 4.15 1.65 0.13 0.00 0.00 0.00 0.00 0.00 M0.58 M1.02 M2.11 11.12
88M2.27 M0.45 0.83 M1.35 M0.32 0.76 0.00 0.00 0.00 0.24 M1.02 M1.63 8.87
89M0.83 M0.92 M1.67 M0.30 0.10 M0.02 0.00 M0.01 M1.56 M0.64 M0.85 M0.05 6.95
90M1.04 M2.11 M0.57 M0.47 M2.00 0.00 0.00 0.00 M0.07 0.15 0.20 1.08 7.69
91M0.22 M1.98 M3.60 M0.37 0.26 M0.00 0.10 0.15 0.00 1.01 M0.25 M0.70 8.64
92M1.43 M3.73 M1.46 0.60 0.00 0.14 0.00 0.00 0.00 M0.71 M0.29 M4.42 12.78
93M5.86 M2.89 M2.83 M0.53 M0.93 M0.14 0.00 0.00 0.00 0.30 2.11 1.39 16.98
94 1.02 2.71 0.07 1.01 1.39 0.00 0.00 0.00 0.05 0.33 2.55 0.67 9.80
95 5.13 0.16 M5.19 0.71 0.48 0.71 0.00 0.00 0.00 0.00 0.00 4.67 17.05
96M4.02 3.79 2.45 1.09 1.19 0.00 0.00 0.00 0.00 1.11 1.99 3.58 19.22
97 5.22 M0.17 0.11 0.03 0.55 0.15 0.00 0.05 0.00 0.22 3.22 1.59 11.31
98 4.57 7.27 1.43 1.08 3.15 0.10 0.00 0.00 0.13 0.52 1.81 0.44 20.50
99 3.08 2.38 1.99 0.71 0.06 0.00 0.00 0.00 0.07 0.06 0.96 0.27 9.58
0 4.32 4.42 0.79 0.42 0.51 0.02 0.00 0.00 0.02 3.87 0.52 0.47 15.36
1 1.84 2.38 1.16 1.08 0.00 0.05 0.00 0.00 0.25 0.17 1.79 4.55 13.27
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WETS Station : UPPER SAN LEANDRO FLTR, CA9185 Creation Date: 08/29/2002
Latitude: 3746 Longitude: 12210 Elevation: 00390
State FIPS/County(FIPS): 06001 County Name: Alameda
Start yr. - 1971 End yr. - 2000

Month	Temperature (Degrees F.)			Precipitation (Inches)				
	avg daily max	avg daily min	avg	avg	30% chance will have		avg # of days w/.1 or more	avg total snow fall
					less than	more than		
January	57.6	40.7	49.1	5.20	2.32	6.34	8	0.0
February	61.3	42.6	51.9	4.64	2.07	5.66	7	0.0
March	62.7	43.9	53.3	4.49	2.34	5.48	8	0.0
April	66.6	44.9	55.7	1.70	0.71	2.07	3	0.0
May	69.5	48.0	58.8	0.75	0.06	0.83	1	0.0
June	73.0	51.6	62.3	0.15	0.00	0.18	0	0.0
July	75.4	53.3	64.3	0.06	0.00	0.00	0	0.0
August	75.3	54.2	64.8	0.11	0.00	0.02	0	0.0
September	76.1	53.9	65.0	0.36	0.00	0.38	1	0.0
October	72.8	51.0	61.9	1.52	0.55	1.88	2	0.0
November	64.4	45.2	54.8	3.88	1.54	4.70	6	0.0
December	58.6	41.4	50.0	3.84	1.81	4.69	6	0.0
Annual	-----	-----	-----	-----	20.36	29.92	--	----
Average	67.8	47.6	57.7	-----	-----	-----	--	----

Alameda County WETS Tables.txt

Total	-----	-----	-----	26.69	-----	-----	42	0.0

GROWING SEASON DATES

Probability	Temperature		
	24 F or higher	28 F or higher	32 F or higher
	Beginning and Ending Dates Growing Season Length		
50 percent *	----- > 365 days	----- > 365 days	> 365 days > 365 days
70 percent *	----- > 365 days	----- > 365 days	> 365 days > 365 days

* Percent chance of the growing season occurring between the Beginning and Ending dates.

total 1948-2002 prcp

Station : CA9185, UPPER SAN LEANDRO FLTR
----- Unit = inches

yr	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	annl
48							0.00	0.02	0.00	0.64	0.86	4.10	5.62
49	1.58	3.12	4.59	0.02	0.78	0.00	0.05	M0.12	0.00	0.32	M1.73	M2.24	14.55
50	9.80	2.31	3.32	1.57	0.91	0.02	0.00	0.00	0.00	2.36	6.08	6.19	32.56
51	6.25	M2.47	M2.24	1.09	0.70	0.01	0.00	0.34	0.03				13.13
58								0.00	0.06	0.22	0.12	1.93	2.33
59	4.73	4.70	0.83	0.02	M0.02	0.00	0.00	0.03	3.31	0.03	0.00	1.61	15.28
60	M3.01	5.63	3.05	0.97	0.96	M0.00	M0.00	0.00	0.00	0.32	M5.81	0.91	20.66
61	2.99	M1.44	3.76	M1.29	0.79	0.00	0.00	0.13	0.34	M0.34	4.07	2.90	18.05
62	1.74	8.93	2.61	0.53	0.00	0.00	0.00	0.14	0.43	13.13	0.95	2.97	31.43
63	2.62	4.47	4.09	5.64	0.69	0.00	0.00	0.00	0.23	1.83	4.10	0.57	24.24
64	4.91	0.19	2.13	0.32	0.66	0.69	0.03	0.05	0.00	1.35	4.21	7.52	22.06
65	4.86	0.98	2.04	3.99	0.00	0.00	0.02	0.10	0.00	0.28	5.48	4.22	21.97
66	2.98	2.97	0.84	0.73	0.34	0.00	0.15	0.14	0.15	0.00	5.03	4.18	17.51
67	10.20	0.37	5.23	5.80	0.09	1.15	0.00	0.00	0.02	0.66	1.20	3.79	28.51
68	6.61	2.81	3.61	0.44	0.57	0.00	0.00	0.25	0.03	0.28	3.26	4.74	22.60
69	9.00	9.14	1.63	2.27	0.00	0.12	0.00	0.00	0.00	2.31	0.73	5.70	30.90
70	9.71	1.59	1.99	0.06	0.01	0.81	0.00	0.00	0.00	0.77	8.03	8.77	31.74
71	1.61	0.76	3.81	1.02	0.23	0.00	0.00	0.00	0.18	0.12	2.13	4.43	14.29
72	1.73	1.97	0.19	1.89	0.01	0.30	0.00	0.00	1.56	3.70	7.02	3.85	22.22
73	11.00	6.89	3.77	0.09		0.00	0.00	0.00	0.79	1.52	9.20	6.94	40.20
74	4.01	2.21	6.80	4.68	0.00	0.10	1.16	0.00	0.00	0.90		2.37	22.23
75	2.21	6.17	6.05	2.85	0.00	0.11	0.14	0.11	0.02	6.41	1.05	0.38	25.50
76	0.33	1.10	2.51	0.98	0.00	0.06	0.00	1.30	0.88	0.72	1.34	1.98	11.20
77	1.29	1.22	2.52	0.20	1.22	0.00	0.00	0.03	0.96	0.48	3.95	5.73	17.60
78	9.51	4.82	7.30	6.17	0.03	0.00	0.00	0.00	0.48	0.00	2.43	0.91	31.65
79	8.83	5.82	4.06	0.96	0.19	0.00	0.02	0.00	0.00	3.11	3.45	5.79	32.23
80	5.79	7.40	2.55	2.19	0.36	0.05	0.19	0.00	0.00	0.15	0.35	2.33	21.36
81	6.05	1.45	5.60	0.61	0.25	0.00	0.00	0.00	0.08	3.66	6.77	6.93	31.40
82	9.38	5.03	7.68	5.05	0.00	0.12	0.05	0.01	1.12	2.80	7.94	4.33	43.51
83	8.11	8.20	13.10	3.57	0.41	0.00	0.00	0.17	0.45	0.93	9.18	7.77	51.89
84	0.22	2.83	2.21	0.99	0.17	0.92	0.00	0.09	0.04	3.82	8.90	2.08	22.27

Alameda County WETS Tables.txt

85	0.56	2.35	4.24	0.08	0.56	0.26	0.08	0.07	0.54	0.90	3.85	1.90	15.39
86	5.23	10.80	6.52	0.81	0.26	0.00	0.04	0.00	1.90	0.17	0.58	1.90	28.21
87	4.25	5.77	3.26	0.53	0.10	0.00	0.00	0.00	0.00	1.24	2.30	5.13	22.58
88	4.40	0.50			0.70	0.41	0.00	0.00	0.00	0.62	5.01	4.17	15.81
89	1.41	1.80	6.85	0.59	0.03	0.08	0.01	0.00	0.91	3.31	2.10	0.03	17.12
90	4.66	2.44	1.31	0.48	3.83	0.01	0.00	0.00	0.12	0.57	0.73	2.21	16.36
91	0.53	3.06	8.35	0.49		0.13	0.00	0.10	0.00	2.76	0.57	2.57	18.56
92	1.84	7.74	4.68	0.34	0.00	0.02		0.01	0.00	2.12	0.27	8.14	25.16
93	9.17	4.55	2.73	1.37	1.19	0.22	0.00	0.00	0.00	0.66	1.75	2.89	24.53
94	2.29	5.51	0.33	1.83	1.69	0.02	0.00	0.00	0.02	0.29	9.46	3.03	24.47
95	11.17	0.12	8.41	2.49	2.13	1.00	0.00	0.00	0.00	0.00	0.10	8.38	33.80
96	6.68	6.29	3.35	2.45	3.18	0.00	0.00	0.00	0.10	1.08	4.38	10.98	38.49
97	M8.77	0.40	0.55	1.22	0.16	0.44	0.00	1.23	0.01	0.93	7.68	3.61	25.00
98	12.19	15.43	3.13	2.47	3.62	0.12		0.00	0.11	0.70	3.93	2.45	44.15
99	4.54	8.07	3.82	2.02	0.06	0.03	0.00	0.11	0.02	0.34	2.08	0.64	21.73
0	8.13	8.48		0.94		0.21		0.00	0.47			1.28	19.51
1	3.46		1.73	1.95	0.00	0.22	0.00	0.00	0.20	0.50	4.33	10.42	22.81
2													

APPENDIX F

Representative Photographs

Photo 1: Looking northeast over one of the Hanson Aggregates quarry pits (OW-4).



Photo 2: Looking west from Calaveras Road (ES-I).



Photo 3: Looking northwest over the newly formed wetlands just off Calaveras Road (SW-1).



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APPENDIX G

East Delineation Study Area

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G.1: East Delineation Study Area Results

Setting

Cattle ranching and watershed management are the primary land uses in the East Delineation Study Area (ESDA).

Soils

Two mapped soil types (see Appendix D) were unique to the ESDA:

Los Gatos-Los Osos complex, 45-75% slopes, eroded

The Los Gatos-Los Osos complex consists of soils on uplands. The Los Gatos soil is a moderately deep, well drained soil formed in material weathered from sedimentary rock. It has rapid runoff and moderately slow permeability. Typically the surface layer is brown (10YR 4/3) or dark brown (10 YR 4/3, 3/3), loam or silt loam about 11 inches thick. It is dark brown (7.5 YR 3/2) when moist. The subsoil is brown or reddish brown heavy loam (10 YR 4/3) to reddish brown (5 YR 5/4) massive, hard, friable and slightly sticky and plastic. It is dark brown or reddish brown (7.5 YR 3/2, 5 YR 3/4 when moist (USDA, 1981; NRCS, 2009). The classification of this soil is fine-loamy mixed, mesic Typic Argixerolls.

The Los Osos soil is moderately deep and well drained upland soils formed in material that weathered from sandstone and shale. Typically, the surface layer is grayish brown (10YR 5/2, 5/3), clay loam about 14 inches thick. The subsoil extends to a depth of 30 inches. It is dark yellowish brown (10 YR 3/2; when moist, 10 YR 4/4), moderately acid silty clay loam and heavy silty clay loam. Below that is weathered shale. The classification of this soil is fine, smectitic, thermic Typic Argixerolls (NRCS, 2009). Los Gatos-Los Osos complex soils are found on the steep uplands in the San Antonio Creek valley.

Positas gravelly loam, 20-40% slopes, eroded

The Positas series is a deep to very deep, moderately well drained soil, with medium to very high runoff, and slow to very slow permeability that formed in alluvial material. The surface soil generally consists of a dark brown (7.5YR 3/3) gravelly loam underlain by dark reddish brown (5YR 3/3) clay layers (with varying structures) to at least 20 inches. The soil classification for this type is a fine, smectitic, thermic Mollic Palexeralfs (NRCS, 2009). This soil type was mapped at the upper end of the study area in the vicinity of Turner Dam and on the north side of San Antonio Creek.

Vegetation

In the San Antonio Creek valley, non-native grassland is the dominant natural community outside of the wooded natural communities and comprises much of the woodland understory. Other natural communities within the ESDA along San Antonio Creek include a mosaic of mixed oak woodland, and sycamore alluvial and mixed riparian woodland. Non-native grassland and mixed riparian woodland are described in the main text body (Section 2.5).

Mixed Oak Woodland

Mixed Oak Woodland is dominated in the ESDA by coast live oak (*Q. agrifolia*), valley oak (*Quercus lobata*), and blue oak (*Quercus douglasii*), and contains other hardwoods such as California bay (*Umbellularia californica*) and California buckeye (*Aesculus californica*). Understory shrubs in these woodlands include poison-oak (*Toxicodendron diversilobum*), toyon (*Heteromeles arbutifolia*), California blackberry (*Rubus ursinus*) and hollyleaf buckthorn (*Rhamnus crocea*). Herbaceous associates include Pacific blacksnakeroot (*Sanicula crassicaulis*), baby blue-eyes (*Nemophila menziesii*), woodland-star (*Lithophragma* spp.), and vetch (*Vicia sativa* and *V. americana*). Coast Live Oak Woodland is found on the hillsides within the study area, such as the slopes near Turner Dam and steeper slopes in the San Antonio Creek valley.

Sycamore Alluvial Woodland

Sycamore Alluvial Woodland is found on cobbly and gravelly braided depositional channels and floodplains of intermittent streams with periodic high flows capable of moving very large-diameter sediment particles. The soils are coarse, very well drained, and often very deep. The woodland is overwhelmingly dominated by widely-spaced California sycamore (*Platanus racemosa*), with other tree associates including California buckeye (*Aesculus californica*), coast live oak, valley oak, and willows. The understory includes shrubs such as common elderberry (*Sambucus nigra* var. *canadensis* = *S. mexicana*), snowberry (*Symphoricarpos albus* var. *laevigata*) mulefat (*Baccharis salicifolia*), mugwort (*Artemisia douglasiana*), California blackberry, poison-oak, and herbaceous species typical of Non-native Grassland. Within the study area, Sycamore Alluvial Woodland is found along San Antonio Creek, east of Calaveras Road, intermixed with areas of Mixed Riparian Woodland too small to map.

Mixed Riparian Woodland

Mixed Riparian Woodland is a natural community with no single dominant tree. In the study area, this community consists of California sycamore, Goodding's black willow (*Salix gooddingii*), and occasional California bay and valley oak (*Quercus lobata*). The understory is variable, but in the study area consists largely of snowberry, California blackberry, poison-oak, and mugwort. Within the study area, this community is found along San Antonio Creek.

Organization of Results

Field delineation results are presented below. Delineation maps and datasheets are presented in Sections G.2 and G.3 of this Appendix. Representative photographs are in Section G.4 See **Figure G-1** for an overview of the delineated features.

Results

A total of 3.64 acres (158,538.29 square feet) and 5,075 linear feet of jurisdictional waters of the U.S. occur within the ESDA. **Table G-1** below presents all delineated features within the study area and summarizes estimated Corps jurisdictional areas for each feature type, as well as

subtotals for wetlands and other waters within the study area. All areas in this delineation are final, having been verified by the Corps during a field verification site visit November 5, 2009.

Other Waters of the U.S.

Intermittent Drainages

San Antonio Creek is the only “blue line” stream in the ESDA and is characterized as intermittent (IS-1). It is also characterized as a wetland tributary (see discussion below). The portion of San Antonio Creek within the EDSA characterized solely as an intermittent stream extends from the bridge over Calaveras Road to the beginning of the seasonal wetland area found just downstream of a weir located on San Antonio Creek. The streambed shows obvious signs of scour from periods of high flow and drift lines are evident. San Antonio Creek is tributary to Alameda Creek west of the ESDA.

Open Water

Three small pools are found on San Antonio Creek (OW-1, 2, and 3) east of Calaveras Road. These pools are likely jurisdictional as they are within the stream boundaries of San Antonio Creek and are bordered by freshwater marsh and seasonal wetlands. In addition, OW-1 is reported to support California red-legged frog¹ and a western pond turtle was observed here during the delineation field work.

Wetlands

The delineation field work was conducted in the spring after a slightly above average seasonal rainfall in late 2008 - early 2009 (USGS, 2009). San Antonio Creek was heavily disturbed by cattle grazing and trampling throughout much of the ESDA. In some areas, vegetation was grazed to the point where identification and estimation of percent cover became difficult.

Wetland Tributaries

San Antonio Creek is characterized, in part, as a ‘wetland tributary’ in this report and has both an OHWM and wetland characteristics (see Section 3.1, *Definitions*). For these reaches (WT-1a and b) the stream supports wetland characteristics and an OHWM. WT-1a, which extends from the cone-valve structure at Turner Dam to the USGS stream gauge weir, supports freshwater marsh. Below the weir, WT-1b supports seasonal wetlands as water heads subsurface.

¹ This pond just downstream of Turner Dam was surveyed by Jones and Stokes in 2006 and both red-legged frog and pond turtle were observed.

**TABLE G-1
WATERS OF THE U.S.
WITHIN THE EAST DELINEATION STUDY AREA**

Project Site/Feature Type	Feature	Linear ft.	Area (sqft)	Area (ac)	Data-point	Map#
Other Waters						
Intermittent stream (IS)	IS-1	1,915	44,741.01	1.027	na	1,2
	Subtotal	1,915	44,741.01	1.027		
Open water (OW)						
	OW-1	--	1,302.53	0.030	na	3
	OW-2	--	1,161.32	0.027	na	2
	OW-3	--	613.05	0.014	na	2
	Subtotal	--	3,076.90	0.071		
Total Other Waters		1,915	47,817.91	1.098		
Wetlands						
Wetland tributary (WT)	WT-1a (FWM)	2,878	92,789.35	2.130	8,9,11, 14	2,3
	WT-1b (SW)	282		0.135	19	
	Subtotal	3,160	98,651.39	2.265		
Freshwater Marsh (FWM)						
	FWM-1	--	1,003.86	0.023	1,2,3	3
	FWM-2	--	10,898.58	0.250	4,5	3
	FWM-3	--	99.63	0.002	7	3
	FWM-4	--	66.92	0.002	na	3
	Subtotal	--	12,068.99	0.277		
Total Wetlands		3,160	110,720.38	2.542		
Total Waters of the U.S.		5,075	158,538.29	3.640		

SOURCE: ESA, 2009

Freshwater Marsh

Freshwater marsh was documented at four locations in the study area. Fresh water marsh is typically indicative of wetland areas that hold water most of the year. These freshwater marsh areas define the upper reaches of San Antonio Creek, which is mapped as a wetland tributary. They are dominated by perennial species such as cattails (*Typha latifolia*; OBL), curly dock (*Rumex crispus*; FACW), duckweed (*Azolla filiculoides*; OBL), and iris-leaved rush (*Juncus xiphioides*, OBL). Numerous Gooding's (*Salix goodingii*; OBL) and arroyo willow (*S. lasiolepis*; FACW) also border or are found within the wetland boundary, sometimes growing in areas of inundation.

Seasonal Wetland

The reach of San Antonio Creek below the USGS stream gauge weir is comprised of seasonal wetland within the creek's OHWM and was mapped as a wetland tributary (WT-1b). Vegetation at sample point 19, taken at a wetter area in this wetland, was dominated by water parsley (*Oenanthe sarmentosa*; OBL), with common rush (*Juncus effusus*; OBL), iris-leaved rush, and common flatsedge (*Cyperus eragrostis*; FACW) also present.

Clean Water Act Analysis

Jurisdictional Determination Analysis Maps are presented in Appendix C and cover both sections of the wetland delineation study area. All delineations and determinations are final, having been verified by the Corps during a field verification site visit November 5, 2009.

No specific studies regarding duration of flow, groundwater measurement, or ecological function and values of streams and wetlands covered in this delineation were conducted. However, the USGS does maintain a monitoring station on San Antonio Creek. This station is approximately 0.25 miles east of Calaveras Road, located at a concrete weir and data shows that flows are perennial to near perennial in the reach upstream.

San Antonio Creek is mapped as a USGS blue line intermittent stream, with direct hydrologic connection to Alameda Creek west of the ESDA. Alameda Creek flows directly, and for approximately 20 stream miles from the project site, to San Francisco Bay, a traditionally navigable water (TNW). The project site is located directly downstream of San Antonio Reservoir, a TNW. The upstream portions of the study reach have perennial to near perennial flow but the lower reach between the USGS weir and Calaveras Road rarely flows on more than an ephemeral basis. Therefore, overall, the reaches of San Antonio Creek within the ESDA are considered to be relatively permanent waters (RPW).

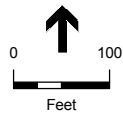
While San Antonio Creek is generally thought of as an intermittent stream, most of the creek east of Calaveras Road was actually mapped as a wetland tributary and can be characterized as freshwater marsh and seasonal wetland. The natural flow of San Antonio Creek has been highly altered by the presence of Turner Dam which was built in 1964. As a result, perennial flows in the upper reaches of the creek result from seepage through and around the earthen dam. Seepage flows are directed into the creek by perforated culverts, one at the north side of the dam and one at the south. This seepage results in highly regulated flows that persist year around in most years with seasonal fluctuations resulting from changes in soil moisture, humidity, temperature and other factors that typically affect hydrology.

This consistent and regulated flow regime has transformed these upper reaches of creek from what was originally a high energy seasonal stream into a wetland tributary with low, slow moving flows that pond behind the USGS stream gauge weir located about 0.25 mile upstream from Calaveras Road. The historical OHWM now defines the wetland boundary in most places. There is very little active incision or erosion evident in the stream reaches east of Calaveras Road. Even with its altered hydrology, San Antonio Creek and its instream, abutting, and adjacent wetlands in

the ESDA still performs all the basic stream functions noted above. In particular, the creek supports special-status wildlife, including California red-legged frog and western pond turtle. San Antonio Creek will therefore likely be considered jurisdictional by the Corps.

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G.2: Delineation Maps



- Waters of the U.S.**
- Data Points
 - Study Area
 - Ephemeral Stream
 - Intermittent Stream
 - Open Water
 - Wetland Tributary
 - Freshwater Marsh
 - Seasonal Wetland

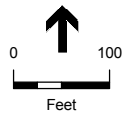


Appendix G
SFPUC San Antonio Backup Pipeline Project
Delineation of Waters
of the U.S.: Map 1 of 3

For contiguous features see adjacent maps for feature information

Map scale: 1:2400

Source: SFPUC, 2009; ESA+Orion, 2009; Jones and Stokes, 2009



- Data Points
 ■ Study Area
- Waters of the U.S.**
 ■ Ephemeral Stream
 ■ Intermittent Stream
 ■ Open Water
- Wetland Tributary
 ■ Freshwater Marsh
 ■ Seasonal Wetland

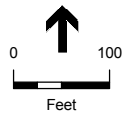


Appendix G
 SFPUC San Antonio Backup Pipeline Project
Delineation of Waters
of the U.S.: Map 2 of 3

For contiguous features see adjacent maps for feature information

Map scale: 1:2400

Source: SFPUC, 2009; ESA+Orion, 2009; Jones and Stokes, 2009



- Waters of the U.S.**
- Data Points
 - Study Area
 - Ephemeral Stream
 - Intermittent Stream
 - Open Water
 - Wetland Tributary
 - Freshwater Marsh
 - Seasonal Wetland



Appendix G
SFPUC San Antonio Backup Pipeline Project
Delineation of Waters
of the U.S.: Map 3 of 3

For contiguous features see adjacent maps for feature information
Map scale: 1:2400

Source: SFPUC, 2009; ESA+Orion, 2009; Jones and Stokes, 2009

G.3: Datasheets

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Antonio Backup Pipeline Project City/County: Alameda County, CA Sampling Date: 3-16-09
 Applicant/Owner: San Francisco Public Utilities Commission State: CA Sampling Point: 1
 Investigator(s): T Brookhart, B Leitner Section, Township, Range: CA T4S R4E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): Convex Slope (%): 0
 Subregion (LRR): C - Mediterranean California Lat: 37°34'21.45501"N Long: 121°55'02.72180"W Datum: NAD83
 Soil Map Unit Name: Yolo Loam NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ 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 ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒ No ☐
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		
Remarks:				

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1. <i>N/A</i>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)			
2.				Total Number of Dominant Species Across All Strata: <u>4</u> (B)			
3.				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0 %</u> (A/B)			
4.							
Total Cover: <u> </u> %							
Sapling/Shrub Stratum				Prevalence Index worksheet:			
1. <i>N/A</i>				Total % Cover of: Multiply by:			
2.				OBL species	<u>25</u>	x 1 =	<u>25</u>
3.				FACW species	<u>5</u>	x 2 =	<u>10</u>
4.				FAC species	<u>5</u>	x 3 =	<u>15</u>
5.				FACU species		x 4 =	<u>0</u>
Total Cover: <u> </u> %				UPL species		x 5 =	<u>0</u>
				Column Totals:	<u>35</u>	(A)	<u>50</u> (B)
				Prevalence Index = B/A = <u>1.43</u>			
Herb Stratum				Hydrophytic Vegetation Indicators:			
1. <i>Juncus effusus</i>	<u>20</u>	Yes	OBL	☒ Dominance Test is >50%			
2. <i>Rumex crispus</i>	<u>5</u>	Yes	FACW	☒ Prevalence Index is ≤3.0 ¹			
3. <i>Vulpia (sp)</i>	<u>5</u>	Yes	FAC	☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
4. <i>Juncus xiphioides</i>	<u>5</u>	Yes	OBL	☐ Problematic Hydrophytic Vegetation ¹ (Explain)			
5.							
6.							
7.							
8.							
Total Cover: <u>35</u> %							
Woody Vine Stratum							
1.							
2.							
Total Cover: <u> </u> %							
% Bare Ground in Herb Stratum <u>60</u> %			% Cover of Biotic Crust <u> </u> %	Hydrophytic Vegetation Present? Yes ☒ No ☐			

¹Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL

Sampling Point: 1**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
12	2.5Y 3/2	95	7.5 YR	5	RM	RC	SANDY LOAM	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

☐ Histosol (A1)	☒ Sandy Redox (S5)
☒ Histic Epipedon (A2)	☐ Stripped Matrix (S6)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)
☐ Stratified Layers (A5) (LRR C)	☐ Depleted Matrix (F3)
☐ 1 cm Muck (A9) (LRR D)	☐ Redox Dark Surface (F6)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)
☐ Sandy Mucky Mineral (S1)	☐ Vernal Pools (F9)
☐ Sandy Gleyed Matrix (S4)	

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (**LRR C**)
☐ 2 cm Muck (A10) (**LRR B**)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: _____

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☒ Surface Water (A1)	☐ Salt Crust (B11)
☐ High Water Table (A2)	☒ Biotic Crust (B12)
☒ Saturation (A3)	☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) (Nonriverine)	☐ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)
☐ Water-Stained Leaves (B9)	

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 ☐ Depth (inches): > 1Water Table Present? Yes ☒ No ☐ Depth (inches): SURFACESaturation Present? Yes ☒ No ☐ Depth (inches): SURFACE
(includes capillary fringe)**Wetland Hydrology Present?** Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____

Remarks: _____

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Antonio Backup Pipeline City/County: Alameda County, CA Sampling Date: 3/16/09
 Applicant/Owner: San Francisco Public Utilities Commission State: CA Sampling Point: 2
 Investigator(s): T Brookhart and B Leitner Section, Township, Range: CA T4S R4E
 Landform (hillslope, terrace, etc.): stream channel Local relief (concave, convex, none): _____ Slope (%): 0
 Subregion (LRR): C - Mediterranean California Lat: 37°34'21.54714"N Long: 121°51'02.79301"W Datum: NAD83
 Soil Map Unit Name: Yolo loam NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ 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 ☐	No ☒	Is the Sampled Area within a Wetland?	Yes ☐	No ☒
Hydric Soil Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☒	No ☐			
Remarks: This is a fairly recent wetland that has been created by the diversion of water from a leak in the pipeline system. The water is conveyed to this location by the use of an electric pump and hose that can be found on the east side of Calaveras Road. The water is then directed into the storm drain where it crosses the road in a culvert and empties into the sample site.					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)			
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)			
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0 %</u> (A/B)			
4. _____	_____	_____	_____				
Total Cover: _____ %							
Sapling/Shrub Stratum				Prevalence Index worksheet:			
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____			
2. _____	_____	_____	_____	OBL species _____ x 1 = <u>0</u>			
3. _____	_____	_____	_____	FACW species _____ x 2 = <u>0</u>			
4. _____	_____	_____	_____	FAC species <u>50</u> x 3 = <u>150</u>			
5. _____	_____	_____	_____	FACU species <u>10</u> x 4 = <u>40</u>			
Total Cover: _____ %				UPL species <u>10</u> x 5 = <u>50</u>			
				Column Totals: <u>70</u> (A) <u>240</u> (B)			
				Prevalence Index = B/A = <u>3.43</u>			
Herb Stratum				Hydrophytic Vegetation Indicators:			
1. <i>Bromus (sp)</i>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	☒ Dominance Test is >50%			
2. <i>Vicia (sp)</i>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	☒ Prevalence Index is ≤3.0 ¹			
3. <i>Vulpia (sp)</i>	<u>30</u>	<u>No</u>	<u>FAC</u>	☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
4. <i>Geranium dissectum</i>	<u>10</u>	<u>No</u>	<u>UPL</u>	☐ Problematic Hydrophytic Vegetation ¹ (Explain)			
5. _____	_____	_____	_____				
6. _____	_____	_____	_____				
7. _____	_____	_____	_____				
8. _____	_____	_____	_____				
Total Cover: <u>70%</u>							
Woody Vine Stratum				Hydrophytic Vegetation Present? Yes ☐ No ☒			
1. _____	_____	_____	_____				
2. _____	_____	_____	_____				
Total Cover: _____ %							
% Bare Ground in Herb Stratum <u>30 %</u>			% Cover of Biotic Crust _____ %				

Remarks: Site is at the base of Turner Dam. Bare ground due to some cattle and ground squirrel activity.

SOIL

Sampling Point: 2**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features			Loc ²	Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
16	5 Y 5/3	100					Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

☐ Histosol (A1)	☐ Sandy Redox (S5)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)
☐ Stratified Layers (A5) (LRR C)	☐ Depleted Matrix (F3)
☐ 1 cm Muck (A9) (LRR D)	☐ Redox Dark Surface (F6)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)
☐ Sandy Mucky Mineral (S1)	☐ Vernal Pools (F9)
☐ Sandy Gleyed Matrix (S4)	

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (**LRR C**)
☐ 2 cm Muck (A10) (**LRR B**)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks: No indicators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☐ Surface Water (A1)	☐ Salt Crust (B11)
☐ High Water Table (A2)	☐ Biotic Crust (B12)
☒ Saturation (A3)	☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) (Nonriverine)	☐ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)
☐ Water-Stained Leaves (B9)	

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 ☒

Depth (inches): _____

Water Table Present? Yes ☐ No ☒

Depth (inches): _____

Saturation Present? Yes ☒ No ☐
(includes capillary fringe)Depth (inches): 6"**Wetland Hydrology Present?** Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Saturation at 6 inches. This area is probably a bit wetter than usual. This site is at the base of Turner Dam

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Antonio Backup Pipeline Project City/County: Alameda County, CA Sampling Date: 3-16-09
 Applicant/Owner: San Francisco Public Utilities Commission State: CA Sampling Point: 3
 Investigator(s): T Brookhart, B Leitner Section, Township, Range: CA T4S R4E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): Convex Slope (%): 0
 Subregion (LRR): _____ Lat: 37°34'21.45501"N Long: 121°55'102.72180"W Datum: NAD83
 Soil Map Unit Name: Yolo Loam NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ 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 ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒ No ☐
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		
Remarks:				

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1. <i>N/A</i>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)			
2.				Total Number of Dominant Species Across All Strata: <u>4</u> (B)			
3.				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0 %</u> (A/B)			
4.							
Total Cover: <u> </u> %							
Sapling/Shrub Stratum				Prevalence Index worksheet:			
1. <i>N/A</i>				Total % Cover of: _____ Multiply by: _____			
2.				OBL species	<u>62</u>	x 1 =	<u>62</u>
3.				FACW species	<u>2</u>	x 2 =	<u>4</u>
4.				FAC species	<u>5</u>	x 3 =	<u>15</u>
5.				FACU species		x 4 =	<u>0</u>
Total Cover: <u> </u> %				UPL species		x 5 =	<u>0</u>
				Column Totals:	<u>69</u>	(A)	<u>81</u> (B)
				Prevalence Index = B/A = <u>1.17</u>			
Herb Stratum				Hydrophytic Vegetation Indicators:			
1. <i>Typha (sp)</i>	<u>15</u>	<u>Yes</u>	<u>OBL</u>	☒ Dominance Test is >50%			
2. <i>Rorippa nasturtium</i>	<u>42</u>	<u>Yes</u>	<u>OBL</u>	☒ Prevalence Index is ≤3.0 ¹			
3. <i>Conium maculatum</i>	<u>2</u>	<u>Yes</u>	<u>FACW</u>	☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
4. <i>Juncus xiphioides</i>	<u>5</u>	<u>Yes</u>	<u>OBL</u>	☐ Problematic Hydrophytic Vegetation ¹ (Explain)			
5. <i>Picris echioides</i>	<u>5</u>	<u>No</u>	<u>FAC</u>				
6.							
7.							
8.							
Total Cover: <u>69</u> %							
Woody Vine Stratum				¹ Indicators of hydric soil and wetland hydrology must be present.			
1.							
2.							
Total Cover: <u> </u> %				Hydrophytic Vegetation Present? Yes ☒ No ☐			
% Bare Ground in Herb Stratum <u>15</u> %			% Cover of Biotic Crust <u>5</u> %				

Remarks: Site is located at the outfall drain of the base of Turner Dam. Drain water enters wetland via a rock filled channel and exists via a 24" culvert. Water flowing during survey. Bare soil due to livestock presence.

SOIL

Sampling Point: 3**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features			Loc ²	Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
12	2.5Y 2/1	98	10 YR 5/8	2	RM	RC	LOAMY SAND	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

☐ Histosol (A1)	☐ Sandy Redox (S5)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1)
☒ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)
☐ Stratified Layers (A5) (LRR C)	☐ Depleted Matrix (F3)
☒ 1 cm Muck (A9) (LRR D)	☐ Redox Dark Surface (F6)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)
☐ Sandy Mucky Mineral (S1)	☐ Vernal Pools (F9)
☐ Sandy Gleyed Matrix (S4)	

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (**LRR C**)
☐ 2 cm Muck (A10) (**LRR B**)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: _____

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☒ Surface Water (A1)	☐ Salt Crust (B11)
☒ High Water Table (A2)	☐ Biotic Crust (B12)
☒ Saturation (A3)	☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) (Nonriverine)	☐ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)
☐ Water-Stained Leaves (B9)	

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 ☐ Depth (inches): > 1Water Table Present? Yes ☒ No ☐ Depth (inches): SURFACESaturation Present? Yes ☒ No ☐ Depth (inches): SURFACE
(includes capillary fringe)**Wetland Hydrology Present?** Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____

Remarks: Contiguous with Site 1

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Antonio Backup Pipeline City/County: Alameda County, CA Sampling Date: 3/16/09
 Applicant/Owner: San Francisco Public Utilities Commission State: CA Sampling Point: 4
 Investigator(s): T Brookhart and B Leitner Section, Township, Range: CA T4S R4E
 Landform (hillslope, terrace, etc.): stream channel Local relief (concave, convex, none): _____ Slope (%): 0
 Subregion (LRR): C - Mediterranean California Lat: 37°34'24.23901"N Long: 121°51'02.18034"W Datum: NAD83
 Soil Map Unit Name: Riverwash NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ 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 ☐	No ☒	Is the Sampled Area within a Wetland?	Yes ☐	No ☒
Hydric Soil Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☒	No ☐			
Remarks: This site is directly outside of a wetland area with Typha and tall Juncus species.					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)			
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)			
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3 %</u> (A/B)			
4. _____	_____	_____	_____				
Total Cover: <u>_____</u> %							
Sapling/Shrub Stratum				Prevalence Index worksheet:			
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____			
2. _____	_____	_____	_____	OBL species <u>_____</u> x 1 = <u>0</u>			
3. _____	_____	_____	_____	FACW species <u>70</u> x 2 = <u>140</u>			
4. _____	_____	_____	_____	FAC species <u>2</u> x 3 = <u>6</u>			
5. _____	_____	_____	_____	FACU species <u>8</u> x 4 = <u>32</u>			
Total Cover: <u>_____</u> %				UPL species <u>20</u> x 5 = <u>100</u>			
				Column Totals: <u>100</u> (A) <u>278</u> (B)			
				Prevalence Index = B/A = <u>2.78</u>			
Herb Stratum				Hydrophytic Vegetation Indicators:			
1. <i>Juncus (sp)</i>	70	Yes	FACW*	☒ Dominance Test is >50%			
2. <i>Piptatherum miliaceum</i>	20	Yes	Not Listed	☒ Prevalence Index is ≤3.0 ¹			
3. <i>Cirsium vulgare</i>	8	Yes	FACU	☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
4. <i>Picris echioides</i>	2	No	FAC	☐ Problematic Hydrophytic Vegetation ¹ (Explain)			
5. _____	_____	_____	_____				
6. _____	_____	_____	_____				
7. _____	_____	_____	_____				
8. _____	_____	_____	_____				
Total Cover: <u>100%</u>							
Woody Vine Stratum				¹ Indicators of hydric soil and wetland hydrology must be present.			
1. _____	_____	_____	_____				
2. _____	_____	_____	_____				
Total Cover: <u>_____</u> %				Hydrophytic Vegetation Present? Yes ☐ No ☒			
% Bare Ground in Herb Stratum <u>0 %</u>			% Cover of Biotic Crust <u>_____</u> %				

Remarks: Site is at the base of Turner Dam. This site is just outside of a wetland.

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Loc ²	Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
12	5 Y 4/2	100					Sand clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)
☐ Black Histic (A3)	☐ Stripped Matrix (S6)
☐ Hydrogen Sulfide (A4)	☐ Loamy Mucky Mineral (F1)
☐ Stratified Layers (A5) (LRR C)	☐ Loamy Gleyed Matrix (F2)
☐ 1 cm Muck (A9) (LRR D)	☐ Depleted Matrix (F3)
☐ Depleted Below Dark Surface (A11)	☐ Redox Dark Surface (F6)
☐ Thick Dark Surface (A12)	☐ Depleted Dark Surface (F7)
☐ Sandy Mucky Mineral (S1)	☐ Redox Depressions (F8)
☐ Sandy Gleyed Matrix (S4)	☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks: No indicators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☐ Surface Water (A1)	☐ Salt Crust (B11)
☐ High Water Table (A2)	☐ Biotic Crust (B12)
☒ Saturation (A3)	☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) (Nonriverine)	☐ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)
☐ Water-Stained Leaves (B9)	

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 ☒

Depth (inches): _____

Water Table Present? Yes ☐ No ☒

Depth (inches): _____

Saturation Present? Yes ☒ No ☐
(includes capillary fringe)

Depth (inches): 12"

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Saturation at 12 inches.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Antonio Backup Pipeline Project City/County: Alameda County, CA Sampling Date: 3-16-09
 Applicant/Owner: San Francisco Public Utilities Commission State: CA Sampling Point: 5
 Investigator(s): T Brookhart, B Leitner Section, Township, Range: CA T4S R4E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): Convex Slope (%): 0
 Subregion (LRR): _____ Lat: 37°34'24.35147"N Long: 121°55'102.16033"W Datum: NAD83
 Soil Map Unit Name: Riverwash NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ 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 ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒ No ☐
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		
Remarks:				

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1. <i>N/A</i>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)			
2. _____				Total Number of Dominant Species Across All Strata: <u>4</u> (B)			
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0 %</u> (A/B)			
4. _____							
Total Cover: _____ %							
Sapling/Shrub Stratum				Prevalence Index worksheet:			
1. <i>N/A</i>				Total % Cover of: _____ Multiply by: _____			
2. _____				OBL species	<u>40</u>	x 1 =	<u>40</u>
3. _____				FACW species	<u>20</u>	x 2 =	<u>40</u>
4. _____				FAC species		x 3 =	<u>0</u>
5. _____				FACU species		x 4 =	<u>0</u>
Total Cover: _____ %				UPL species		x 5 =	<u>0</u>
Herb Stratum				Column Totals:	<u>60</u>	(A)	<u>80</u> (B)
1. <i>Typha (sp)</i>	<u>20</u>	Yes	OBL	Prevalence Index = B/A = <u>1.33</u>			
2. <i>Juncus phaeocephalus</i>	<u>20</u>	Yes	FACW				
3. <i>Juncus effusus</i>	<u>15</u>	Yes	OBL				
4. <i>Juncus xiphioides</i>	<u>5</u>	Yes	OBL				
5. _____							
6. _____							
7. _____							
8. _____							
Total Cover: <u>60 %</u>							
Woody Vine Stratum				Hydrophytic Vegetation Indicators:			
1. _____				☒ Dominance Test is >50%			
2. _____				☒ 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 ☒ No ☐			
% Bare Ground in Herb Stratum _____ % % Cover of Biotic Crust _____ %							

Remarks: Dead material in area, mostly Typha

SOIL

Sampling Point: 5**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
12	2.5Y 2/1	98						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

☐ Histosol (A1)	☐ Sandy Redox (S5)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1)
☒ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)
☐ Stratified Layers (A5) (LRR C)	☐ Depleted Matrix (F3)
☒ 1 cm Muck (A9) (LRR D)	☐ Redox Dark Surface (F6)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)
☐ Sandy Mucky Mineral (S1)	☐ Vernal Pools (F9)
☐ Sandy Gleyed Matrix (S4)	

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: _____

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☒ Surface Water (A1)	☐ Salt Crust (B11)
☐ High Water Table (A2)	☐ Biotic Crust (B12)
☒ Saturation (A3)	☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) (Nonriverine)	☒ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)
☐ Water-Stained Leaves (B9)	

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 ☐ Depth (inches): > 1Water Table Present? Yes ☒ No ☐ Depth (inches): SURFACESaturation Present? Yes ☒ No ☐ Depth (inches): SURFACE
(includes capillary fringe)**Wetland Hydrology Present?** Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____

Remarks: _____

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Antonio Backup Pipeline Project City/County: Alameda County, CA Sampling Date: 3-16-09
 Applicant/Owner: San Francisco Public Utilities Commission State: CA Sampling Point: 6
 Investigator(s): T Brookhart, B Leitner Section, Township, Range: CA T4S R4E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRR): _____ Lat: 37°34'24.817997"N Long: 121°51'01.29185"W Datum: NAD83
 Soil Map Unit Name: Riverwash NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ 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 ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒ No ☐
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		
Remarks:				

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1. <u>N/A</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)			
2. _____				Total Number of Dominant Species Across All Strata: <u>4</u> (B)			
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75.0 %</u> (A/B)			
4. _____							
Total Cover: _____ %							
Sapling/Shrub Stratum				Prevalence Index worksheet:			
1. <u>N/A</u>				Total % Cover of: _____ Multiply by: _____			
2. _____				OBL species	<u>70</u>	x 1 =	<u>70</u>
3. _____				FACW species	<u>5</u>	x 2 =	<u>10</u>
4. _____				FAC species	<u>5</u>	x 3 =	<u>15</u>
5. _____				FACU species	<u>5</u>	x 4 =	<u>20</u>
Total Cover: _____ %				UPL species		x 5 =	<u>0</u>
				Column Totals:	<u>85</u>	(A)	<u>115</u> (B)
				Prevalence Index = B/A = <u>1.35</u>			
Herb Stratum				Hydrophytic Vegetation Indicators:			
1. <u>Juncus effusus</u>	<u>70</u>	Yes	OBL	☒ Dominance Test is >50%			
2. <u>Conium maculatum</u>	<u>5</u>	Yes	FACW	☒ Prevalence Index is ≤3.0 ¹			
3. <u>Picris echinoides</u>	<u>5</u>	Yes	FAC	☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
4. <u>Cirsium vulgare</u>	<u>5</u>	Yes	FACU	☐ Problematic Hydrophytic Vegetation ¹ (Explain)			
5. _____				¹ Indicators of hydric soil and wetland hydrology must be present.			
6. _____							
7. _____							
8. _____							
Total Cover: <u>85 %</u>							
Woody Vine Stratum				Hydrophytic Vegetation Present?			
1. _____				Yes ☒ No ☐			
2. _____							
Total Cover: _____ %							
% Bare Ground in Herb Stratum <u>15 %</u>		% Cover of Biotic Crust _____ %					
Remarks:							

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
12	5 YR 3.5/2	100						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)
☐ Black Histic (A3)	☐ Stripped Matrix (S6)
☒ Hydrogen Sulfide (A4)	☒ Loamy Mucky Mineral (F1)
☐ Stratified Layers (A5) (LRR C)	☐ Loamy Gleyed Matrix (F2)
☒ 1 cm Muck (A9) (LRR D)	☐ Depleted Matrix (F3)
☐ Depleted Below Dark Surface (A11)	☐ Redox Dark Surface (F6)
☐ Thick Dark Surface (A12)	☐ Depleted Dark Surface (F7)
☐ Sandy Mucky Mineral (S1)	☐ Redox Depressions (F8)
☐ Sandy Gleyed Matrix (S4)	☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☐ Surface Water (A1)	☐ Salt Crust (B11)
☐ High Water Table (A2)	☐ Biotic Crust (B12)
☒ Saturation (A3)	☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) (Nonriverine)	☒ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)
☐ Water-Stained Leaves (B9)	

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 ☒

Depth (inches): _____

Water Table Present? Yes ☒ No ☐

Depth (inches): > 1

Saturation Present? Yes ☒ No ☐
(includes capillary fringe)

Depth (inches): > 1

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Antonio Backup Pipeline City/County: Alameda County, CA Sampling Date: 3-16-09
 Applicant/Owner: San Francisco Public Utilities Commission State: CA Sampling Point: 7
 Investigator(s): T Brookhart, B Leitner Section, Township, Range: CA T4S R4E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 0
 Subregion (LRR): C - Mediterranean California Lat: 37°34'24.76608"N Long: 121°55'1'03.24536"W Datum: NAD83
 Soil Map Unit Name: Riverwash NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ 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 ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒ No ☐
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		
Remarks:				

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)			
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)			
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0 %</u> (A/B)			
4. _____	_____	_____	_____	Total Cover: <u>_____</u> %			
Sapling/Shrub Stratum				Prevalence Index worksheet:			
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____			
2. _____	_____	_____	_____	OBL species	<u>45</u>	x 1 =	<u>45</u>
3. _____	_____	_____	_____	FACW species	<u>5</u>	x 2 =	<u>10</u>
4. _____	_____	_____	_____	FAC species	_____	x 3 =	<u>0</u>
5. _____	_____	_____	_____	FACU species	_____	x 4 =	<u>0</u>
Total Cover: <u>_____</u> %				UPL species	_____	x 5 =	<u>0</u>
Herb Stratum				Column Totals:	<u>50</u>	(A)	<u>55</u> (B)
1. <i>Typha latifolia</i>	<u>40</u>	Yes	OBL	Prevalence Index = B/A = <u>1.10</u>			
2. <i>Baccharis salicifolia</i>	<u>5</u>	Yes	FACW	Hydrophytic Vegetation Indicators:			
3. <i>Juncus effusus</i>	<u>5</u>	Yes	OBL	☒ 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)			
4. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present.			
5. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes ☒ No ☐			
6. _____	_____	_____	_____				
7. _____	_____	_____	_____				
8. _____	_____	_____	_____				
Total Cover: <u>50</u> %							
Woody Vine Stratum							
1. _____	_____	_____	_____				
2. _____	_____	_____	_____				
Total Cover: <u>_____</u> %							
% Bare Ground in Herb Stratum <u>35</u> % % Cover of Biotic Crust _____ %							
Remarks:							

SOIL

Sampling Point: 7**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features			Loc ²	Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
12	5 YR 2.5/1	100					Sandy Clay	remnant riverbed- gravel/cobble

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)
☐ Black Histic (A3)	☐ Stripped Matrix (S6)
☒ Hydrogen Sulfide (A4)	☐ Loamy Mucky Mineral (F1)
☐ Stratified Layers (A5) (LRR C)	☐ Loamy Gleyed Matrix (F2)
☒ 1 cm Muck (A9) (LRR D)	☐ Depleted Matrix (F3)
☐ Depleted Below Dark Surface (A11)	☐ Redox Dark Surface (F6)
☐ Thick Dark Surface (A12)	☐ Depleted Dark Surface (F7)
☐ Sandy Mucky Mineral (S1)	☐ Redox Depressions (F8)
☐ Sandy Gleyed Matrix (S4)	☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.**Restrictive Layer (if present):**
 Type: Rock/gravel
 Depth (inches): 6-10
Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☒ Surface Water (A1)	☐ Salt Crust (B11)
☐ High Water Table (A2)	☐ Biotic Crust (B12)
☒ Saturation (A3)	☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) (Nonriverine)	☐ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)
☐ Water-Stained Leaves (B9)	

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 ☐	Depth (inches): <u>surface</u>
Water Table Present?	Yes ☒ No ☐	Depth (inches): <u>surface</u>
Saturation Present? (includes capillary fringe)	Yes ☒ No ☐	Depth (inches): <u>surface</u>

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Antonio Backup Pipeline City/County: Alameda County, CA Sampling Date: 3-16-09
 Applicant/Owner: San Francisco Public Utilities Commission State: CA Sampling Point: 8
 Investigator(s): T Brookhart, B Leitner Section, Township, Range: CA T4S R4E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 0
 Subregion (LRR): C - Mediterranean California Lat: 37°34'24.00653"N Long: 121°55'103.71862"W Datum: NAD83
 Soil Map Unit Name: Riverwash NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ 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 ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒ No ☐
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		
Remarks:				

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>3</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100.0 %</u> (A/B)
4. _____	_____	_____	_____		
Total Cover:	<u> </u> %				
Sapling/Shrub Stratum				Prevalence Index worksheet:	
1. _____	_____	_____	_____	Total % Cover of:	Multiply by:
2. _____	_____	_____	_____	OBL species <u>70</u>	x 1 = <u>70</u>
3. _____	_____	_____	_____	FACW species _____	x 2 = <u>0</u>
4. _____	_____	_____	_____	FAC species _____	x 3 = <u>0</u>
5. _____	_____	_____	_____	FACU species _____	x 4 = <u>0</u>
Total Cover:	<u> </u> %			UPL species _____	x 5 = <u>0</u>
Herb Stratum				Column Totals:	<u>70</u> (A) <u>70</u> (B)
1. <i>Juncus xiphioides</i>	<u>30</u>	<u>Yes</u>	<u>OBL</u>	Prevalence Index = B/A = <u>1.00</u>	
2. <i>Juncus effusus</i>	<u>30</u>	<u>Yes</u>	<u>OBL</u>		
3. <i>Typha angustifolia</i>	<u>10</u>	<u>Yes</u>	<u>OBL</u>		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
Total Cover:	<u>70</u> %				
Woody Vine Stratum				Hydrophytic Vegetation Indicators:	
1. _____	_____	_____	_____	☒ Dominance Test is >50%	
2. _____	_____	_____	_____	☒ 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 ☒ No ☐	
Remarks:					

Remarks:

SOIL

Sampling Point: 8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Loc ²	Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
12	5 Y 5/1	100					Sandy Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐ Histosol (A1)	☐ Sandy Redox (S5)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1)
☒ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)
☐ Stratified Layers (A5) (LRR C)	☐ Depleted Matrix (F3)
☐ 1 cm Muck (A9) (LRR D)	☐ Redox Dark Surface (F6)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)
☐ Sandy Mucky Mineral (S1)	☐ Vernal Pools (F9)
☒ Sandy Gleyed Matrix (S4)	

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: Rock/gravel
 Depth (inches): 6-10
Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☒ Surface Water (A1)	☐ Salt Crust (B11)
☐ High Water Table (A2)	☐ Biotic Crust (B12)
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) (Nonriverine)	☒ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)
☒ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)
☐ Water-Stained Leaves (B9)	

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 ☐	Depth (inches): <u>1</u>
Water Table Present?	Yes ☐ No ☒	Depth (inches): <u></u>
Saturation Present? (includes capillary fringe)	Yes ☒ No ☐	Depth (inches): <u>surface</u>

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Antonio Backup Pipeline City/County: Alameda County, CA Sampling Date: 3-16-09
 Applicant/Owner: San Francisco Public Utilities Commission State: CA Sampling Point: 9
 Investigator(s): T Brookhart, B Leitner Section, Township, Range: CA T4S R4E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 0
 Subregion (LRR): C - Mediterranean California Lat: 37°34'24.15607"N Long: 121°51'06.70353"W Datum: NAD83
 Soil Map Unit Name: Riverwash NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ 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 ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒ No ☐
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		
Remarks:				

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1. <i>Salix goodingii</i>	40	Yes	OBL	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)			
2. _____				Total Number of Dominant Species Across All Strata: <u>4</u> (B)			
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0 %</u> (A/B)			
4. _____							
Total Cover: <u>40 %</u>							
Sapling/Shrub Stratum				Prevalence Index worksheet:			
1. _____				Total % Cover of: _____ Multiply by: _____			
2. _____				OBL species	<u>98</u>	x 1 =	<u>98</u>
3. _____				FACW species	<u>2</u>	x 2 =	<u>4</u>
4. _____				FAC species		x 3 =	<u>0</u>
5. _____				FACU species		x 4 =	<u>0</u>
Total Cover: _____ %				UPL species		x 5 =	<u>0</u>
				Column Totals:	<u>100</u>	(A)	<u>102</u> (B)
				Prevalence Index = B/A = <u>1.02</u>			
Herb Stratum				Hydrophytic Vegetation Indicators:			
1. <i>Schoenoplectus americanus</i>	40	Yes	OBL	☒ Dominance Test is >50%			
2. <i>Juncus xiphioides</i>	28	Yes	OBL	☒ Prevalence Index is ≤3.0 ¹			
3. <i>Rumex crispus</i>	2	Yes	FACW	☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
4. _____				☐ Problematic Hydrophytic Vegetation ¹ (Explain)			
5. _____							
6. _____							
7. _____							
8. _____							
Total Cover: <u>70 %</u>							
Woody Vine Stratum				¹ Indicators of hydric soil and wetland hydrology must be present.			
1. _____							
2. _____				Hydrophytic Vegetation Present? Yes ☒ No ☐			
Total Cover: _____ %							
% Bare Ground in Herb Stratum <u>20 %</u>		% Cover of Biotic Crust _____ %					
Remarks:							

SOIL

Sampling Point: 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Loc ²	Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
12	7.5 YR 3/1	100					Clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)
☐ Black Histic (A3)	☐ Stripped Matrix (S6)
☒ Hydrogen Sulfide (A4)	☐ Loamy Mucky Mineral (F1)
☐ Stratified Layers (A5) (LRR C)	☐ Loamy Gleyed Matrix (F2)
☐ 1 cm Muck (A9) (LRR D)	☐ Depleted Matrix (F3)
☐ Depleted Below Dark Surface (A11)	☐ Redox Dark Surface (F6)
☐ Thick Dark Surface (A12)	☐ Depleted Dark Surface (F7)
☐ Sandy Mucky Mineral (S1)	☐ Redox Depressions (F8)
☒ Sandy Gleyed Matrix (S4)	☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.**Restrictive Layer (if present):**

Type: Rock/gravel

Depth (inches): 6-10

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☒ Surface Water (A1)	☐ Salt Crust (B11)
☐ High Water Table (A2)	☐ Biotic Crust (B12)
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) (Nonriverine)	☒ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)
☒ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)
☐ Water-Stained Leaves (B9)	

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 ☐	Depth (inches): 1
Water Table Present?	Yes ☐ No ☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ☒ No ☐	Depth (inches): surface

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Antonio Backup Pipeline City/County: Alameda County, CA Sampling Date: 3/16/09
 Applicant/Owner: San Francisco Public Utilities Commission State: CA Sampling Point: 10
 Investigator(s): T Brookhart and B Leitner Section, Township, Range: CA T4S R4E
 Landform (hillslope, terrace, etc.): stream channel Local relief (concave, convex, none): _____ Slope (%): 0
 Subregion (LRR): C - Mediterranean California Lat: 37°34'24.15607"N Long: 121°51'06.70353"W Datum: NAD83
 Soil Map Unit Name: Riverwash NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ 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 ☐	No ☒	Is the Sampled Area within a Wetland?	Yes ☐	No ☒
Hydric Soil Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☐	No ☒			
Remarks: This site is directly outside of a wetland area with Typha and tall Juncus species.					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)			
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)			
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0</u> % (A/B)			
4. _____	_____	_____	_____				
Total Cover: _____ %							
Sapling/Shrub Stratum				Prevalence Index worksheet:			
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____			
2. _____	_____	_____	_____	OBL species	_____	x 1 =	<u>0</u>
3. _____	_____	_____	_____	FACW species	<u>2</u>	x 2 =	<u>4</u>
4. _____	_____	_____	_____	FAC species	_____	x 3 =	<u>0</u>
5. _____	_____	_____	_____	FACU species	<u>25</u>	x 4 =	<u>100</u>
Total Cover: _____ %				UPL species	<u>11</u>	x 5 =	<u>55</u>
				Column Totals:	<u>38</u>	(A)	<u>159</u> (B)
				Prevalence Index = B/A = <u>4.18</u>			
Herb Stratum				Hydrophytic Vegetation Indicators:			
1. <i>Bromus hordeaceus</i>	<u>25</u>	Yes	FACU	☒ Dominance Test is >50%			
2. <i>Geranium molle</i>	<u>8</u>	Yes	UPL	☒ Prevalence Index is ≤3.0 ¹			
3. <i>Trifolium (sp)</i>	<u>2</u>	No	NI	☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
4. <i>Hirschfeldia incana</i>	<u>3</u>	No	UPL	☐ Problematic Hydrophytic Vegetation ¹ (Explain)			
5. <i>Conium maculatum</i>	<u>2</u>	No	FACW				
6. _____	_____	_____	_____				
7. _____	_____	_____	_____				
8. _____	_____	_____	_____				
Total Cover: <u>40</u> %							
Woody Vine Stratum				¹ Indicators of hydric soil and wetland hydrology must be present.			
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes ☐ No ☒			
2. _____	_____	_____	_____				
Total Cover: _____ %							
% Bare Ground in Herb Stratum <u>0</u> %			% Cover of Biotic Crust _____ %				

Remarks: Upland site of coupled wetland site (Data sheet 9)

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Loc ²	Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
16	10 YR 4/2	100					Sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

☐ Histosol (A1)	☐ Sandy Redox (S5)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)
☐ Stratified Layers (A5) (LRR C)	☐ Depleted Matrix (F3)
☐ 1 cm Muck (A9) (LRR D)	☐ Redox Dark Surface (F6)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)
☐ Sandy Mucky Mineral (S1)	☐ Vernal Pools (F9)
☐ Sandy Gleyed Matrix (S4)	

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks: No indicators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☐ Surface Water (A1)	☐ Salt Crust (B11)
☐ High Water Table (A2)	☐ Biotic Crust (B12)
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) (Nonriverine)	☐ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)
☐ Water-Stained Leaves (B9)	

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 ☒ Depth (inches): _____Water Table Present? Yes ☐ No ☒ Depth (inches): _____Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)**Wetland Hydrology Present?** Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No indicators

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Antonio Backup Pipeline City/County: Alameda County, CA Sampling Date: 3-16-09
 Applicant/Owner: San Francisco Public Utilities Commission State: CA Sampling Point: 11
 Investigator(s): T Brookhart, B Leitner Section, Township, Range: CA T4S R4E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 0
 Subregion (LRR): C - Mediterranean California Lat: 37°34'30.70607"N Long: 121°51'17.94060"W Datum: NAD83
 Soil Map Unit Name: Riverwash NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ 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 ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒ No ☐
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		
Remarks:				

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)			
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)			
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0 %</u> (A/B)			
4. _____	_____	_____	_____	Prevalence Index worksheet:			
Total Cover: _____ %				Total % Cover of: _____ Multiply by: _____			
Sapling/Shrub Stratum				OBL species <u>50</u> x 1 = <u>50</u>			
1. _____	_____	_____	_____	FACW species <u>2</u> x 2 = <u>4</u>			
2. _____	_____	_____	_____	FAC species _____ x 3 = <u>0</u>			
3. _____	_____	_____	_____	FACU species _____ x 4 = <u>0</u>			
4. _____	_____	_____	_____	UPL species _____ x 5 = <u>0</u>			
5. _____	_____	_____	_____	Column Totals: <u>52</u> (A) <u>54</u> (B)			
Total Cover: _____ %				Prevalence Index = B/A = <u>1.04</u>			
Herb Stratum				Hydrophytic Vegetation Indicators:			
1. <i>Juncus effusus</i>	<u>45</u>	Yes	OBL	☒ Dominance Test is >50%			
2. <i>Juncus xiphioides</i>	<u>5</u>	Yes	OBL	☒ Prevalence Index is ≤3.0 ¹			
3. <i>Rumex crispus</i>	<u>2</u>	Yes	FACW	☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
4. _____	_____	_____	_____	☐ Problematic Hydrophytic Vegetation ¹ (Explain)			
5. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present.			
6. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes ☒ No ☐			
7. _____	_____	_____	_____				
8. _____	_____	_____	_____				
Total Cover: <u>52 %</u>							
Woody Vine Stratum							
1. _____	_____	_____	_____				
2. _____	_____	_____	_____				
Total Cover: _____ %							
% Bare Ground in Herb Stratum <u>20 %</u> % Cover of Biotic Crust _____ %							

Remarks: Just below a patch of cattails. Lots of tall juncus

SOIL

Sampling Point: 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Loc ²	Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
12	5 Y 2.5/2	100					Sandy Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)
☐ Black Histic (A3)	☐ Stripped Matrix (S6)
☒ Hydrogen Sulfide (A4)	☐ Loamy Mucky Mineral (F1)
☐ Stratified Layers (A5) (LRR C)	☐ Loamy Gleyed Matrix (F2)
☒ 1 cm Muck (A9) (LRR D)	☐ Depleted Matrix (F3)
☐ Depleted Below Dark Surface (A11)	☐ Redox Dark Surface (F6)
☐ Thick Dark Surface (A12)	☐ Depleted Dark Surface (F7)
☐ Sandy Mucky Mineral (S1)	☐ Redox Depressions (F8)
☐ Sandy Gleyed Matrix (S4)	☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rock/gravel

Depth (inches): 6-10

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☒ Surface Water (A1)	☐ Salt Crust (B11)
☐ High Water Table (A2)	☐ Biotic Crust (B12)
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) (Nonriverine)	☒ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)
☒ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)
☐ Water-Stained Leaves (B9)	

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 ☐

Depth (inches): 2

Water Table Present? Yes ☒ No ☐

Depth (inches): surface

Saturation Present? (includes capillary fringe) Yes ☒ No ☐

Depth (inches): surface

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Antonio Backup Pipeline City/County: Alameda County, CA Sampling Date: 3/16/09
 Applicant/Owner: San Francisco Public Utilities Commission State: CA Sampling Point: 12
 Investigator(s): T Brookhart and B Leitner Section, Township, Range: CA T4S R4E
 Landform (hillslope, terrace, etc.): stream channel Local relief (concave, convex, none): _____ Slope (%): 0
 Subregion (LRR): C - Mediterranean California Lat: 37°34'30.26569"N Long: 121°51'18.11880"W Datum: NAD83
 Soil Map Unit Name: Riverwash NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ 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 ☐	No ☒	Is the Sampled Area within a Wetland?	Yes ☐	No ☒
Hydric Soil Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☐	No ☒			
Remarks: This site is directly outside of a wetland area with Typha and tall Juncus species.					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <i>Platanus racemosa</i>	20	Yes	FACW	Number of Dominant Species That Are OBL, FACW, or FAC:	1 (A)
2.				Total Number of Dominant Species Across All Strata:	3 (B)
3.				Percent of Dominant Species That Are OBL, FACW, or FAC:	33.3 % (A/B)
4.					
Total Cover: 20 %					
Sapling/Shrub Stratum				Prevalence Index worksheet:	
1.				Total % Cover of:	Multiply by:
2.				OBL species	x 1 = 0
3.				FACW species	20 x 2 = 40
4.				FAC species	x 3 = 0
5.				FACU species	50 x 4 = 200
Total Cover: %				UPL species	17 x 5 = 85
				Column Totals:	87 (A) 325 (B)
Herb Stratum				Prevalence Index = B/A = 3.74	
1. <i>Bromus hordeaceus</i>	50	Yes	FACU	Hydrophytic Vegetation Indicators:	
2. <i>Geranium dissectum</i>	5	No	UPL	☒ Dominance Test is >50%	
3. <i>Claytonia perfoliata</i>	2	No	UPL	☒ Prevalence Index is ≤3.0 ¹	
4. <i>Carduus pycnocephalus</i>	10	Yes	UPL	☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
5.				☐ Problematic Hydrophytic Vegetation ¹ (Explain)	
6.				¹ Indicators of hydric soil and wetland hydrology must be present.	
7.				Hydrophytic Vegetation Present? Yes ☐ No ☒	
8.					
Total Cover: 67 %					
Woody Vine Stratum					
1.					
2.					
Total Cover: %					
% Bare Ground in Herb Stratum 0 %			% Cover of Biotic Crust %		

Remarks: Upland site of coupled wetland site (Data sheet 13)

SOIL

Sampling Point: 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Loc ²	Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
12	10 YR 3/2	100					Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐ Histosol (A1)	☐ Sandy Redox (S5)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)
☐ Stratified Layers (A5) (LRR C)	☐ Depleted Matrix (F3)
☐ 1 cm Muck (A9) (LRR D)	☐ Redox Dark Surface (F6)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)
☐ Sandy Mucky Mineral (S1)	☐ Vernal Pools (F9)
☐ Sandy Gleyed Matrix (S4)	

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks: No indicators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☐ Surface Water (A1)	☐ Salt Crust (B11)
☐ High Water Table (A2)	☐ Biotic Crust (B12)
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) (Nonriverine)	☐ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)
☐ Water-Stained Leaves (B9)	

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 ☒

Depth (inches): _____

Water Table Present? Yes ☐ No ☒

Depth (inches): _____

Saturation Present? Yes ☐ No ☒
(includes capillary fringe)

Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No indicators

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Antonio Backup Pipeline City/County: Alameda County, CA Sampling Date: 3-16-09
 Applicant/Owner: San Francisco Public Utilities Commission State: CA Sampling Point: 13
 Investigator(s): T Brookhart, B Leitner Section, Township, Range: CA T4S R4E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 0
 Subregion (LRR): C - Mediterranean California Lat: 37°34'36.45340"N Long: 121°51'23.48429"W Datum: NAD83
 Soil Map Unit Name: Riverwash NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ 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 ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒ No ☐
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		
Remarks:				

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1. <i>Platanus racemosa</i>	5	No	FACW	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)			
2. <i>Salix goodingii</i>	10	Yes	OBL	Total Number of Dominant Species Across All Strata: <u>3</u> (B)			
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0 %</u> (A/B)			
4. _____							
Total Cover: <u>15 %</u>							
Sapling/Shrub Stratum				Prevalence Index worksheet:			
1. _____				Total % Cover of: _____ Multiply by: _____			
2. _____				OBL species	<u>23</u>	x 1 =	<u>23</u>
3. _____				FACW species	<u>10</u>	x 2 =	<u>20</u>
4. _____				FAC species	<u>12</u>	x 3 =	<u>36</u>
5. _____				FACU species		x 4 =	<u>0</u>
Total Cover: _____ %				UPL species		x 5 =	<u>0</u>
				Column Totals:	<u>45</u>	(A)	<u>79</u> (B)
				Prevalence Index = B/A = <u>1.76</u>			
Herb Stratum				Hydrophytic Vegetation Indicators:			
1. <i>Juncus effusus</i>	8	Yes	OBL	☒ Dominance Test is >50%			
2. <i>Plantago major</i>	5	No	FACW*	☒ Prevalence Index is ≤3.0 ¹			
3. <i>Leymus triticoides</i>	12	Yes	FAC*	☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
4. <i>Mentha pulegium</i>	5	No	OBL	☐ Problematic Hydrophytic Vegetation ¹ (Explain)			
5. _____							
6. _____							
7. _____							
8. _____							
Total Cover: <u>30 %</u>							
Woody Vine Stratum				¹ Indicators of hydric soil and wetland hydrology must be present.			
1. _____							
2. _____				Hydrophytic Vegetation Present? Yes ☒ No ☐			
Total Cover: _____ %							
% Bare Ground in Herb Stratum <u>50 %</u>		% Cover of Biotic Crust <u>d %</u>					
Remarks:							

SOIL

Sampling Point: 13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Loc ²	Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
5	10 YR 3/2	90	7.5 YR 3/4	10	C	M	sand	
5-10	10 YR 3/1	100					sandy clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐ Histosol (A1)	☒ Sandy Redox (S5)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)
☒ Stratified Layers (A5) (LRR C)	☐ Depleted Matrix (F3)
☐ 1 cm Muck (A9) (LRR D)	☐ Redox Dark Surface (F6)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)
☐ Sandy Mucky Mineral (S1)	☐ Vernal Pools (F9)
☐ Sandy Gleyed Matrix (S4)	

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rock/gravel

Depth (inches): 6-10

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☐ Surface Water (A1)	☐ Salt Crust (B11)
☐ High Water Table (A2)	☐ Biotic Crust (B12)
☒ Saturation (A3)	☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) (Nonriverine)	☐ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)
☐ Water-Stained Leaves (B9)	

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 ☒	Depth (inches):	
Water Table Present?	Yes ☐ No ☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ☒ No ☐	Depth (inches):	surface

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Antonio Backup Pipeline City/County: Alameda County, CA Sampling Date: 3/16/09
 Applicant/Owner: San Francisco Public Utilities Commission State: CA Sampling Point: 14
 Investigator(s): T Brookhart and B Leitner Section, Township, Range: CA T4S R4E
 Landform (hillslope, terrace, etc.): stream channel Local relief (concave, convex, none): _____ Slope (%): 0
 Subregion (LRR): C - Mediterranean California Lat: 37°34'36.34855"N Long: 121°51'23.57321"W Datum: NAD83
 Soil Map Unit Name: Riverwash NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ 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 ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒ No ☐
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		
Remarks:				

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1. <i>Salix lasiolepis</i>	40	Yes	FACW	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)			
2. _____				Total Number of Dominant Species Across All Strata: <u>3</u> (B)			
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0 %</u> (A/B)			
4. _____							
Total Cover: <u>40 %</u>							
Sapling/Shrub Stratum				Prevalence Index worksheet:			
1. _____				Total % Cover of: _____ Multiply by: _____			
2. _____				OBL species	x 1 =	<u>0</u>	
3. _____				FACW species	x 2 =	<u>100</u>	
4. _____				FAC species	x 3 =	<u>0</u>	
5. _____				FACU species	x 4 =	<u>0</u>	
Total Cover: _____ %				UPL species	x 5 =	<u>0</u>	
				Column Totals:	<u>50</u>	(A)	<u>100</u> (B)
				Prevalence Index = B/A = <u>2.00</u>			
Herb Stratum				Hydrophytic Vegetation Indicators:			
1. <i>Rumex crispus</i>	5	Yes	FACW	☒ Dominance Test is >50%			
2. <i>Juncus (sp)</i>	5	Yes	FACW	☒ Prevalence Index is ≤3.0 ¹			
3. _____				☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
4. _____				☐ Problematic Hydrophytic Vegetation ¹ (Explain)			
5. _____							
6. _____							
7. _____							
8. _____							
Total Cover: <u>10 %</u>							
Woody Vine Stratum				¹ Indicators of hydric soil and wetland hydrology must be present.			
1. _____							
2. _____				Hydrophytic Vegetation Present? Yes ☒ No ☐			
Total Cover: _____ %							
% Bare Ground in Herb Stratum <u>0 %</u>		% Cover of Biotic Crust _____ %					

Remarks: open water 70% and remaining cover dead vegetation

SOIL

Sampling Point: 13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
12	2.5 Y 3/1	100					Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐ Histosol (A1)	☐ Sandy Redox (S5)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1)
☒ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)
☐ Stratified Layers (A5) (LRR C)	☐ Depleted Matrix (F3)
☒ 1 cm Muck (A9) (LRR D)	☐ Redox Dark Surface (F6)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)
☐ Sandy Mucky Mineral (S1)	☐ Vernal Pools (F9)
☒ Sandy Gleyed Matrix (S4)	

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☒ Surface Water (A1)	☐ Salt Crust (B11)
☐ High Water Table (A2)	☐ Biotic Crust (B12)
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)
☒ Water Marks (B1) (Nonriverine)	☒ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)
☒ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)
☐ Water-Stained Leaves (B9)	

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 ☐ Depth (inches): 6 inchesWater Table Present? Yes ☒ No ☐ Depth (inches): _____Saturation Present? Yes ☒ No ☐ Depth (inches): _____Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Antonio Backup Pipeline City/County: Alameda County, CA Sampling Date: 3/17/09
 Applicant/Owner: San Francisco Public Utilities Commission State: CA Sampling Point: 19
 Investigator(s): T Brookhart and B Leitner Section, Township, Range: CA T4S R4E
 Landform (hillslope, terrace, etc.): stream channel Local relief (concave, convex, none): _____ Slope (%): 0
 Subregion (LRR): C - Mediterranean California Lat: 37 34'37.91487"N Long: 121 51'30.52628"W Datum: NAD83
 Soil Map Unit Name: Riverwash NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ 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 ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒	No ☐
Hydric Soil Present?	Yes ☒	No ☐			
Wetland Hydrology Present?	Yes ☒	No ☐			
Remarks:					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)			
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)			
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0 %</u> (A/B)			
4. _____	_____	_____	_____				
Total Cover: <u> </u> %							
Sapling/Shrub Stratum				Prevalence Index worksheet:			
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____			
2. _____	_____	_____	_____	OBL species	<u>48</u>	x 1 =	<u>48</u>
3. _____	_____	_____	_____	FACW species	<u>2</u>	x 2 =	<u>4</u>
4. _____	_____	_____	_____	FAC species	_____	x 3 =	<u>0</u>
5. _____	_____	_____	_____	FACU species	_____	x 4 =	<u>0</u>
Total Cover: <u> </u> %				UPL species	_____	x 5 =	<u>0</u>
				Column Totals:	<u>50</u>	(A)	<u>52</u> (B)
				Prevalence Index = B/A = <u>1.04</u>			
Herb Stratum				Hydrophytic Vegetation Indicators:			
1. <i>Oenanthse sarmentosa</i>	<u>40</u>	Yes	OBL	☒ Dominance Test is >50%			
2. <i>Juncus effusus</i>	<u>5</u>	Yes	OBL	☒ Prevalence Index is ≤3.0 ¹			
3. <i>Juncus xiphioides</i>	<u>3</u>	Yes	OBL	☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
4. <i>Cyperus eragrostis</i>	<u>2</u>	No	FACW	☐ Problematic Hydrophytic Vegetation ¹ (Explain)			
5. _____	_____	_____	_____				
6. _____	_____	_____	_____				
7. _____	_____	_____	_____				
8. _____	_____	_____	_____				
Total Cover: <u>50</u> %							
Woody Vine Stratum				¹ Indicators of hydric soil and wetland hydrology must be present.			
1. _____	_____	_____	_____				
2. _____	_____	_____	_____				
Total Cover: <u> </u> %							
% Bare Ground in Herb Stratum <u>0</u> %	% Cover of Biotic Crust <u> </u> %			Hydrophytic Vegetation Present? Yes ☒ No ☐			
Remarks:							

SOIL

Sampling Point: 19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Loc ²	Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
6	2.5 Y 3/1	100					sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)
☐ Black Histic (A3)	☐ Stripped Matrix (S6)
☒ Hydrogen Sulfide (A4)	☐ Loamy Mucky Mineral (F1)
☐ Stratified Layers (A5) (LRR C)	☐ Loamy Gleyed Matrix (F2)
☐ 1 cm Muck (A9) (LRR D)	☐ Depleted Matrix (F3)
☐ Depleted Below Dark Surface (A11)	☐ Redox Dark Surface (F6)
☐ Thick Dark Surface (A12)	☐ Depleted Dark Surface (F7)
☐ Sandy Mucky Mineral (S1)	☐ Redox Depressions (F8)
☒ Sandy Gleyed Matrix (S4)	☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.**Restrictive Layer (if present):**

Type: cobble

Depth (inches): 6"

Hydric Soil Present? Yes ☒ No ☐

Remarks: This area is over an historic stream bed (San Antonio Creek) and soil is about 6 inches deep before reaching the cobble of the old streambed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☒ Surface Water (A1)	☐ Salt Crust (B11)
☒ High Water Table (A2)	☐ Biotic Crust (B12)
☒ Saturation (A3)	☐ Aquatic Invertebrates (B13)
☒ Water Marks (B1) (Nonriverine)	☐ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)
☒ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)
☒ Water-Stained Leaves (B9)	

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 ☐

Depth (inches): 4"

Water Table Present? Yes ☒ No ☐

Depth (inches):

Saturation Present? Yes ☒ No ☐

Depth (inches):

(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Antonio Backup Pipeline City/County: Alameda County, CA Sampling Date: 3/17/09
 Applicant/Owner: San Francisco Public Utilities Commission State: CA Sampling Point: 20
 Investigator(s): T Brookhart and B Leitner Section, Township, Range: CA T4S R4E
 Landform (hillslope, terrace, etc.): stream channel Local relief (concave, convex, none): _____ Slope (%): 0
 Subregion (LRR): C - Mediterranean California Lat: 37 34'38.30355"N Long: 121 51'30.55981"W Datum: NAD83
 Soil Map Unit Name: Riverwash NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ 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 ☐	No ☒	Is the Sampled Area within a Wetland?	Yes ☐	No ☒
Hydric Soil Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☒	No ☐			
Remarks:					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)			
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)			
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7 %</u> (A/B)			
4. _____	_____	_____	_____				
Total Cover: <u> </u> %							
Sapling/Shrub Stratum				Prevalence Index worksheet:			
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____			
2. _____	_____	_____	_____	OBL species <u> </u> x 1 = <u>0</u>			
3. _____	_____	_____	_____	FACW species <u>5</u> x 2 = <u>10</u>			
4. _____	_____	_____	_____	FAC species <u>10</u> x 3 = <u>30</u>			
5. _____	_____	_____	_____	FACU species <u>35</u> x 4 = <u>140</u>			
Total Cover: <u> </u> %				UPL species <u>5</u> x 5 = <u>25</u>			
				Column Totals: <u>55</u> (A) <u>205</u> (B)			
				Prevalence Index = B/A = <u>3.73</u>			
Herb Stratum				Hydrophytic Vegetation Indicators:			
1. <i>Rumex crispus</i>	<u>5</u>	Yes	FACW	☒ Dominance Test is >50%			
2. <i>Trifolium fucatum</i>	<u>5</u>	No	FACU	☒ Prevalence Index is ≤3.0 ¹			
3. <i>Vicia (sp.)</i>	<u>10</u>	Yes	FAC	☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
4. <i>Bromus hordeaceus</i>	<u>30</u>	Yes	FACU	☐ Problematic Hydrophytic Vegetation ¹ (Explain)			
5. <i>Geranium molle</i>	<u>5</u>	No	UPL				
6. _____	_____	_____	_____				
7. _____	_____	_____	_____				
8. _____	_____	_____	_____				
Total Cover: <u>55 %</u>							
Woody Vine Stratum							
1. _____	_____	_____	_____				
2. _____	_____	_____	_____				
Total Cover: <u> </u> %							
% Bare Ground in Herb Stratum <u>45 %</u>			% Cover of Biotic Crust <u>35 %</u>				
Remarks: Upland plot from site 19 (wetland)				Hydrophytic Vegetation Present? Yes ☐ No ☒			

SOIL

Sampling Point: 20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Loc ²	Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
10	2.5 Y 4/2	100					clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)
☐ Black Histic (A3)	☐ Stripped Matrix (S6)
☐ Hydrogen Sulfide (A4)	☐ Loamy Mucky Mineral (F1)
☐ Stratified Layers (A5) (LRR C)	☐ Loamy Gleyed Matrix (F2)
☐ 1 cm Muck (A9) (LRR D)	☐ Depleted Matrix (F3)
☐ Depleted Below Dark Surface (A11)	☐ Redox Dark Surface (F6)
☐ Thick Dark Surface (A12)	☐ Depleted Dark Surface (F7)
☐ Sandy Mucky Mineral (S1)	☐ Redox Depressions (F8)
☐ Sandy Gleyed Matrix (S4)	☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☐ Surface Water (A1)	☐ Salt Crust (B11)
☐ High Water Table (A2)	☐ Biotic Crust (B12)
☒ Saturation (A3)	☐ Aquatic Invertebrates (B13)
☐ Water Marks (B1) (Nonriverine)	☐ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)
☐ Water-Stained Leaves (B9)	

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 ☒

Depth (inches): _____

Water Table Present? Yes ☐ No ☒

Depth (inches): _____

Saturation Present? Yes ☒ No ☐
(includes capillary fringe)

Depth (inches): _____

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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G.4: Representative Photographs

Photo 1: Open water pool (OH-I) with freshwater marsh at the outlet pool next to Turner Dam.



Photo 2: Looking east along the boundary of San Antonio Creek (WT-I)- 0.25 miles from Turner Dam.



Photo 3: San Antonio Creek (WT-I) - Looking southwest.



Photo 4: Looking southeast over San Antonio Creek (WT-I)



Photo 5: Looking east from the weir on San Antonio Creek (WT-I)



Photo 6: Looking west toward the bridge on Calaveras Road (IS-1).



APPENDIX I

Tree Survey

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SAN ANTONIO BACKUP PIPELINE PROJECT

FINAL TREE SURVEY REPORT

PREPARED FOR:

**San Francisco Public Utilities Commission
1155 Market Street
San Francisco, CA 94102**

PREPARED BY:

**EMPSi
944 Market Street, Suite 509
San Francisco, CA 94102**



UNDER CONTRACT TO:

**ESA+Orion
225 Bush Street, Suite 1700
San Francisco, CA 94104**

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SAN ANTONIO BACKUP PIPELINE PROJECT

Tree Survey Report

Purpose and Scope

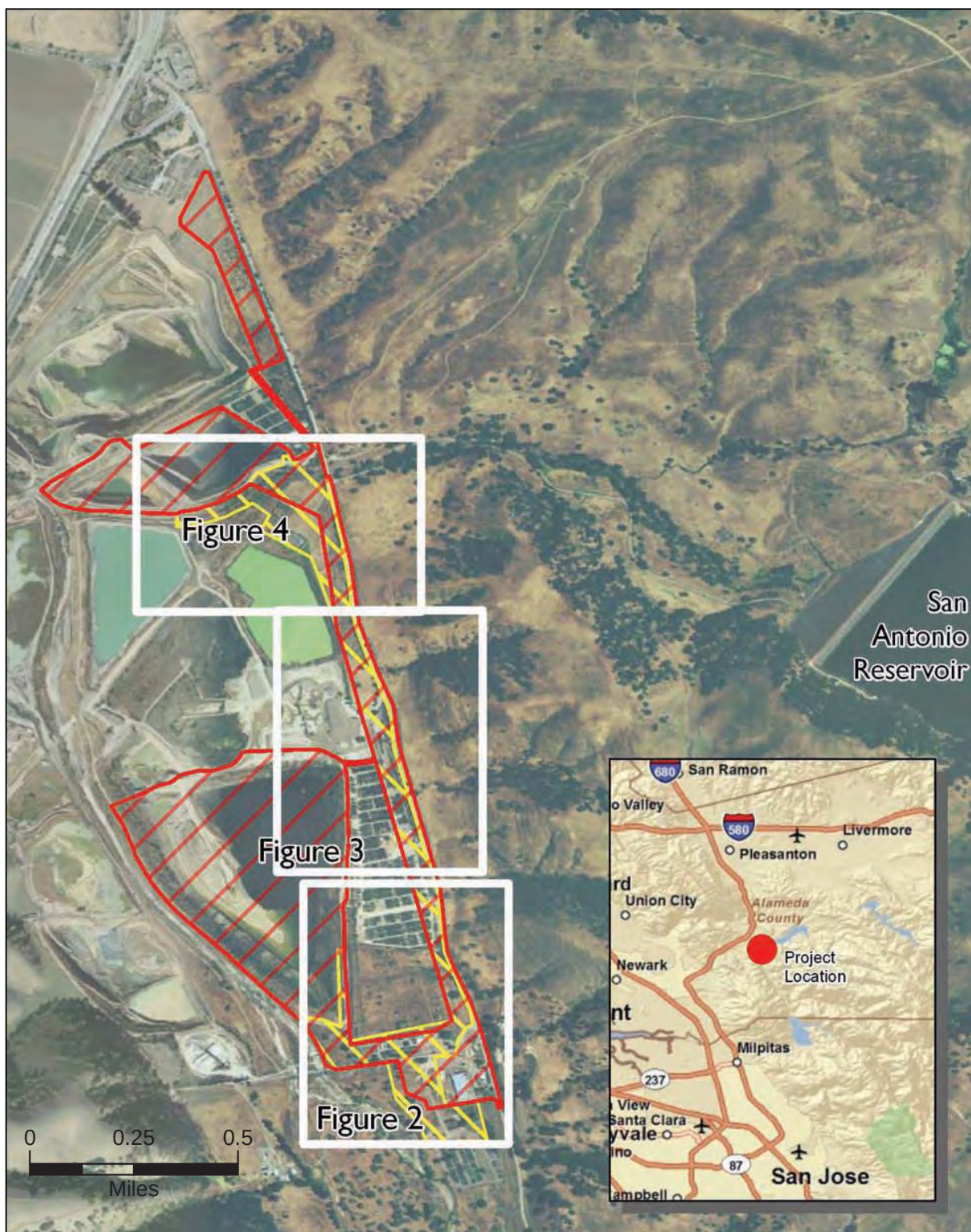
EMPSi was subcontracted by ESA+Orion to perform a tree survey and produce a tree survey report for the San Francisco Public Utilities Commission (SFPUC) San Antonio Backup Pipeline (SABPL) project (proposed project). The survey area is based on the SFPUC-defined project footprint, and modified to encompass a 60-foot buffer from the edge of the pipeline and omit areas where tree disturbance is not anticipated (i.e. no surveys within or around the SMP-30 quarry pit; only the southeast boundary of SMP-24 quarry pits was surveyed). The proposed project is located in an unincorporated area of Alameda County, approximately one mile south of the intersection of Interstate 680 (I-680) and State Route 84 (SR-84) along Calaveras Road. The SFPUC would construct the proposed improvements on lands owned by the City and County of San Francisco (CCSF) and managed by the SFPUC within the Sunol Valley Region of the SFPUC's regional water system in the Alameda watershed. An overview of the survey area and project footprint is provided in **Figure 1**.

The SFPUC Alameda Watershed Management Plan (Alameda WMP), adopted by the CCSF in 2000, provides goals, policies, and management actions to guide activities within watershed lands. The Alameda WMP does not have specific policies pertaining to tree preservation (SFPUC, 2001).

Cities and counties are mutually exempt from complying with each other's building and zoning codes (California Government Code Section 53090 et seq). In addition, pursuant to California Government Code Section 53091, the SFPUC, as a public water utility, is not subject to the building and zoning ordinances of local jurisdictions for projects like the SABPL (facilities for the production, generation, storage, treatment, or transmission of water).¹ The SFPUC has authority over management of extraterritorial lands like the project site pursuant to the City Charter. Nonetheless, for purposes of impact evaluation under the California Environmental Quality Act (CEQA), local tree protection ordinances are used as significance criteria for WSIP facility improvement projects outside of the CCSF.

The Alameda County Tree Ordinance (No. 0-2004-23, Chapter 12.11 of the Alameda County General Ordinance Code) applies to trees within the Alameda County right-of-way. The ordinance requires an encroachment permit for planting, pruning, or removing trees in the right-of-way with a Diameter at Breast Height (DBH) (4.5 feet above-ground) of two inches or more, taller than ten feet in the right-of-way of a county road. The ordinance requires replacement of removed trees. The county does not have an ordinance that applies to those trees within the survey area but outside of the county ROW. No other local tree ordinances apply to the proposed project.

¹ Although California Public Resources Code (PRC) Section 21083.4 addresses oak habitat evaluation, this applies only to counties and is not applicable to the SFPUC.



 Project Footprint
 Survey Area

San Antonio Backup Pipeline Project Overview

Figure I

Trees within the survey area were surveyed and tagged in accordance with the Alameda County Tree Ordinance and industry standards using the following criteria:

- trees with a DBH greater than two inches and within the Alameda County ROW along Calaveras Road;
- native oaks with a DBH of five inches or more; and
- all other trees with a DBH of six inches or more.

Tree location data was collected with a Trimble Geo XH handheld Global Positioning System (GPS). The GPS data was used to map tree resources within the survey area using ArcGIS software. Tree resources in the survey area are shown on **Figures 2, 3 and 4**. The following sections describe the survey methods and provide a summary of the tree resources surveyed.

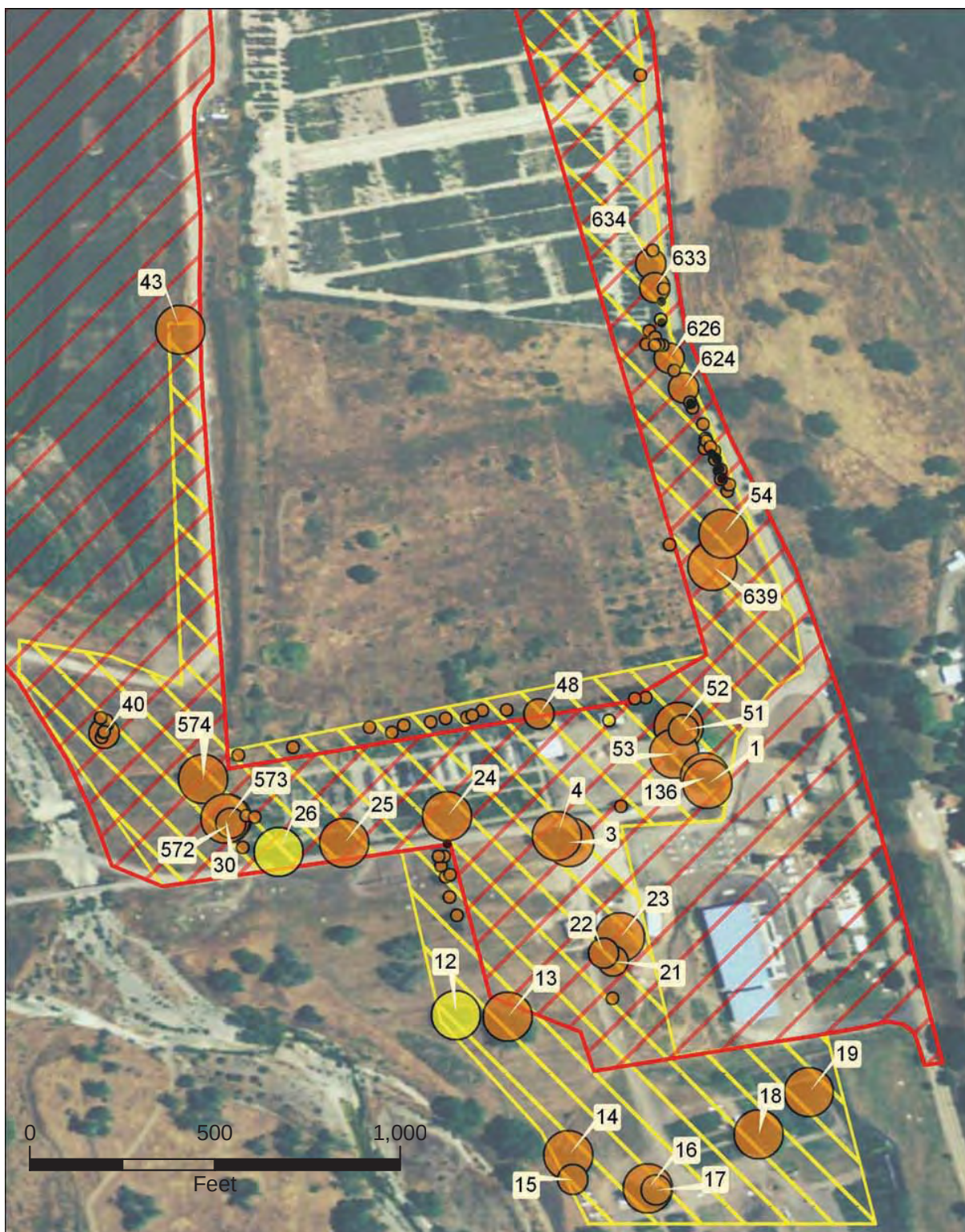
Survey Methods

The project site was surveyed on March 24, 25, and 26, 2009, and June 5, 2009. The survey methods follow standard professional practices. The survey consisted of identifying, measuring, assessing, and tagging all qualifying trees in the survey area. Trees were tagged with numbered one-inch aluminum tags. Information collected included DBH, radius of the dripline (measured at the largest radius), and the general condition of the tree and its components (root collar, trunk, limbs, and foliage). The “Condition” of the tree is defined as follows:

Good: Tree is without any visible deficiencies. Tree is in excellent health and is structurally sound, with little evidence of dieback and good overall annual growth. The tree shows no sign of disease, decay, or mistletoe infestation. The tree has a balanced branching structure.

Fair: Tree has no major deficiencies but may have minor dieback or overcrowding. Tree is in good health and is structurally sound. Defects are not a risk to the tree's long term survival.

Poor: Tree has major to minor deficiencies. Tree is in average to poor health and may have some structural deficiencies such as decay and numerous dead limbs. Overall health and integrity of the tree is adversely affected, limiting growth, and is likely detrimental to long-term health of tree. Tree may also have extensive dieback, sparse foliage, and/or unbalanced or asymmetrical form.



Tree DBH

Native

29" +

2 - 5"

Non-Native

18 - 28"

6 - 17"



Project Footprint

Survey Area

Tree Survey South

Figure 2



Tree DBH

Native

29" +

2 - 5"

Non-Native

18 - 28"

6 - 17"



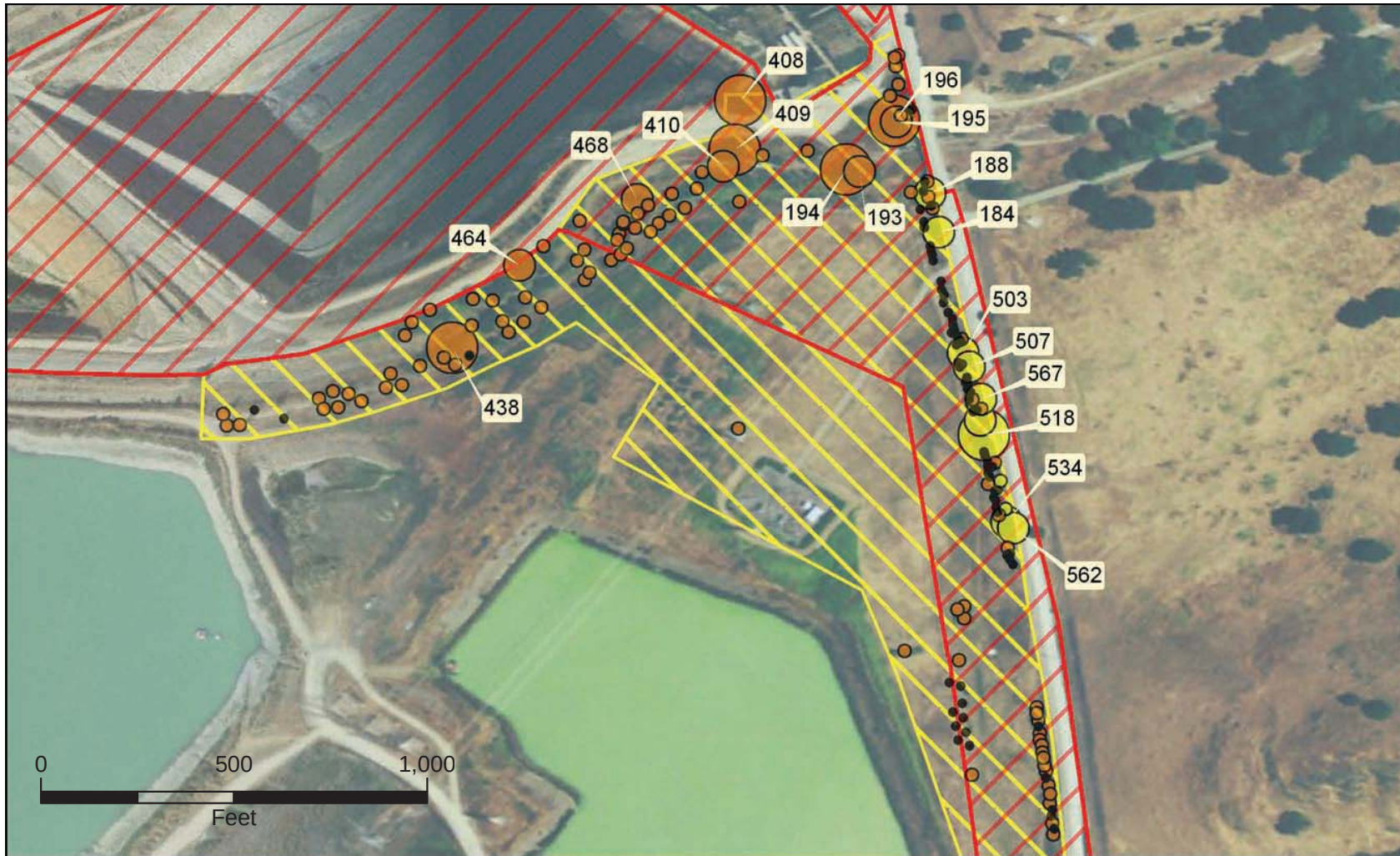
Project Footprint



Survey Area

*Tree Survey
Central*

Figure 3



Tree Survey North

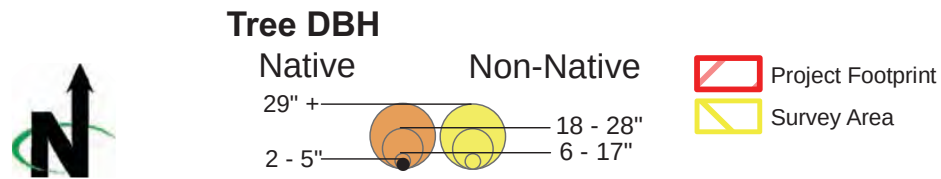


Figure 4

Survey Results

A summary of the tree survey results are presented in **Table I**. **Figure 5** presents summary DBH and species occurrence data for the entire survey area. **Figures 6 to 10** present size and occurrence data for the five most common native species found in the survey area (California buckeye (*Aesculus californica*), California walnut (*Juglans hindsii*), California sycamore (*Platanus racemosa*), coast live oak (*Quercus agrifolia*), and valley oak (*Q. lobata*). Additionally, **Appendix I** provides a table listing all trees surveyed and includes the DBH of each tree, tag number, total number of trunks, crown diameter, tree condition, and any unique features, such as bird nests, that might help identify the impacts of removal or facilitate in identification. A total of 391 trees were surveyed within the survey area.

The most prominent trees found in the survey area are the large California sycamore trees that are located at the southern portion of the survey area. The largest of these trees has a DBH of 69 inches. Several large coast live oaks and valley oaks can also be found in this area (Figure 2).

Calaveras Road is lined with coast live oaks, valley oaks, several large non-native cork oaks (*Q. suber*). A few other scattered non-natives that are likely the result of plantings or volunteers from one of the adjacent tree nurseries are also found along the roadway. These include three large Deodar cedar (*Cedrus deodara*) trees at the Cemex quarry entrance. The northern section of the survey area located within the Alameda County ROW for Calaveras Road includes numerous small California walnut trees that appear to have been planted. (Refer to Photos 1 and 2 in **Appendix II**).

The western portion of San Antonio Creek is also bordered on its southern side by numerous plantings (in two rows). These plantings include several species – black cottonwood (*Populus trichocarpa*), Goodings's willow (*Salix goodingii*), and California sycamore. This reach of San Antonio Creek is also lined with the majority of the survey area's California buckeye and blue elderberry (*Sambucus mexicana*). There are also a few large sycamores where San Antonio Creek crosses Calaveras Road (Figure 4).

TABLE I: TREE SURVEY SUMMARY

SPECIES	<6 inches	6 to 18 inches	>18 inches	Total Count
Black cottonwood (<i>Populus trichocarpa</i>)	0	32	2	34
Blackwood acacia (<i>Acacia melanoxydon</i>)	0	1	1	1
Blue elderberry (<i>Sambucus mexicana</i>)	0	11	0	12
California buckeye (<i>Aesculus californica</i>)	0	17	3	20
California pepper (<i>Schinus molle</i>)	0	0	1	1
California sycamore (<i>Platanus racemosa</i>)	12	26	26	64
California walnut (<i>Juglans hindsii</i>)	68	22	0	90
Coast live oak (<i>Quercus agrifolia</i>)	16	67	6	88
Cork oak (<i>Quercus suber</i>)	0	4	10	14
Deodar cedar (<i>Cedrus deodara</i>)	0	3	0	3
Goodings willow (<i>Salix goodingii</i>)	0	9	0	9
Olive (<i>Olea europaea</i>)	0	4	0	4
Ponderosa pine (<i>Pinus ponderosa</i>)	0	1	2	3
Port Orford cedar (<i>Chamaecyparis lawsoniana</i>)	0	0	1	1
Valley oak (<i>Quercus lobata</i>)	9	28	11	47
TOTAL	104	223	66	391

Notes:

See Figures 2, 3, and 4 for locations of trees listed. See Appendix I for specific species and tag numbers.

a. DBH = Diameter at Breast Height. DBH = diameter measurement of the largest trunk or major branch of the tree at 4.5 feet above ground level.

b. Bold = A native species.

SOURCE: EMPSi, 2009

References

EMPSi, 2009. Environmental Management and Planning Solutions Inc. GIS and tree survey data collected in support of the San Antonio Backup Pipeline Project.

SFPUC, 2001. San Francisco Public Utilities Commission, *Final Alameda Watershed Management Plan*, 2001.

Figure 5: Total Project DBH measurements and counts for all trees surveyed

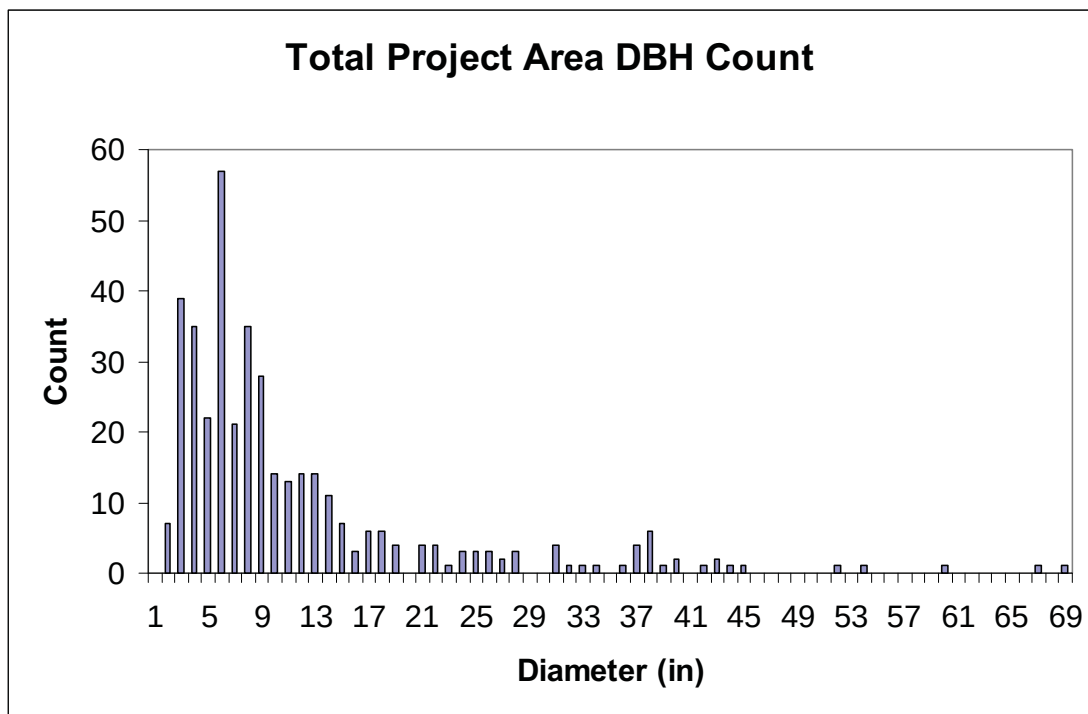


Figure 6: California black walnut DBH measurements and total counts

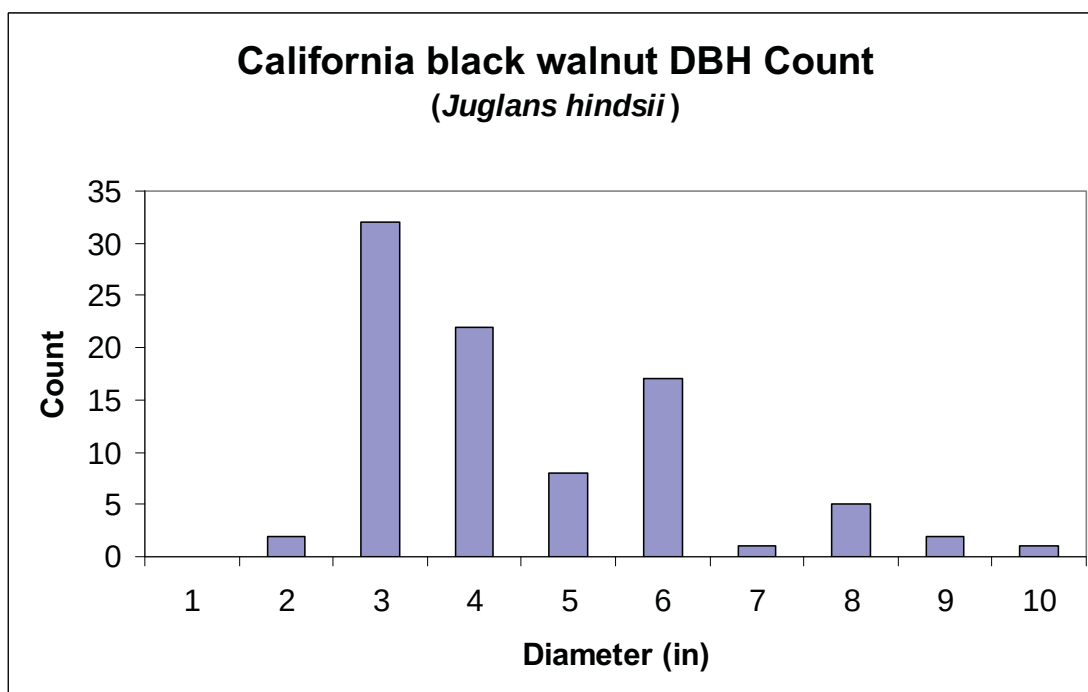


Figure 7: California sycamore DBH measurements and total counts

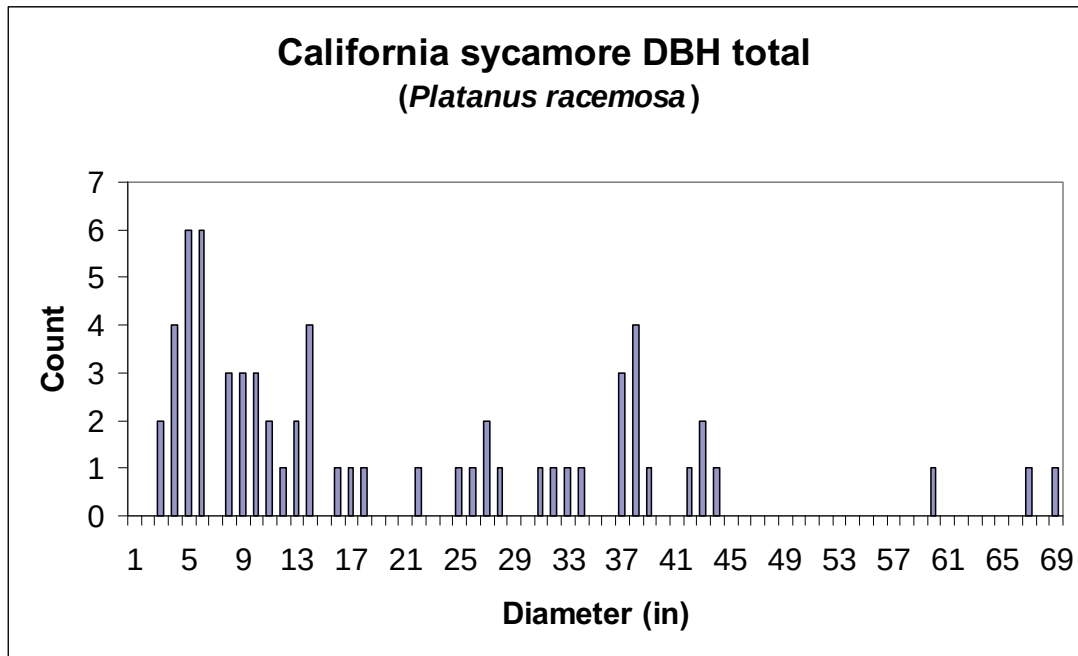


Figure 8: California buckeye DBH measurements and total count

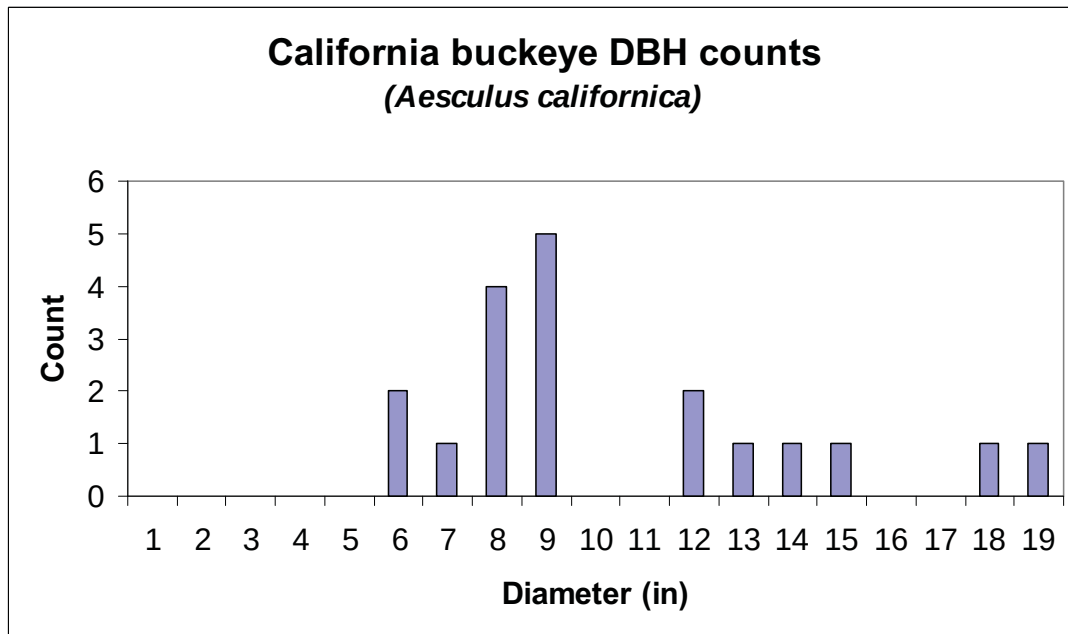


Figure 9: Valley oak DBH measurements and total count

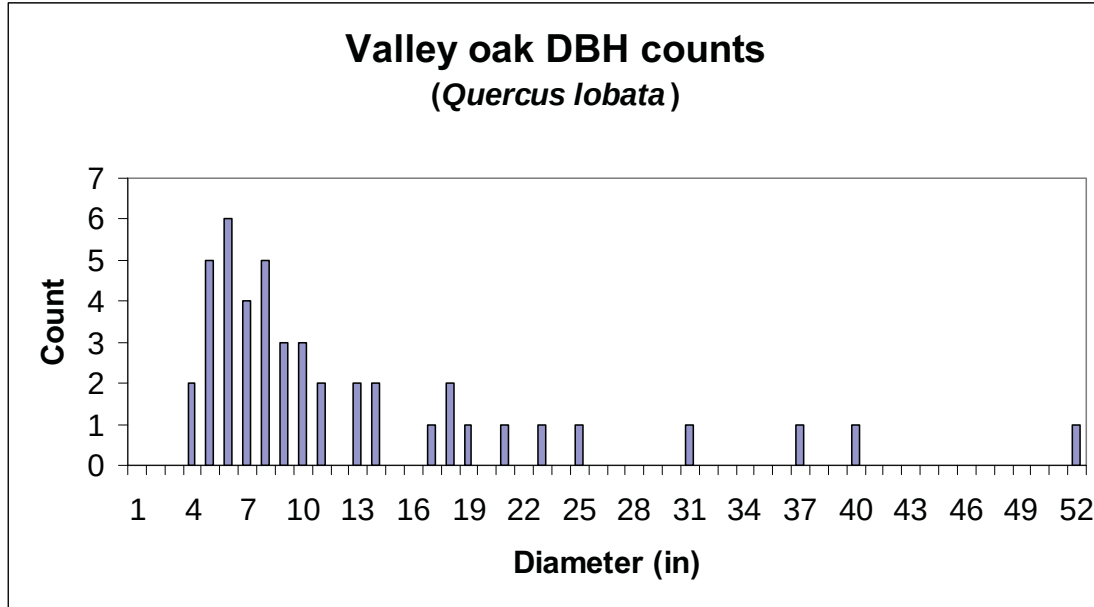
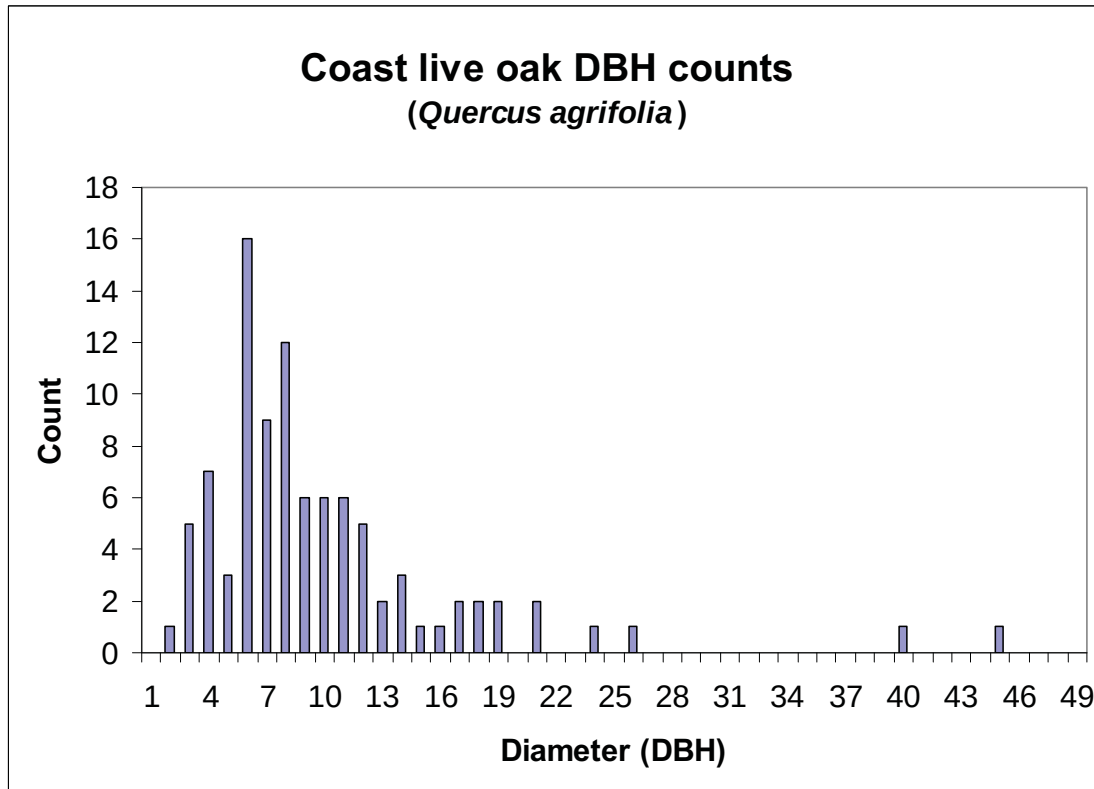


Figure 10: Coast live oak DBH measurements and total count



Appendix I: Tree Survey Data

APPENDIX I: Tree Survey Data

This is a complete inventory list of all trees surveyed.
Trees in **bold** are species native to the state of California.

Species name	Tag	Common name	DBH	Trunks	Dripline	Condition	Comments
<i>Abies sp</i>	133	Fur Species	13	2	30	Fair	
<i>Abies sp</i>	134	Fur Species	15	1	30	Fair	
<i>Abies sp</i>	135	Fur Species	17	1	30	Fair	
<i>Acacia melanoxydon</i>	581	Blackwood Acacia	12	1	20	Good	
<i>Aesculus californica</i>	15	California Buckeye	25	2	33	Good	
<i>Aesculus californica</i>	192	California Buckeye	12	1	16	Fair	
<i>Aesculus californica</i>	198	California Buckeye	9	6	30	Good	
<i>Aesculus californica</i>	410	California Buckeye	19	3	33	Good	
<i>Aesculus californica</i>	417	California Buckeye	9	7	20	Good	
<i>Aesculus californica</i>	421	California Buckeye	8	6	30	Good	
<i>Aesculus californica</i>	422	California Buckeye	9	9	35	Good	
<i>Aesculus californica</i>	427	California Buckeye	15	3	33	Good	
<i>Aesculus californica</i>	428	California Buckeye	9	4	30	Good	
<i>Aesculus californica</i>	436	California Buckeye	7	6	20	Good	
<i>Aesculus californica</i>	456	California Buckeye	9	8	25	Good	
<i>Aesculus californica</i>	458	California Buckeye	13	7	20	Good	
<i>Aesculus californica</i>	459	California Buckeye	6	8	20	Good	
<i>Aesculus californica</i>	461	California Buckeye	12	7	20	Good	
<i>Aesculus californica</i>	462	California Buckeye	8	7	24	Good	
<i>Aesculus californica</i>	464	California Buckeye	18	6	20	Good	
<i>Aesculus californica</i>	465	California Buckeye	8	9	20	Good	
<i>Aesculus californica</i>	466	California Buckeye	14	4	30	Good	
<i>Aesculus californica</i>	467	California Buckeye	8	5	20	Good	
<i>Aesculus californica</i>	637	California Buckeye	6	9	20	Good	
<i>Chamaecyparis lawsoniana</i>	51	Port Orford Cedar	28	1	30	Good	
<i>Juglans hindsii</i>	67	California walnut	8	1	10	Good	
<i>Juglans hindsii</i>	68	California walnut	6	1	10	Good	
<i>Juglans hindsii</i>	69	California walnut	9	1	12	Good	
<i>Juglans hindsii</i>	70	California walnut	5	1	8	Good	
<i>Juglans hindsii</i>	71	California walnut	6	1	8	Good	
<i>Juglans hindsii</i>	72	California	6	1	10	Good	

Species name	Tag	Common name	DBH	Trunks	Dripline	Condition	Comments
		walnut					
<i>Juglans hindsii</i>	73	California walnut	6	1	10	Good	
<i>Juglans hindsii</i>	74	California walnut	6	1	10	Good	
<i>Juglans hindsii</i>	75	California walnut	6	1	10	Good	
<i>Juglans hindsii</i>	76	California walnut	7	1	20	Good	
<i>Juglans hindsii</i>	77	California walnut	8	1	25	Good	
<i>Juglans hindsii</i>	78	California walnut	5	1	20	Good	
<i>Juglans hindsii</i>	79	California walnut	8	1	30	Good	
<i>Juglans hindsii</i>	80	California walnut	8	1	30	Good	
<i>Juglans hindsii</i>	81	California walnut	10	1	20	Good	
<i>Juglans hindsii</i>	82	California walnut	3	1	20	Good	
<i>Juglans hindsii</i>	83	California walnut	5	1	15	Good	
<i>Juglans hindsii</i>	85	California walnut	4	1	10	Good	
<i>Juglans hindsii</i>	86	California walnut	6	1	20	Good	
<i>Juglans hindsii</i>	87	California walnut	6	1	20	Good	
<i>Juglans hindsii</i>	88	California walnut	4	1	10	Good	
<i>Juglans hindsii</i>	89	California walnut	4	1	10	Good	
<i>Juglans hindsii</i>	90	California walnut	3	1	10	Good	
<i>Juglans hindsii</i>	91	California walnut	3	1	9	Good	
<i>Juglans hindsii</i>	93	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	94	California walnut	3	1	15	Good	
<i>Juglans hindsii</i>	95	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	96	California walnut	5	1	20	Good	
<i>Juglans hindsii</i>	97	California walnut	4	1	8	Good	
<i>Juglans hindsii</i>	98	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	99	California walnut	6	1	20	Good	
<i>Juglans hindsii</i>	101	California walnut	3	1	15	Good	
<i>Juglans hindsii</i>	102	California walnut	6	1	20	Good	
<i>Juglans hindsii</i>	103	California walnut	4	1	15	Good	
<i>Juglans hindsii</i>	104	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	105	California walnut	4	1	12	Good	
<i>Juglans hindsii</i>	106	California walnut	4	1	10	Good	
<i>Juglans hindsii</i>	107	California walnut	3	1	8	Good	

Species name	Tag	Common name	DBH	Trunks	Dripline	Condition	Comments
<i>Juglans hindsii</i>	108	California walnut	6	1	15	Good	
<i>Juglans hindsii</i>	109	California walnut	4	1	12	Good	
<i>Juglans hindsii</i>	110	California walnut	6	1	20	Good	
<i>Juglans hindsii</i>	111	California walnut	8	1	20	Good	
<i>Juglans hindsii</i>	112	California walnut	2	1	6	Fair	
<i>Juglans hindsii</i>	113	California walnut	5	1	14	Good	
<i>Juglans hindsii</i>	480	California walnut	4	1	10	Good	
<i>Juglans hindsii</i>	481	California walnut	4	1	20	Good	
<i>Juglans hindsii</i>	482	California walnut	4	1	10	Good	
<i>Juglans hindsii</i>	483	California walnut	4	1	10	Good	
<i>Juglans hindsii</i>	484	California walnut	4	1	10	Good	
<i>Juglans hindsii</i>	485	California walnut	4	1	10	Good	
<i>Juglans hindsii</i>	486	California walnut	4	1	10	Good	
<i>Juglans hindsii</i>	488	California walnut	4	1	10	Good	
<i>Juglans hindsii</i>	489	California walnut	4	1	10	Good	
<i>Juglans hindsii</i>	490	California walnut	4	1	10	Good	
<i>Juglans hindsii</i>	491	California walnut	3	1	10	Good	
<i>Juglans hindsii</i>	492	California walnut	2	1	8	Good	
<i>Juglans hindsii</i>	493	California walnut	4	1	10	Good	
<i>Juglans hindsii</i>	494	California walnut	3	1	10	Good	
<i>Juglans hindsii</i>	495	California walnut	2	1	8	Fair	
<i>Juglans hindsii</i>	496	California walnut	4	1	10	Good	
<i>Juglans hindsii</i>	497	California walnut	3	1	8	Fair	trunk split
<i>Juglans hindsii</i>	502	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	504	California walnut	2	1	8	Good	
<i>Juglans hindsii</i>	505	California walnut	3	1	8	Fair	
<i>Juglans hindsii</i>	506	California walnut	2	1	8	Fair	
<i>Juglans hindsii</i>	508	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	509	California walnut	4	1	8	Good	
<i>Juglans hindsii</i>	510	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	511	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	512	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	513	California	3	1	8	Good	

Species name	Tag	Common name	DBH	Trunks	Dripline	Condition	Comments
		walnut					
<i>Juglans hindsii</i>	516	California walnut	2	1	8	Good	
<i>Juglans hindsii</i>	519	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	520	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	521	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	522	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	524	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	525	California walnut	5	1	10	Good	
<i>Juglans hindsii</i>	526	California walnut	6	1	10	Good	
<i>Juglans hindsii</i>	527	California walnut	5	1	8	Good	
<i>Juglans hindsii</i>	529	California walnut	4	1	8	Good	
<i>Juglans hindsii</i>	530	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	531	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	532	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	535	California walnut	6	1	8	Good	
<i>Juglans hindsii</i>	536	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	537	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	538	California walnut	3	1	8	Good	
<i>Juglans hindsii</i>	539	California walnut	5	1	8	Good	
<i>Juglans hindsii</i>	555	California walnut	3	1	12	Good	
<i>Olea europaea</i>	170	Olive	9	4	30	Good	Invasive ornamental species
<i>Olea europaea</i>	172	Olive	6	2	20	Good	Invasive ornamental species
<i>Olea europaea</i>	582	Olive	6	7	20	Good	Invasive ornamental species
<i>Olea europaea</i>	629	Olive	6	9	20	Good	Invasive ornamental species
<i>Pinus ponderosa</i>	123	Ponderosa Pine	15	1	20	Fair	
<i>Pinus ponderosa</i>	141	Ponderosa Pine	36	1	60	Poor	Dead
<i>Pinus ponderosa</i>	144	Ponderosa Pine	38	1	60	Poor	Almost dead
<i>Platanus racemosa</i>	3	California sycamore	37	1	38	Good	
<i>Platanus racemosa</i>	4	California sycamore	34	1	34	Good	
<i>Platanus racemosa</i>	13	California sycamore	42	3	56	Good	
<i>Platanus racemosa</i>	14	California sycamore	38	2	66	Good	
<i>Platanus racemosa</i>	16	California sycamore	37	1	38	Good	

Species name	Tag	Common name	DBH	Trunks	Dripline	Condition	Comments
<i>Platanus racemosa</i>	17	California sycamore	25	1	31	Good	
<i>Platanus racemosa</i>	18	California sycamore	37	4	38	Good	
<i>Platanus racemosa</i>	19	California sycamore	60	1	44	Good	
<i>Platanus racemosa</i>	20	California sycamore	11	1	12	Good	
<i>Platanus racemosa</i>	24	California sycamore	38	1	50	Good	
<i>Platanus racemosa</i>	30	California sycamore	31	1	55	Good	
<i>Platanus racemosa</i>	34	California sycamore	13	1	25	Good	part of a small grove
<i>Platanus racemosa</i>	35	California sycamore	9	1	20	Good	part of a small grove
<i>Platanus racemosa</i>	37	California sycamore	14	2	30	Good	part of a small grove
<i>Platanus racemosa</i>	38	California sycamore	12	1	20	Good	part of a small grove
<i>Platanus racemosa</i>	39	California sycamore	10	1	20	Good	part of a small grove
<i>Platanus racemosa</i>	40	California sycamore	18	6	50	Good	part of a small grove
<i>Platanus racemosa</i>	41	California sycamore	10	2	30	Good	part of a small grove
<i>Platanus racemosa</i>	42	California sycamore	14	2	35	Good	part of a small grove
<i>Platanus racemosa</i>	43	California sycamore	32	1	35	Good	
<i>Platanus racemosa</i>	52	California sycamore	44	4	75	Good	
<i>Platanus racemosa</i>	53	California sycamore	39	1	20	Good	
<i>Platanus racemosa</i>	114	California sycamore	38	2	95	Good	
<i>Platanus racemosa</i>	142	California sycamore	22	1	40	Good	
<i>Platanus racemosa</i>	143	California sycamore	26	1	45	Good	
<i>Platanus racemosa</i>	193	California sycamore	27	7	44	Good	
<i>Platanus racemosa</i>	194	California sycamore	38	2	52	Good	
<i>Platanus racemosa</i>	195	California sycamore	27	1	44	Good	
<i>Platanus racemosa</i>	196	California sycamore	33	2	42	Fair	
<i>Platanus racemosa</i>	197	California sycamore	16	1	20	Good	
<i>Platanus racemosa</i>	408	California sycamore	69	1	55	Good	
<i>Platanus racemosa</i>	409	California sycamore	43	3	46	Fair	
<i>Platanus racemosa</i>	411	California sycamore	8	1	8	Good	
<i>Platanus racemosa</i>	418	California sycamore	6	1	15	Good	
<i>Platanus racemosa</i>	419	California sycamore	6	1	10	Good	
<i>Platanus racemosa</i>	429	California sycamore	6	1	10	Good	
<i>Platanus racemosa</i>	431	California sycamore	8	1	14	Good	
<i>Platanus racemosa</i>	437	California	5	1	15	Good	

Species name	Tag	Common name	DBH	Trunks	Dripline	Condition	Comments
		sycamore					
<i>Platanus racemosa</i>	440	California sycamore	10	1	20	Good	
<i>Platanus racemosa</i>	443	California sycamore	6	1	20	Good	
<i>Platanus racemosa</i>	445	California sycamore	6	1	20	Good	
<i>Platanus racemosa</i>	447	California sycamore	9	1	16	Good	
<i>Platanus racemosa</i>	448	California sycamore	9	1	18	Good	
<i>Platanus racemosa</i>	450	California sycamore	11	1	20	Good	
<i>Platanus racemosa</i>	451	California sycamore	5	1	15	Good	
<i>Platanus racemosa</i>	452	California sycamore	5	1	8	Fair	
<i>Platanus racemosa</i>	541	California sycamore	8	1	20	Good	
<i>Platanus racemosa</i>	542	California sycamore	14	1	25	Good	
<i>Platanus racemosa</i>	544	California sycamore	14	3	30	Good	
<i>Platanus racemosa</i>	545	California sycamore	5	1	20	Good	
<i>Platanus racemosa</i>	546	California sycamore	3	1	10	Poor	
<i>Platanus racemosa</i>	547	California sycamore	5	1	20	Good	
<i>Platanus racemosa</i>	548	California sycamore	4	1	20	Good	
<i>Platanus racemosa</i>	549	California sycamore	5	1	20	Good	
<i>Platanus racemosa</i>	550	California sycamore	3	1	10	Good	
<i>Platanus racemosa</i>	551	California sycamore	4	1	15	Fair	
<i>Platanus racemosa</i>	552	California sycamore	4	1	15	Good	
<i>Platanus racemosa</i>	553	California sycamore	4	1	20	Good	
<i>Platanus racemosa</i>	554	California sycamore	6	1	20	Good	
<i>Platanus racemosa</i>	572	California sycamore	28	1	45	Good	
<i>Platanus racemosa</i>	573	California sycamore	43	1	50	Good	
<i>Platanus racemosa</i>	579	California sycamore	13	1	20	Fair	
<i>Platanus racemosa</i>	639	California sycamore	67	1	80	Good	active red-tailed hawk nest
<i>Platanus racemosa</i>	640	California sycamore	17	1	20	Good	
<i>Populus trichocarpa</i>	5	Black Cottonwood	6	8	4	Good	
<i>Populus trichocarpa</i>	6	Black Cottonwood	12	4	13	Good	
<i>Populus trichocarpa</i>	7	Black Cottonwood	13	2	6	Good	
<i>Populus trichocarpa</i>	8	Black Cottonwood	7	2	10	Good	
<i>Populus trichocarpa</i>	9	Black Cottonwood	13	9	20	Good	
<i>Populus trichocarpa</i>	10	Black	8	2	9	Fair	

Species name	Tag	Common name	DBH	Trunks	Dripline	Condition	Comments
		Cottonwood					
<i>Populus trichocarpa</i>	11	Black Cottonwood	12	1	14	Good	
<i>Populus trichocarpa</i>	21	Black Cottonwood	22	1	28	Good	
<i>Populus trichocarpa</i>	22	Black Cottonwood	21	1	26	Good	
<i>Populus trichocarpa</i>	49	Black Cottonwood	6	4	60	Good	
<i>Populus trichocarpa</i>	50	Black Cottonwood	12	2	50	Good	
<i>Populus trichocarpa</i>	57	Black Cottonwood	6	2	10	Fair	
<i>Populus trichocarpa</i>	58	Black Cottonwood	9	1	20	Fair	
<i>Populus trichocarpa</i>	59	Black Cottonwood	17	1	10	Fair	
<i>Populus trichocarpa</i>	60	Black Cottonwood	13	3	10	Good	
<i>Populus trichocarpa</i>	61	Black Cottonwood	7	2	10	Fair	
<i>Populus trichocarpa</i>	63	Black Cottonwood	11	2	10	Poor	
<i>Populus trichocarpa</i>	64	Black Cottonwood	7	1	10	Fair	
<i>Populus trichocarpa</i>	65	Black Cottonwood	6	1	10	Poor	
<i>Populus trichocarpa</i>	413	Black Cottonwood	13	1	17	Good	
<i>Populus trichocarpa</i>	414	Black Cottonwood	15	1	20	Good	
<i>Populus trichocarpa</i>	420	Black Cottonwood	8	1	20	Good	
<i>Populus trichocarpa</i>	424	Black Cottonwood	6	0	20	Good	
<i>Populus trichocarpa</i>	425	Black Cottonwood	12	1	20	Good	
<i>Populus trichocarpa</i>	426	Black Cottonwood	14	1	20	Good	
<i>Populus trichocarpa</i>	432	Black Cottonwood	6	1	12	Good	
<i>Populus trichocarpa</i>	433	Black Cottonwood	13	1	8	Good	
<i>Populus trichocarpa</i>	434	Black Cottonwood	12	1	20	Good	
<i>Populus trichocarpa</i>	441	Black Cottonwood	16	1	25	Good	
<i>Populus trichocarpa</i>	442	Black Cottonwood	9	1	20	Good	
<i>Populus trichocarpa</i>	453	Black Cottonwood	9	1	12	Good	
<i>Populus trichocarpa</i>	454	Black Cottonwood	8	1	20	Good	
<i>Populus trichocarpa</i>	455	Black Cottonwood	7	1	10	Good	
<i>Populus trichocarpa</i>	627	Black Cottonwood	9	4	10	Fair	
<i>Quercus agrifolia</i>	2	Coast Live oak	17	1	10	Good	
<i>Quercus agrifolia</i>	27	Coast Live oak	15	1	25	Good	
<i>Quercus agrifolia</i>	31	Coast Live oak	16	1	30	Good	
<i>Quercus agrifolia</i>	32	Coast Live oak	14	1	25	Good	
<i>Quercus agrifolia</i>	44	Coast Live oak	9	1	20	Fair	

Species name	Tag	Common name	DBH	Trunks	Dripline	Condition	Comments
<i>Quercus agrifolia</i>	48	Coast Live oak	24	2	30	Fair	
<i>Quercus agrifolia</i>	84	Coast Live oak	10	3	20	Good	
<i>Quercus agrifolia</i>	92	Coast Live oak	26	1	35	Good	
<i>Quercus agrifolia</i>	115	Coast Live oak	11	1	30	Good	
<i>Quercus agrifolia</i>	116	Coast Live oak	10	1	25	Good	
<i>Quercus agrifolia</i>	117	Coast Live oak	7	1	20	Good	
<i>Quercus agrifolia</i>	118	Coast Live oak	6	1	20	Good	
<i>Quercus agrifolia</i>	119	Coast Live oak	8	1	20	Good	
<i>Quercus agrifolia</i>	120	Coast Live oak	9	2	20	Good	
<i>Quercus agrifolia</i>	121	Coast Live oak	4	2	10	Good	
<i>Quercus agrifolia</i>	125	Coast Live oak	14	1	28	Good	
<i>Quercus agrifolia</i>	126	Coast Live oak	9	1	20	Good	
<i>Quercus agrifolia</i>	127	Coast Live oak	10	1	25	Good	
<i>Quercus agrifolia</i>	128	Coast Live oak	12	1	25	Good	
<i>Quercus agrifolia</i>	129	Coast Live oak	6	1	20	Good	
<i>Quercus agrifolia</i>	130	Coast Live oak	8	1	20	Good	
<i>Quercus agrifolia</i>	131	Coast Live oak	11	1	20	Good	
<i>Quercus agrifolia</i>	136	Coast Live oak	7	1	20	Good	
<i>Quercus agrifolia</i>	137	Coast Live oak	9	1	25	Good	
<i>Quercus agrifolia</i>	138	Coast Live oak	8	1	20	Good	
<i>Quercus agrifolia</i>	140	Coast Live oak	11	1	25	Good	
<i>Quercus agrifolia</i>	145	Coast Live oak	7	2	20	Good	
<i>Quercus agrifolia</i>	156	Coast Live oak	3	1	5	Good	
<i>Quercus agrifolia</i>	157	Coast Live oak	10	1	15	Good	
<i>Quercus agrifolia</i>	158	Coast Live oak	3	6	6	Good	
<i>Quercus agrifolia</i>	160	Coast Live oak	4	1	8	Good	
<i>Quercus agrifolia</i>	161	Coast Live oak	6	1	20	Good	
<i>Quercus agrifolia</i>	162	Coast Live oak	6	4	15	Good	
<i>Quercus agrifolia</i>	165	Coast Live oak	19	1	30	Good	
<i>Quercus agrifolia</i>	168	Coast Live oak	5	2	20	Good	
<i>Quercus agrifolia</i>	169	Coast Live oak	4	2	20	Good	
<i>Quercus agrifolia</i>	171	Coast Live oak	7	2	20	Good	
<i>Quercus agrifolia</i>	173	Coast Live oak	6	3	12	Good	
<i>Quercus agrifolia</i>	174	Coast Live oak	9	2	20	Good	
<i>Quercus agrifolia</i>	175	Coast Live oak	8	3	20	Good	
<i>Quercus agrifolia</i>	176	Coast Live oak	8	1	20	Good	
<i>Quercus agrifolia</i>	178	Coast Live oak	6	7	20	Good	
<i>Quercus agrifolia</i>	180	Coast Live oak	7	2	20	Good	
<i>Quercus agrifolia</i>	181	Coast Live oak	7	4	25	Good	
<i>Quercus agrifolia</i>	186	Coast Live oak	5	1	6	Good	
<i>Quercus agrifolia</i>	189	Coast Live oak	3	1	4	Good	
<i>Quercus agrifolia</i>	191	Coast Live oak	5	1	7	Good	
<i>Quercus agrifolia</i>	468	Coast Live oak	19	1	30	Good	
<i>Quercus agrifolia</i>	473	Coast Live oak	6	6	20	Good	

Species name	Tag	Common name	DBH	Trunks	Dripline	Condition	Comments
<i>Quercus agrifolia</i>	501	Coast Live oak	2	1	6	Good	
<i>Quercus agrifolia</i>	514	Coast Live oak	6	1	30	Good	
<i>Quercus agrifolia</i>	523	Coast Live oak	4	2	10	Good	
<i>Quercus agrifolia</i>	528	Coast Live oak	3	1	10	Good	
<i>Quercus agrifolia</i>	556	Coast Live oak	6	2	20	Good	
<i>Quercus agrifolia</i>	557	Coast Live oak	8	3	20	Good	
<i>Quercus agrifolia</i>	558	Coast Live oak	7	1	20	Good	
<i>Quercus agrifolia</i>	559	Coast Live oak	7	1	20	Good	
<i>Quercus agrifolia</i>	561	Coast Live oak	12	1	30	Good	
<i>Quercus agrifolia</i>	566	Coast Live oak	8	3	20	Good	
<i>Quercus agrifolia</i>	571	Coast Live oak	10	2	25	Good	
<i>Quercus agrifolia</i>	574	Coast Live oak	45	1	60	Good	
<i>Quercus agrifolia</i>	575	Coast Live oak	8	1	20	Good	
<i>Quercus agrifolia</i>	576	Coast Live oak	8	1	20	Poor	
<i>Quercus agrifolia</i>	580	Coast Live oak	17	3	30	Good	
<i>Quercus agrifolia</i>	584	Coast Live oak	6	2	20	Good	
<i>Quercus agrifolia</i>	585	Coast Live oak	6	6	20	Good	
<i>Quercus agrifolia</i>	586	Coast Live oak	18	4	30	Good	
<i>Quercus agrifolia</i>	587	Coast Live oak	8	3	20	Good	
<i>Quercus agrifolia</i>	588	Coast Live oak	6	3	20	Good	
<i>Quercus agrifolia</i>	589	Coast Live oak	7	3	20	Good	
<i>Quercus agrifolia</i>	592	Coast Live oak	11	2	20	Good	
<i>Quercus agrifolia</i>	593	Coast Live oak	12	2	30	Good	
<i>Quercus agrifolia</i>	594	Coast Live oak	4	3	5	Good	
<i>Quercus agrifolia</i>	595	Coast Live oak	6	1	9	Good	
<i>Quercus agrifolia</i>	596	Coast Live oak	11	5	20	Good	
<i>Quercus agrifolia</i>	597	Coast Live oak	4	4	9	Good	
<i>Quercus agrifolia</i>	598	Coast Live oak	9	2	15	Good	
<i>Quercus agrifolia</i>	599	Coast Live oak	10	3	20	Good	
<i>Quercus agrifolia</i>	601	Coast Live oak	12	6	30	Good	
<i>Quercus agrifolia</i>	605	Coast Live oak	6	2	20	Good	
<i>Quercus agrifolia</i>	610	Coast Live oak	8	5	25	Good	
<i>Quercus agrifolia</i>	613	Coast Live oak	6	2	15	Good	
<i>Quercus agrifolia</i>	615	Coast Live oak	14	1	20	Good	
<i>Quercus agrifolia</i>	619	Coast Live oak	8	1	20	Good	
<i>Quercus agrifolia</i>	628	Coast Live oak	4	1	15	Good	
<i>Quercus agrifolia</i>	630	Coast Live oak	6	3	20	Good	
<i>Quercus agrifolia</i>	632	Coast Live oak	3	1	9	Good	
<i>Quercus agrifolia</i>	636	Coast Live oak	11	4	25	Good	
<i>Quercus lobata</i>	1	Valley Oak	31	1	34	Good	
<i>Quercus lobata</i>	23	Valley Oak	40	1	44	Good	
<i>Quercus lobata</i>	25	Valley Oak	52	1	60	Good	
<i>Quercus lobata</i>	47	Valley Oak	8	1	20	Good	
<i>Quercus lobata</i>	48	Valley Oak	7	3	20	Good	

Species name	Tag	Common name	DBH	Trunks	Dripline	Condition	Comments
<i>Quercus lobata</i>	48	Valley Oak	13	2	20	Good	
<i>Quercus lobata</i>	54	Valley Oak	54	1	80	Good	
<i>Quercus lobata</i>	56	Valley Oak	17	1	30	Good	
<i>Quercus lobata</i>	136	Valley Oak	37	1	55	Good	
<i>Quercus lobata</i>	163	Valley Oak	23	1	35	Good	
<i>Quercus lobata</i>	164	Valley Oak	10	1	20	Good	
<i>Quercus lobata</i>	167	Valley Oak	7	1	20	Good	
<i>Quercus lobata</i>	179	Valley Oak	14	1	30	Good	
<i>Quercus lobata</i>	185	Valley Oak	8	1	13	Fair	
<i>Quercus lobata</i>	187	Valley Oak	7	1	9	Good	
<i>Quercus lobata</i>	190	Valley Oak	6	1	4	Fair	
<i>Quercus lobata</i>	472	Valley Oak	10	1	20	Fair	
<i>Quercus lobata</i>	479	Valley Oak	4	1	6	Fair	
<i>Quercus lobata</i>	497	Valley Oak	6	1	20	Good	
<i>Quercus lobata</i>	515	Valley Oak	5	1	15	Good	
<i>Quercus lobata</i>	533	Valley Oak	8	1	20	Good	
<i>Quercus lobata</i>	560	Valley Oak	6	1	20	Good	
<i>Quercus lobata</i>	565	Valley Oak	8	1	20	Fair	
<i>Quercus lobata</i>	577	Valley Oak	11	1	20	Poor	
<i>Quercus lobata</i>	578	Valley Oak	14	1	20	Fair	
<i>Quercus lobata</i>	600	Valley Oak	21	2	30	Good	
<i>Quercus lobata</i>	604	Valley Oak	8	2	20	Good	
<i>Quercus lobata</i>	606	Valley Oak	7	1	20	Fair	
<i>Quercus lobata</i>	607	Valley Oak	6	4	20	Fair	
<i>Quercus lobata</i>	608	Valley Oak	4	2	10	Good	
<i>Quercus lobata</i>	609	Valley Oak	10	2	20	Good	
<i>Quercus lobata</i>	611	Valley Oak	5	1	20	Good	
<i>Quercus lobata</i>	612	Valley Oak	5	1	10	Fair	
<i>Quercus lobata</i>	614	Valley Oak	5	2	20	Fair	
<i>Quercus lobata</i>	616	Valley Oak	9	3	20	Fair	
<i>Quercus lobata</i>	617	Valley Oak	6	2	10	Fair	
<i>Quercus lobata</i>	618	Valley Oak	11	1	20	Good	
<i>Quercus lobata</i>	620	Valley Oak	9	1	25	Fair	
<i>Quercus lobata</i>	621	Valley Oak	13	2	30	Fair	
<i>Quercus lobata</i>	622	Valley Oak	6	1	10	Fair	
<i>Quercus lobata</i>	623	Valley Oak	5	2	10	Good	
<i>Quercus lobata</i>	624	Valley Oak	18	1	35	Good	
<i>Quercus lobata</i>	625	Valley Oak	9	1	20	Good	
<i>Quercus lobata</i>	626	Valley Oak	25	1	40	Good	
<i>Quercus lobata</i>	633	Valley Oak	18	5	35	Good	
<i>Quercus lobata</i>	634	Valley Oak	19	3	30	Good	
<i>Quercus lobata</i>	696	Valley Oak	5	1	10	Good	
<i>Quercus suber</i>	12	Cork Oak	31	1	23	Good	
<i>Quercus suber</i>	184	Cork Oak	22	1	27	Good	
<i>Quercus suber</i>	188	Cork Oak	26	1	33	Good	

Species name	Tag	Common name	DBH	Trunks	Dripline	Condition	Comments
<i>Quercus suber</i>	478	Cork Oak	13	1	20	Good	
<i>Quercus suber</i>	503	Cork Oak	28	1	33	Good	
<i>Quercus suber</i>	507	Cork Oak	21	1	30	Good	
<i>Quercus suber</i>	517	Cork Oak	21	1	30	Good	
<i>Quercus suber</i>	518	Cork Oak	40	2	30	Good	
<i>Quercus suber</i>	534	Cork Oak	24	2	25	Good	
<i>Quercus suber</i>	562	Cork Oak	22	1	40	Good	
<i>Quercus suber</i>	563	Cork Oak	12	3	35	Good	
<i>Quercus suber</i>	564	Cork Oak	13	4	30	Good	
<i>Quercus suber</i>	567	Cork Oak	18	1	30	Good	
<i>Quercus suber</i>	603	Cork Oak	24	1	35	Good	
<i>Salix goodingii</i>	199	Goodings willow	15	3	30	Fair	
<i>Salix goodingii</i>	407	Goodings willow	11	1	21	Good	
<i>Salix goodingii</i>	430	Goodings willow	9	1	20	Poor	1/2 of tree is dead
<i>Salix goodingii</i>	439	Goodings willow	10	1	20	Good	
<i>Salix goodingii</i>	440	Goodings willow	6	1	20	Poor	possibly dead
<i>Salix goodingii</i>	444	Goodings willow	8	1	20	Fair	
<i>Salix goodingii</i>	446	Goodings willow	6	1	20	Good	
<i>Salix goodingii</i>	449	Goodings willow	7	1	20	Good	
<i>Salix goodingii</i>	469	Goodings willow	9	4	25	Fair	
<i>Sambucus mexicana</i>	100	Blue Elderberry	9	6	35	Good	
<i>Sambucus mexicana</i>	412	Blue Elderberry	6	9	20	Good	
<i>Sambucus mexicana</i>	415	Blue Elderberry	11	2	20	Fair	
<i>Sambucus mexicana</i>	416	Blue Elderberry	8	2	20	Fair	
<i>Sambucus mexicana</i>	423	Blue Elderberry	8	5	25	Fair	
<i>Sambucus mexicana</i>	438	Blue Elderberry	31	3	20	Good	
<i>Sambucus mexicana</i>	457	Blue Elderberry	15	2	20	Fair	
<i>Sambucus mexicana</i>	470	Blue Elderberry	9	1	20	Good	
<i>Sambucus mexicana</i>	471	Blue Elderberry	6	2	20	Fair	
<i>Sambucus mexicana</i>	487	Blue Elderberry	9	5	20	Good	growing into power pole with 3 other smaller S. mex
<i>Sambucus mexicana</i>	543	Blue Elderberry	13	4	25	Good	
<i>Sambucus mexicana</i>	561	Blue Elderberry	7	2	20	Good	
<i>Schinus molle</i>	26	California pepper	38	1	55	Good	

Notes:

- a. See Figures 2, 3, and 4 for locations of trees listed.
- b. DBH = Diameter at Breast Height. DBH = diameter measurement of the largest trunk or major branch of the tree at 4.5 feet above ground level.
- c. Bold = A native species.

SOURCE: EMPSi, 2009

Appendix I I: Representative Photos

Photo 1: California walnut (*Juglans hindsii*) on the east side of Calaveras Road near San Antonio Creek.



Photo 2: Looking south down Calaveras Road from just south of San Antonio Creek.



Photo 3: Looking northwest down San Antonio— several sycamores (*Platanus racemosa*) are visible.



Photo 3: Looking southwest down Calaveras Road— numerous small coast live oak (*Quercus agrifolia*) and valley oak (*Q. lobata*) line the road.



Photo 5: Looking west from the staging area just west of Alameda siphons at two large sycamores.



Photo 6: Looking west to the edge of the southern staging area at several black cottonwoods (*Populus trichocarpa*).



APPENDIX J

Rare Plant Survey

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memorandum

to: Kelly White, ESA
from: Barbara Malloch Leitner, Orion; Martha Lowe, ESA
date: November 23, 2010
subject: 2009 and 2010 Special-status Plant Surveys for San Antonio Backup Pipeline Project

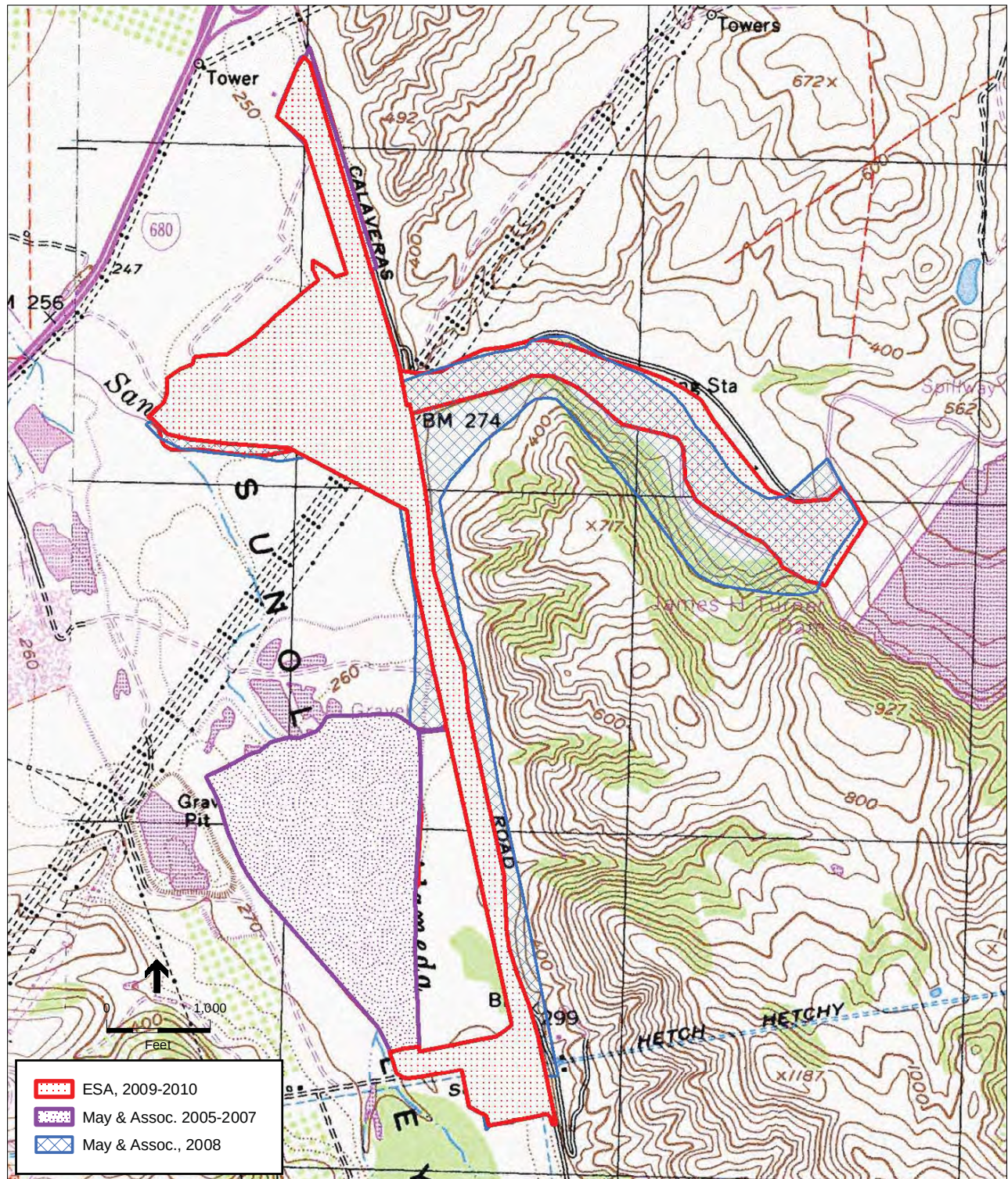
Summary

On March 11 and 17, April 21 and May 4, 2009 and November 17, 2010, ESA+Orion carried out follow-up special-status plant surveys for the San Antonio Backup Pipeline Project. These included focused surveys in areas previously covered by May and Associates (2008)¹, and focused surveys and a habitat assessment in expanded project areas not previously surveyed. Of the 16 special-status species May and Associates identified as potentially occurring in the original SABPL project area, potential presence of three California Native Plant Society (CNPS) listed species (fragrant fritillary (*Fritillaria liliacea*), stink bells (*F. agrestis*), and western leatherwood (*Dirca occidentalis*)) could not be conclusively assessed in 2008 due to seasonal timing. Appropriately-timed focused surveys were carried out for these species, in areas identified as potential habitat by May and Associates and within the updated project footprint, in March, 2009. No special-status plant species were identified within the areas surveyed at this time or during additional field work in April and May 2009. Additionally, no suitable habitat was found for special-status plant species within the updated project footprint. No further botanical surveys are recommended for the project as the combined results of the various field investigations are considered sufficient to determine all potentially occurring special-status plant species absent from the updated project footprint.

Area Surveyed

The March 2009 special-status plant surveys covered the project footprint, as defined at that time. The project area was expanded since the May and Associates 2008 surveys for the SABPL project. Since March of 2009, the project footprint changed again, to exclude all areas east of Calaveras Road. ESA+Orion's March 2009 surveys included these deleted areas east of Calaveras Road and the results from the deleted areas have been included in this report for informational purposes. The updated project footprint includes: 1) the Hanson Aggregates quarry pits F3-East and F3-West within the Surface Mining Permit (SMP) 24 area; 2) the North Spoils Site located just west of Calaveras Road to the north of Pits F3-East and F3-West; 3) areas in and around SMP-30 to the south (which were surveyed by May and Associates in 2005-2007 in conjunction with the New Irvington Tunnel and Alameda Siphons Projects); and 4) additional areas to the west of Calaveras Road between approximately San Antonio Creek and the San Antonio Pump Station. (see **Figure 1**).

¹ May and Associates, 2008, Botanical Survey Report, San Antonio Backup Pipeline Project, prepared for San Francisco Public Utilities Commission, San Francisco, CA.



SOURCE: SFPUC, 2009; ESA+Orion, 2009

SFPUC San Antonio Backup Pipeline Project
Figure 1
 SABPL Project Rare Plant Study Area

The 2009 survey area included several natural communities, which are characterized in this memorandum based on the nomenclature and classification used by Holland². Natural communities present in the larger survey area include non-native annual grassland, mulefat scrub, coast live oak woodland, sycamore alluvial woodland, mixed riparian woodland, and ruderal. The majority of the area west of Calaveras Road and within the project footprint supports non-native annual grassland and ruderal vegetation. Herbaceous vegetation in this area is dense and dominated by a variety of non-native annual grasses, as well as large stands of non-native weedy species, such as wild mustard (*Brassica nigra*), yellow star-thistle (*Centaurea solstitialis*) and poison hemlock (*Conium maculatum*). Side slopes of the quarry pits and the roads and laydown areas around them are highly disturbed and primarily barren or support a sparse cover of non-native annual grasses and ruderal species. There are also two areas of freshwater marsh and one seasonal wetland in the southern portion of the project footprint and areas of mixed riparian woodland along San Antonio Creek west of Calaveras Road and along the southern edge of SMP-30. Wetland and riparian communities are generally considered sensitive by federal, state, and most local agencies.

The 2010 surveys demonstrated that most of the project area previously mapped as non-native annual grassland had been cleared as part of site preparation for the New Irvington Tunnel Project and the Alameda Siphons Seismic Reliability Upgrade Project, leaving only small areas of mulefat scrub and mixed riparian woodland along the steep streambank and channel of San Antonio Creek, and very small areas of seasonal wetlands at the southern end of the SABPL project area near the chloramination building. Large mature trees such as valley oak (*Quercus lobata*), California sycamore (*Platanus racemosa*) and coast live oak (*Quercus agrifolia*) were retained and protected in areas that were otherwise scraped and graded for use as part of these projects.

Methods

ESA+Orion reviewed the May and Associates 2008 report, which identified 16 target species for focused surveys and areas of potential habitat for three target plant species whose presence they were unable to confirm. ESA+Orion also reviewed California Native Plant Society (CNPS) Electronic Inventory and updated U.S. Fish and Wildlife Service (USFWS) and CNDDDB records for the La Costa Valley US Geologic Survey 7.5-minute topographic quadrangle, in which the project area is located, and the eight surrounding quadrangles. ESA+Orion compared the updated lists with those produced by May and Associates and found no additional species that warranted inclusion as target species for rare plant surveys. Focused early season field surveys were carried out by Orion botanist B. Leitner on March 11 and 17, 2009 for all but the North Spoils Site and SMP-30 pit, which had been surveyed previously in conjunction with the SFPUC's Alameda Siphons and New Irvington Tunnel projects. ESA biologist M. Lowe carried out a mid-season focused floristic survey and late-blooming special-status plant habitat assessment of the current project footprint (exclusive of the North Spoils Site and SMP-30 pit) on April 21 and May 4, 2009. Together on November 17, 2010, B. Leitner and M. Lowe visited those small additional portions of the project area near San Antonio Creek. All parts of the project footprint surveyed were covered on foot. All plant species observed were noted and identified to a level sufficient to determine their rarity.

² Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. California Department of Fish and Game, Natural Heritage Division, Sacramento, CA 1986.

Results and Conclusion

Attachment 1 lists all plant species observed during ESA+Orion's 2009 and 2010 site surveys. Attachment 2 presents results of the updated CNPS, CNDDDB and USFWS database queries. No fragrant fritillary, stinkbells, or western leatherwood were found within the updated project footprint, nor were they found in areas identified by May and Associates as potentially suitable habitat. In addition, although johnny jump-up (*Viola pedunculata*) populations³ were found east of Calaveras Road by May and Associates, none were found within the updated project footprint. ESA+Orion's early season surveys were carried out at a time when these species would be readily observable and it was concluded that they were not present. No other special-status plant species were observed during either the early or mid-season surveys. Results of the previous surveys by May and Associates for the SABPL, Alameda Siphons, and New Irvington Tunnel projects were negative within areas included in the updated project footprint. ESA+Orion's 2009 early and mid-season plant surveys and 2010 late-season plant surveys within the project footprint were also negative. In addition, ESA determined that no suitable habitat exists for late-blooming special-status plants in the newer portions of the project footprint due to the highly disturbed conditions there. Therefore, since no special-status plants or suitable habitat for special-status plants were documented within the updated project footprint, no further special-status plant surveys are recommended.

³ Johnny jump-up serve as the host plant for the endangered callippe silverspot butterfly.

ATTACHMENT 1

Plant Species Observed

San Antonio Backup Pipeline Project Focused Surveys

March 11 and 17, April 21, and May 4, 2009 and November 17, 2010

Scientific Name	Common Name
ANACARDIACEAE <i>Toxicodendron diversilobum</i>	SUMAC OR CASHEW FAMILY Pacific poisonoak
APIACEAE <i>Conium maculatum</i> <i>Foeniculum vulgare</i> <i>Oenanthe sarmentosa</i> <i>Torilis nodosa</i>	CARROT FAMILY Poison hemlock Sweet fennel Oenanthe Knotted hedge-parsley
ASCLEPIADACEAE <i>Asclepias fascicularis</i>	MILKWEED FAMILY Narrowleaf milkweed
ASTERACEAE <i>Achillea millefolium</i> <i>Artemisia douglasiana</i> <i>Baccharis pilularis</i> <i>Baccharis salicifolia</i> <i>Carduus pycnocephalus</i> <i>Centaurea solstitialis</i> <i>Cirsium vulgare</i> <i>Dittrichia graveolens</i> <i>Hypochaeris glabra</i> <i>Matricaria discoidea</i> (= <i>Chamomilla suaveolens</i>) <i>Picris echioides</i> <i>Senecio vulgaris</i> <i>Silybum marianum</i> <i>Sonchus asper</i> ssp. <i>asper</i> <i>Taraxacum officinale</i>	SUNFLOWER FAMILY Common yarrow Douglas' mugwort Coyotebrush Mule's fat; seepwillow Italian thistle Yellow star thistle Bull thistle Stinkwort Smooth catsear Disc mayweed; pineapple weed Bristly oxtongue Common groundsel Milk thistle Spiny sowthistle; prickly sow thistle Dandelion
AZOLLACEAE <i>Azolla filiculoides</i>	MOSQUITO FERN FAMILY Pacific mosquitofern
BORAGINACEAE <i>Amsinckia menziesii</i> var. <i>intermedia</i> <i>Plagiobothrys nothofulvus</i>	FORGET-ME-NOT FAMILY Common fiddleneck, intermediate fiddleneck Rusty popcornflower
BRASSICACEAE <i>Barbarea orthoceras</i> <i>Cardamine oligosperma</i> <i>Hirschfeldia incana</i> <i>Raphanus sativus</i> <i>Rorippa curvisiliqua</i> <i>Rorippa nasturtium-aquaticum</i>	MUSTARD FAMILY American yellowrocket; wintercress Idaho bittercress Shortpod mustard Wild radish Curvedpod yellowcress Watercress
CAPRIFOLIACEAE <i>Sambucus nigra</i> ssp. <i>canadensis</i> (= <i>S. mexicana</i>) <i>Symphoricarpos albus</i> var. <i>laevigatus</i> <i>Symphoricarpos mollis</i>	HONEYSUCKLE FAMILY Blue elder, common elderberry, Mexican elderberry Common snowberry Creeping snowberry
CARYOPHYLLACEAE <i>Cerastium glomeratum</i> <i>Stellaria media</i>	PINK FAMILY Sticky chickweed Common chickweed
CUCURBITACEAE <i>Marah fabaceus</i>	MELON FAMILY California manroot

Scientific Name	Common Name
CYPERACEAE	SEDGE FAMILY
<i>Carex</i> sp.	Sedge
<i>Cyperus eragrosis</i>	Tall flatsedge
<i>Eleocharis palustris</i> (= <i>E. macrostachya</i>)	Common spikerush
<i>Schoenoplectus acutus</i> var. <i>occidentalis</i> (= <i>Scirpus a.</i> var. <i>o.</i>)	Tule
FABACEAE	PEA FAMILY
<i>Lotus corniculatus</i>	Birdfoot deervetch; birdsfoot trefoil
<i>Lupinus bicolor</i>	Dove lupine
<i>Medicago polymorpha</i>	California burclover
<i>Melilotus indica</i>	Sourclover
<i>Trifolium fucatum</i>	Bull clover
<i>Trifolium repens</i>	White clover
<i>Trifolium subterraneum</i>	Subterranean clover
<i>Vicia americana</i> var. <i>americana</i>	American vetch
<i>Vicia sativa</i> var. <i>sativa</i>	Spring vetch
<i>Vicia villosa</i> var. <i>villosa</i>	Winter vetch
FAGACEAE	OAK FAMILY
<i>Quercus agrifolia</i>	Coast live oak
<i>Quercus lobata</i>	Valley oak
<i>Quercus suber</i>	Cork oak
GERANIACEAE	GERANIUM FAMILY
<i>Erodium brachycarpum</i>	Shortfruit stork's bill
<i>Erodium cicutarium</i>	Redstem stork's bill
<i>Erodium moschatum</i>	Musky stork's bill
<i>Geranium dissectum</i>	Cutleaf geranium
<i>Geranium molle</i>	Awnless geranium; dovefoot geranium
HIPPOCASTANACEAE	HORSE-CHESTNUT FAMILY
<i>Aesculus californica</i>	California buckeye
JUNCACEAE	RUSH FAMILY
<i>Juncus bufonius</i> var. <i>bufonius</i>	Toad rush
<i>Juncus effusus</i> var. <i>brunneus</i>	Soft rush
<i>Juncus phaeocephalus</i> var. <i>paniculatus</i>	Brownhead rush
<i>Juncus xiphioides</i>	Irisleaf rush
LAMIACEAE	MINT FAMILY
<i>Lamium amplexicaule</i>	Common henbit
<i>Marrubium vulgare</i>	Horehound
<i>Mentha pulegium</i>	Pennyroyal
<i>Stachys rigida</i> var. <i>rigida</i> (= <i>S. ajugoides</i> var. <i>r.</i>)	Rough hedgenettle
LAURACEAE	LAUREL FAMILY
<i>Umbellularia californica</i>	California bay
LEMNACEAE	DUCKWEED FAMILY
<i>Lemna</i> sp.	Duckweed
LILIACEAE	LILY FAMILY
<i>Chlorogalum pomeridianum</i>	Wavyleaf soap plant
ONAGRACEAE	EVENING PRIMROSE FAMILY
<i>Epilobium brachycarpum</i>	Autumn willowherb
PAPAVERACEAE	POPPY FAMILY
<i>Eschscholzia californica</i>	California poppy
PLANTAGINACEAE	PLANTAIN FAMILY
<i>Plantago coronopus</i>	Buckhorn plantain
<i>Plantago lanceolata</i>	English plantain
<i>Plantago major</i>	Common plantain

Scientific Name	Common Name
PLATANACEAE	PLANE TREE FAMILY
<i>Platanus racemosa</i>	California sycamore
POACEAE	GRASS FAMILY
<i>Avena barbata</i>	Slender oats
<i>Avena fatua</i>	Wild oats
<i>Briza minor</i>	Little quakinggrass
<i>Bromus carinatus</i> var. <i>carinatus</i>	California brome
<i>Bromus diandrus</i>	Ripgut brome
<i>Bromus hordeaceus</i>	Soft brome; soft chess
<i>Bromus madritensis</i> ssp. <i>rubens</i>	Red brome
<i>Cortaderia</i> sp.	Pampas grass
<i>Cynodon dactylon</i>	Bermudagrass
<i>Elymus glaucus</i>	Blue wildrye
<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Mediterranean barley
<i>Hordeum murinum</i> ssp. <i>leporinum</i>	Leporinum barley
<i>Leymus triticoides</i>	Creeping wildrye
<i>Lolium multiflorum</i>	Italian ryegrass
<i>Piptatherum miliaceum</i>	Smilo grass
<i>Poa annua</i>	Annual bluegrass
<i>Polypogon monspeliensis</i>	Annual rabbitsfoot grass
<i>Vulpia microstachys</i> var. <i>ciliata</i>	Nuttall's fescue
<i>Vulpia myuros</i>	Rat-tail fescue
POLYGONACEAE	BUCKWHEAT FAMILY
<i>Polygonum arenastrum</i>	Common knotweed
<i>Rumex crispus</i>	Curly dock
PORTULACACEAE	PURSLANE FAMILY
<i>Claytonia perfoliata</i>	Miner's lettuce
PRIMULACEAE	PRIMROSE FAMILY
<i>Anagallis arvensis</i>	Scarlet pimpernel
RHAMNACEAE	BUCKTHORN FAMILY
<i>Ceanothus</i> sp.	Ceanothus
<i>Frangula californica</i> ssp. <i>californica</i> (= <i>Rhamnus c.</i> ssp. <i>c</i>)	California buckthorn; California coffeeberry
ROSACEAE	ROSE FAMILY
<i>Aphanes arvensis</i> (= <i>A. occidentalis</i>)	Field parsley pier
<i>Rosa californica</i>	California wildrose
<i>Rubus ursinus</i>	California blackberry
RUBIACEAE	MADDER FAMILY
<i>Galium aparine</i>	Bedstraw; cleavers
SALICACEAE	WILLOW FAMILY
<i>Populus fremontii</i>	Fremont cottonwood
<i>Salix gooddingii</i>	Gooding's black willow
<i>Salix lasiolepis</i>	Arroyo willow
SCROPHULARIACEAE	FIGWORT FAMILY
<i>Scrophularia californica</i>	California figwort; California beeplant
<i>Veronica americana</i>	American brooklime
SOLANACEAE	TOMATO FAMILY
<i>Nicotiana glauca</i>	Tree tobacco
<i>Solanum umbelliferum</i> var. <i>incanum</i>	Bluewitch
TYPHACEAE	CATTAIL FAMILY
<i>Typha angustifolia</i>	Narrowleaf cattail
<i>Typha</i> sp.	Cattail
URTICACEAE	NETTLE FAMILY
<i>Urtica dioica</i> ssp. <i>holosericea</i>	Hoary stinging nettle

ATTACHMENT 2

Results of California Native Plant Society, California Natural Diversity Database and US Fish and Wildlife Service Database Queries

San Antonio Backup Pipeline Project

Scientific name	Family	Life form	Blooming	Communities	Elevation	CNPS
Acanthomintha lanceolata	Lamiaceae	annual herb	Mar-Jun	•Chaparral (Chprl)(often serpentine) •Cismontane woodland (CmWld) •Coastal scrub (CoScr)/rocky	80 - 1200 meters	List 4.2
Amsinckia lunaris	Boraginaceae	annual herb	Mar-Jun	•Coastal bluff scrub (CBScr) •Cismontane woodland (CmWld) •Valley and foothill grassland (VFGr)	3 - 500 meters	List 1B.2
Androsace elongata ssp. acuta	Primulaceae	annual herb	Mar-Jun	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Coastal scrub (CoScr) •Meadows and seeps (Medws) •Pinyon and juniper woodland (PJWld) •Valley and foothill grassland (VFGr)	150 - 1200 meters	List 4.2
Aspidotis carlotta-halliae	Pteridaceae	perennial rhizomatous herb	Jan-Dec	•Chaparral (Chprl) •Cismontane woodland (CmWld)/generally serpentine	100 - 1400 meters	List 4.2
Astragalus nuttallii var. nuttallii	Fabaceae	perennial herb	Jan-Nov	•Coastal bluff scrub (CBScr) •Coastal dunes (CoDns)	3 - 120 meters	List 4.2
Astragalus tener var. tener	Fabaceae	annual herb	Mar-Jun	•Playas (Plyas) •Valley and foothill grassland (VFGr)(adobe clay) •Vernal pools (VnPls)/alkaline	1 - 60 meters	List 1B.2
Atriplex cordulata	Chenopodiaceae	annual herb	Apr-Oct	•Chenopod scrub (ChScr) •Meadows and seeps (Medws) •Valley and foothill grassland (VFGr)(sandy)/saline or alkaline	1 - 375 meters	List 1B.2
Atriplex coronata var. coronata	Chenopodiaceae	annual herb	Mar-Oct	•Chenopod scrub (ChScr) •Valley and foothill grassland (VFGr) •Vernal pools (VnPls)/alkaline	1 - 590 meters	List 4.2
Atriplex depressa	Chenopodiaceae	annual herb	Apr-Oct	•Chenopod scrub (ChScr) •Meadows and seeps (Medws) •Playas (Plyas) •Valley and foothill grassland (VFGr) •Vernal pools (VnPls)/alkaline, clay	1 - 320 meters	List 1B.2
Atriplex joaquiniana	Chenopodiaceae	annual herb	Apr-Oct	•Chenopod scrub (ChScr) •Meadows and seeps (Medws) •Playas (Plyas) •Valley and foothill grassland (VFGr)/alkaline	1 - 835 meters	List 1B.2
Balsamorhiza macrolepis var. macrolepis	Asteraceae	perennial herb	Mar-Jun	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Valley and foothill grassland (VFGr)/sometimes serpentine	90 - 1555 meters	List 1B.2
Blepharizonia plumosa	Asteraceae	annual herb	Jul-Oct	•Valley and foothill grassland (VFGr)	30 - 505 meters	List 1B.1
California macrophylla	Geraniaceae	annual herb	Mar-May	•Cismontane woodland (CmWld) •Valley and foothill grassland (VFGr)/clay	15 - 1200 meters	List 1B.1

Scientific name	Family	Life form	Blooming	Communities	Elevation	CNPS
Calochortus umbellatus	Liliaceae	perennial bulbiferous herb	Mar-May	•Broadleaved upland forest (BUFrS) •Chaparral (Chprl) •Cismontane woodland (CmWld) •Lower montane coniferous forest (LCFrS) •Valley and foothill grassland (VFGrs)/often serpentinite	100 - 700 meters	List 4.2
Campanula exigua	Campanulaceae	annual herb	May-Jun	•Chaparral (Chprl)(rocky, usually serpentinite)	275 - 1250 meters	List 1B.2
Castilleja ambigua ssp. ambigua	Scrophulariaceae	annual herb	Mar-Aug	•Coastal bluff scrub (CBScr) •Coastal prairie (CoPrr) •Coastal scrub (CoScr) •Marshes and swamps (MshSw) •Valley and foothill grassland (VFGrs) •Vernal pools (VnPls)margins	0 - 435 meters	List 4.2
Centromadia parryi ssp. congdonii	Asteraceae	annual herb	May-Oct(Nov), Months in parentheses are uncommon.	•Valley and foothill grassland (VFGrs)(alkaline)	1 - 230 meters	List 1B.2
Clarkia breweri	Onagraceae	annual herb	Apr-Jun	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Coastal scrub (CoScr)/often serpentinite	215 - 1000 meters	List 4.2
Clarkia concinna ssp. automixa	Onagraceae	annual herb	(Apr),May-Jun(Jul), Months in parentheses are uncommon.	•Chaparral (Chprl) •Cismontane woodland (CmWld)	90 - 1500 meters	List 4.3
Cordylanthus maritimus ssp. palustris	Scrophulariaceae	annual herb hemiparasitic	Jun-Oct	•Marshes and swamps (MshSw)(coastal salt)	0 - 10 meters	List 1B.2
Cordylanthus mollis ssp. hispidus	Scrophulariaceae	annual herb hemiparasitic	Jun-Sep	•Meadows and seeps (Medws) •Playas (Plyas) •Valley and foothill grassland (VFGrs)/alkaline	1 - 155 meters	List 1B.1
Cordylanthus palmatus	Scrophulariaceae	annual herb hemiparasitic	May-Oct	•Chenopod scrub (ChScr) •Valley and foothill grassland (VFGrs)/alkaline	5 - 155 meters	List 1B.1
Deinandra bacigalupii	Asteraceae	annual herb	Jun-Oct	•Meadows and seeps (Medws)(alkaline)	150 - 185 meters	List 1B.2
Delphinium californicum ssp. interius	Ranunculaceae	perennial herb	Apr-Jun	•Chaparral (Chprl)(openings) •Cismontane woodland (CmWld)(mesic)	230 - 1095 meters	List 1B.2
Delphinium gypsophilum ssp. gypsophilum	Ranunculaceae	perennial herb	Feb-May	•Chenopod scrub (ChScr) •Cismontane woodland (CmWld) •Valley and foothill grassland (VFGrs)	100 - 825 meters	List 4.2

Scientific name	Family	Life form	Blooming	Communities	Elevation	CNPS
Eriogonum nudum var. decurrens	Polygonaceae	perennial herb	Jun-Oct	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Lower montane coniferous forest (LCFRs)(maritime ponderosa pine sandhills)/sandy	50 - 800 meters	List 1B.1
Eriogonum umbellatum var. bahiiforme	Polygonaceae	perennial herb	Jul-Sep	•Cismontane woodland (CmWld) •Lower montane coniferous forest (LCFRs)/rocky, often serpentinite	700 - 2200 meters	List 4.2
Eriophyllum jepsonii	Asteraceae	perennial herb	Apr-Jun	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Coastal scrub (CoScr)/sometimes serpentinite	200 - 1025 meters	List 4.3
Eryngium aristulatum var. hooveri	Apiaceae	annual/perennial herb	Jul	•Vernal pools (VnPIs)	3 - 45 meters	List 1B.1
Fritillaria agrestis	Liliaceae	perennial bulbiferous herb	Mar-Jun	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Pinyon and juniper woodland (PJWld) •Valley and foothill grassland (VFGrs)/clay, sometimes serpentinite	10 - 1555 meters	List 4.2
Fritillaria liliacea	Liliaceae	perennial bulbiferous herb	Feb-Apr	•Cismontane woodland (CmWld) •Coastal prairie (CoPrr) •Coastal scrub (CoScr) •Valley and foothill grassland (VFGrs)/often serpentinite	3 - 410 meters	List 1B.2
Galium andrewsii ssp. gatense	Rubiaceae	perennial herb	Apr-Jul	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Lower montane coniferous forest (LCFRs)/serpentinite, rocky	150 - 1450 meters	List 4.2
Helianthella castanea	Asteraceae	perennial herb	Mar-Jun	•Broadleafed upland forest (BUFRs) •Chaparral (Chprl) •Cismontane woodland (CmWld) •Coastal scrub (CoScr) •Riparian woodland (RpWld) •Valley and foothill grassland (VFGrs)	60 - 1300 meters	List 1B.2
Hesperevax caulescens	Asteraceae	annual herb	Mar-Jun	•Valley and foothill grassland (VFGrs)(mesic, clay) •Vernal pools (VnPIs)(shallow)	0 - 505 meters	List 4.2
Iris longipetala	Iridaceae	perennial rhizomatous herb	Mar-May	•Coastal prairie (CoPrr) •Lower montane coniferous forest (LCFRs) •Meadows and seeps (Medws)/mesic	0 - 600 meters	List 4.2
Lasthenia conjugens	Asteraceae	annual herb	Mar-Jun	•Cismontane woodland (CmWld) •Playas (Plyas)(alkaline) •Valley and foothill grassland (VFGrs) •Vernal pools (VnPIs)/mesic	0 - 470 meters	List 1B.1

Scientific name	Family	Life form	Blooming	Communities	Elevation	CNPS
Lasthenia ferrisiae	Asteraceae	annual herb	Feb-May	•Vernal pools (VnPls)(alkaline, clay)	20 - 700 meters	List 4.2
Legenere limosa	Campanulaceae	annual herb	Apr-Jun	•Vernal pools (VnPls)	1 - 880 meters	List 1B.1
Leptosiphon acicularis	Polemoniaceae	annual herb	Apr-Jul	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Coastal prairie (CoPrr) •Valley and foothill grassland (VFGrS)	55 - 1500 meters	List 4.2
Leptosiphon ambiguus	Polemoniaceae	annual herb	Mar-Jun	•Cismontane woodland (CmWld) •Coastal scrub (CoScr) •Valley and foothill grassland (VFGrS)/usually serpentinite	120 - 1130 meters	List 4.2
Leptosiphon grandiflorus	Polemoniaceae	annual herb	Apr-Aug	•Coastal bluff scrub (CBScr) •Closed-cone coniferous forest (CCFrS) •Cismontane woodland (CmWld) •Coastal dunes (CoDns) •Coastal prairie (CoPrr) •Coastal scrub (CoScr) •Valley and foothill grassland (VFGrS)/usually sandy	5 - 1220 meters	List 4.2
Leptosyne hamiltonii	Asteraceae	annual herb	Mar-May	•Cismontane woodland (CmWld)(rocky)	550 - 1300 meters	List 1B.2
Lessingia hololeuca	Asteraceae	annual herb	Jun-Oct	•Broadleafed upland forest (BUFrS) •Coastal scrub (CoScr) •Lower montane coniferous forest (LCFrS) •Valley and foothill grassland (VFGrS)/clay, serpentinite	15 - 305 meters	List 3
Lessingia tenuis	Asteraceae	annual herb	May-Jul	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Lower montane coniferous forest (LCFrS)/openings	300 - 2150 meters	List 4.3
Malacothamnus arcuatus	Malvaceae	perennial evergreen shrub	Apr-Sep	•Chaparral (Chprl) •Cismontane woodland (CmWld)	15 - 355 meters	List 1B.2
Malacothamnus hallii	Malvaceae	perennial evergreen shrub	May-Sep(Oct), Months in parentheses are uncommon.	•Chaparral (Chprl) •Coastal scrub (CoScr)	10 - 760 meters	List 1B.2
Microseris sylvatica	Asteraceae	perennial herb	Mar-Jun	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Great Basin scrub (GBScr) •Pinyon and juniper woodland (PJWld) •Valley and foothill grassland (VFGrS)(serpentinite)	45 - 1500 meters	List 4.2
Monardella antonina ssp. antonina	Lamiaceae	perennial rhizomatous herb	Jun-Aug	•Chaparral (Chprl) •Cismontane woodland (CmWld)	500 - 1000 meters	List 3

Scientific name	Family	Life form	Blooming	Communities	Elevation	CNPS
Monardella villosa ssp. globosa	Lamiaceae	perennial rhizomatous herb	Jun-Jul(Aug), Months in parentheses are uncommon.	•Broadleafed upland forest (BUFRs)(openings) •Chaparral (Chprl)(openings) •Cismontane woodland (CmWld) •Coastal scrub (CoScr) •Valley and foothill grassland (VFGrS)	100 - 915 meters	List 1B.2
Myosurus minimus ssp. apus	Ranunculaceae	annual herb	Mar-Jun	•Valley and foothill grassland (VFGrS) •Vernal pools (VnPls)(alkaline)	20 - 640 meters	List 3.1
Navarretia cotulifolia	Polemoniaceae	annual herb	May-Jun	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Valley and foothill grassland (VFGrS)/adobe	4 - 1830 meters	List 4.2
Navarretia nigelliformis ssp. nigelliformis	Polemoniaceae	annual herb	Apr-Jun	•Valley and foothill grassland (VFGrS)vernally mesic •Vernal pools (VnPls)sometimes/clay, sometimes serpentinite	100 - 1000 meters	List 4.2
Navarretia prostrata	Polemoniaceae	annual herb	Apr-Jul	•Coastal scrub (CoScr) •Meadows and seeps (Medws) •Valley and foothill grassland (VFGrS)(alkaline) •Vernal pools (VnPls)/mesic	15 - 700 meters	List 1B.1
Piperia michaelii	Orchidaceae	perennial herb	Apr-Aug	•Coastal bluff scrub (CBScr) •Closed-cone coniferous forest (CCFrS) •Chaparral (Chprl) •Cismontane woodland (CmWld) •Coastal scrub (CoScr) •Lower montane coniferous forest (LCFrS)	3 - 915 meters	List 4.2
Plagiobothrys glaber	Boraginaceae	annual herb	Mar-May	•Meadows and seeps (Medws)(alkaline) •Marshes and swamps (MshSw)(coastal salt)	15 - 180 meters	List 1A
Polemonium carneum	Polemoniaceae	perennial herb	Apr-Sep	•Coastal prairie (CoPrr) •Coastal scrub (CoScr) •Lower montane coniferous forest (LCFrS)	0 - 1830 meters	List 2.2
Psilocarphus brevissimus var. multiflorus	Asteraceae	annual herb	May-Jun	•Vernal pools (VnPls)	10 - 500 meters	List 4.2
Ranunculus lobbii	Ranunculaceae	annual herb aquatic	Feb-May	•Cismontane woodland (CmWld) •North Coast coniferous forest (NCFrS) •Valley and foothill grassland (VFGrS) •Vernal pools (VnPls)/mesic	15 - 470 meters	List 4.2

Scientific name	Family	Life form	Blooming	Communities	Elevation	CNPS
Streptanthus albidus ssp. peramoenus	Brassicaceae	annual herb	(Mar),Apr-Sep(Oct), Months in parentheses are uncommon.	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Valley and foothill grassland (VFGrS)/serpentinite	94 - 1000 meters	List 1B.2
Stuckenia filiformis	Potamogetonaceae	perennial rhizomatous herb aquatic	May-Jul	•Marshes and swamps (MshSw)(assorted shallow freshwater)	300 - 2150 meters	List 2.2
Suaeda californica	Chenopodiaceae	perennial evergreen shrub	Jul-Oct	•Marshes and swamps (MshSw)(coastal salt)	0 - 15 meters	List 1B.1
Trifolium hydrophilum	Fabaceae	annual herb	Apr-Jun	•Marshes and swamps (MshSw) •Valley and foothill grassland (VFGrS)(mesic, alkaline) •Vernal pools (VnPls)	0 - 300 meters	List 1B.2
Tropidocarpum capparideum	Brassicaceae	annual herb	Mar-Apr	•Valley and foothill grassland (VFGrS)(alkaline hills)	1 - 455 meters	List 1B.1

California Department of Fish and Game
Natural Diversity Database
CNDDDB Data Request
For La Costa Valley and eight surrounding USGS 7.5 minute topo quads

Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 <i>Amsinckia lunaris</i> bent-flowered fiddleneck	PDBOR01070			G2	S2.2	1B.2
2 <i>Astragalus tener</i> var. <i>tener</i> alkali milk-vetch	PDFAB0F8R1			G1T1	S1.1	1B.2
3 <i>Atriplex cordulata</i> heartscale	PDCHE040B0			G2?	S2.2?	1B.2
4 <i>Atriplex depressa</i> brittlescale	PDCHE042L0			G2Q	S2.2	1B.2
5 <i>Atriplex joaquiniana</i> San Joaquin spearscale	PDCHE041F3			G2	S2	1B.2
6 <i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i> big-scale balsamroot	PDAST11061			G3G4T2	S2	1B.2
7 <i>Blepharizonia plumosa</i> big tarplant	PDAST1C011			G1	S1	1B.1
8 <i>California macrophylla</i> round-leaved filaree	PDGER01070			G2	S2	1B.1
9 <i>Campanula exigua</i> chaparral harebell	PDCAM020A0			G2	S2.2	1B.2
10 <i>Centromadia parryi</i> ssp. <i>congdonii</i> Congdon's tarplant	PDAST4R0P1			G4T2	S2	1B.2
11 <i>Chorizanthe robusta</i> var. <i>robusta</i> robust spineflower	PDPGN040Q2	Endangered		G2T1	S1.1	1B.1
12 <i>Clarkia concinna</i> ssp. <i>automixa</i> Santa Clara red ribbons	PDONA050A1			G5?T3	S3.3	4.3
13 <i>Cordylanthus maritimus</i> ssp. <i>palustris</i> Point Reyes bird's-beak	PDSCR0J0C3			G4?T2	S2.2	1B.2
14 <i>Cordylanthus mollis</i> ssp. <i>hispidus</i> hispid bird's-beak	PDSCR0J0D1			G2T2	S2.1	1B.1
15 <i>Cordylanthus palmatus</i> palmate-bracted bird's-beak	PDSCR0J0J0	Endangered	Endangered	G1	S1.1	1B.1
16 <i>Deinandra bacigalupii</i> Livermore tarplant	PDAST4R0V0			G1	S1.2	1B.2
17 <i>Delphinium californicum</i> ssp. <i>interius</i> Hospital Canyon larkspur	PDRAN0B0A2			G3T2?	S2?	1B.2
18 <i>Eryngium aristulatum</i> var. <i>hooveri</i> Hoover's button-celery	PDAP10Z043			G5T2	S2.1	1B.1
19 <i>Eschscholzia rhombipetala</i> diamond-petaled California poppy	PDPAP0A0D0			G1	S1.1	1B.1
20 <i>Fritillaria agrestis</i> stinkbells	PMLIL0V010			G3	S3.2	4.2
21 <i>Fritillaria liliacea</i> fragrant fritillary	PMLIL0V0C0			G2	S2.2	1B.2
22 <i>Helianthella castanea</i> Diablo helianthella	PDAST4M020			G2	S2	1B.2
23 <i>Lasthenia conjugens</i> Contra Costa goldfields	PDAST5L040	Endangered		G1	S1.1	1B.1

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For La Costa Valley and eight surrounding USGS 7.5 minute topo quads

Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
24 <i>Legenere limosa</i> legenere	PDCAM0C010			G2	S2.2	1B.1
25 <i>Leptosyne hamiltonii</i> Mt. Hamilton coreopsis	PDAST2L0C0			G2	S2.2	1B.2
26 <i>Malacothamnus arcuatus</i> arcuate bush-mallow	PDMAL0Q0E0			G2Q	S2.2	1B.2
27 <i>Malacothamnus hallii</i> Hall's bush-mallow	PDMAL0Q0F0			G2Q	S2	1B.2
28 <i>Monardella villosa ssp. globosa</i> robust monardella	PDLAM180P7			G5T2	S2.2	1B.2
29 <i>Navarretia prostrata</i> prostrate vernal pool navarretia	PDPLM0C0Q0			G2?	S2.1?	1B.1
30 <i>Plagiobothrys glaber</i> hairless popcorn-flower	PDBOR0V0B0			GH	SH	1A
31 <i>Polemonium carneum</i> Oregon polemonium	PDPLM0E050			G4	S1	2.2
32 <i>Sidalcea malachroides</i> maple-leaved checkerbloom	PDMAL110E0			G3G4	S3S4.2	4.2
33 <i>Streptanthus albidus ssp. peramoenus</i> most beautiful jewel-flower	PDBRA2G012			G2T2	S2.2	1B.2
34 <i>Stuckenia filiformis</i> slender-leaved pondweed	PMPOT03090			G5	S1S2	2.2
35 <i>Suaeda californica</i> California seablite	PDCHE0P020	Endangered		G1	S1.1	1B.1
36 <i>Trifolium hydrophilum</i> saline clover	PDFAB400R5			G2?	S2.2?	1B.2
37 <i>Tropidocarpum capparideum</i> caper-fruited tropidocarpum	PDBRA2R010			G1	S1.1	1B.1



United States Department of the Interior
FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825



November 23, 2010

Document Number: 101123102533

Martha Lowe
ESA
350 Frank H. Ogawa Plaza
Suite 300
Oakland, CA 94610

Subject: Species List for San Antonio Backup Pipeline

Dear: Ms. Lowe

We are sending this official species list in response to your November 23, 2010 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be February 21, 2011.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found at www.fws.gov/sacramento/es/branches.htm.

Endangered Species Division



U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
Federal Endangered and Threatened Species that Occur in
or may be Affected by Projects in the Counties and/or
U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 101123102533

Database Last Updated: April 29, 2010

Quad Lists

Listed Species

Invertebrates

- Branchinecta conservatio*
Conservancy fairy shrimp (E)
- Branchinecta longiantenna*
longhorn fairy shrimp (E)
- Branchinecta lynchi*
Critical habitat, vernal pool fairy shrimp (X)
vernal pool fairy shrimp (T)
- Euphydryas editha bayensis*
bay checkerspot butterfly (T)
- Lepidurus packardii*
Critical habitat, vernal pool tadpole shrimp (X)
vernal pool tadpole shrimp (E)

Fish

- Hypomesus transpacificus*
delta smelt (T)
- Oncorhynchus mykiss*
Central California Coastal steelhead (T) (NMFS)
Central Valley steelhead (T) (NMFS)
Critical habitat, Central California coastal steelhead (X) (NMFS)
- Oncorhynchus tshawytscha*
Central Valley spring-run chinook salmon (T) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

- Ambystoma californiense*
California tiger salamander, central population (T)
Critical habitat, CA tiger salamander, central population (X)
- Rana draytonii*
California red-legged frog (T)
Critical habitat, California red-legged frog (X)

Reptiles

- Masticophis lateralis euryxanthus*
Alameda whipsnake [=striped racer] (T)
Critical habitat, Alameda whipsnake (X)

Birds

- Charadrius alexandrinus nivosus*
western snowy plover (T)
Pelecanus occidentalis californicus
California brown pelican (E)
Rallus longirostris obsoletus
California clapper rail (E)
Sternula antillarum (=Sterna, =albifrons) browni
California least tern (E)

Mammals

- Reithrodontomys raviventris*
salt marsh harvest mouse (E)
Vulpes macrotis mutica
San Joaquin kit fox (E)

Plants

- Cordylanthus palmatus*
palmate-bracted bird's-beak (E)
Lasthenia conjugens
Contra Costa goldfields (E)
Critical habitat, Contra Costa goldfields (X)
Suaeda californica
California sea blite (E)

Proposed Species

Amphibians

- Rana draytonii*
Critical habitat, California red-legged frog (PX)

Quads Containing Listed, Proposed or Candidate Species:

MT. DAY (426B)
CALAVERAS RESERVOIR (427A)
MILPITAS (427B)
ALTAMONT (445B)
MENDENHALL SPRINGS (445C)
LIVERMORE (446A)
DUBLIN (446B)
NILES (446C)
LA COSTA VALLEY (446D)

County Lists

No county species lists requested.

Key:

- (E) *Endangered* - Listed as being in danger of extinction.
(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.
(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.
(NMFS) Species under the Jurisdiction of the [National Oceanic & Atmospheric Administration Fisheries Service](http://www.noaa.gov).
Consult with them directly about these species.
Critical Habitat - Area essential to the conservation of a species.
(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.
(C) *Candidate* - Candidate to become a proposed species.
(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online [Inventory of Rare and Endangered Plants](#).

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our [Protocol](#) and [Recovery Permits](#) pages.

For plant surveys, we recommend using the [Guidelines for Conducting and Reporting Botanical Inventories](#). The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal [consultation](#) with the Service.

During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our [Map Room](#) page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. [More info](#)

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be February 21, 2011.

APPENDIX K

Air Quality Technical Report

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Air Quality Technical Report – Final Draft

To: Kelly White, ESA

From: Valerie Geier and Hans Giroux, Orion Environmental Associates

Date: June 22, 2011, revised July 11, 2011 and August 16, 2011, finalized September 12, 2011

Subject: SFPUC San Antonio Backup Pipeline Project (CS-954A)

This technical report presents the results of the air quality assessment conducted for the San Francisco Public Utilities Commission (SFPUC) San Antonio Backup Pipeline (SABPL) project as required by the San Francisco Planning Department, Environmental Planning Division (formerly the Major Environmental Analysis Division [MEA]) guidelines for compliance with California Environmental Quality Act (CEQA) documentation and consistent with the Bay Area Air Quality Management District (BAAQMD) CEQA Guidelines (BAAQMD, 2011a). The scope of work for this technical report was approved by Environmental Planning on March 23, 2011 and is included in Appendix A.

Project Description

The proposed SABPL project is located in the Sunol Valley, an unincorporated area of Alameda County. The project area extends roughly 2 miles along the west side of Calaveras Road from the Alameda Siphons in the south to the Interstate 680 (I-680)/State Route 84 (SR 84) interchange in the north. Existing land uses in the immediate vicinity of the proposed project include gravel mining operations, water supply infrastructure and facilities, private residences, grazing land, and regional open space. One commercial nursery exists just north of the project area near the I-680/SR 84 interchange. Two commercial gravel quarries operated by Hanson Aggregates under Surface Mining Permit 24 (SMP-24) and Oliver De Silva, Inc. (formerly CEMEX Construction Materials Pacific) under Surface Mining Permit 30 (SMP-30) are located partially within the project area, along Alameda Creek between the Alameda Siphons and I-680. Other active mining operations in the immediate vicinity include the SMP-32 area north of I-680 and west of SR 84, and the SMP-33 area just north of the Alameda West Portal on the west side of Alameda Creek. The nearest community is the town of Sunol, approximately 1 mile northwest of the project area.

Project Components

The SABPL project would include the following components (and auxiliary facilities):

- 7,000-foot-long, 66-inch-diameter San Antonio Backup Pipeline (SABPL or backup pipeline) along the west side of Calaveras Road;

- Discharge facility at quarry Pit F3-East (including a discharge valve vault, electrical control building, baffled outfall, reinforced concrete splash pad, and 550-foot-long overhead powerline between the electrical control building and the Hetch Hetchy Water & Power [HHWP] Calaveras Substation);
- New chemical facility near the San Antonio Pump Station (including an emergency backup generator);
- Cutoff wall around quarry Pits F3-East and F3-West;
- Dewatering facilities at Pits F3-East and F3-West (including two low-pressure submersible pumps adjacent to the new discharge facility at Pit F3-East, a pump mounted on a floating platform in Pit F3-West, and a dewatering pipeline along the southern boundary of the two quarry pits);
- Alameda Creek Pump Station, wet well, and electrical control building at the western corner of Pit F3-West (including electrical transformer and 1,650-foot-long overhead powerline between the electrical control building and the HHWP Calaveras Substation);
- Transfer pipeline connecting the Alameda Creek Pump Station to other existing pipelines; and
- Other improvements, including Supervisory Control and Data Acquisition (SCADA) transmitters, corrosion control, and a replacement of a 5,700-foot-long section of 12-inch-diameter water pipeline to the town of Sunol parallel to the proposed backup pipeline alignment.

New Hetch Hetchy overhead powerlines would provide electrical power to the Alameda Creek Pump Station and control building, and the electrical control building associated with the new discharge facility at Pit F3-East. The SCADA and security equipment at the Alameda Creek Pump Station and the discharge facility at Pit F3-East would each be powered with an uninterruptible battery power supply. Emergency backup power for the discharge facility at Pit F3-East would be comprised of an uninterruptible battery power supply with sufficient power for one full discharge. No permanent emergency backup power is proposed for the Alameda Creek Pump Station.

SFPUC facility operators would use the proposed dewatering facilities at Pits F3-East and F3-West to pump Hetch Hetchy water that is discharged into Pit F3-East (and potentially seeps into Pit F3-West) to the Alameda Creek Pump Station. The proposed facilities at the Alameda Creek Pump Station include four 274-horsepower vertical submersible pumps (three active and one on standby). Power for operation of the Alameda Creek Pump Station would be hydroelectric power provided by the HHWP Calaveras Substation. No emergency backup power is proposed for the dewatering facilities or the Alameda Creek Pump Station.

Electrical power for the new chemical facility at San Antonio Pump Station would also be hydroelectric power that would be provided by the HHWP Calaveras Substation via new underground powerlines between the existing Sunol Valley Chloramination Facility and the new chemical facility. A portable liquid propane gas (LPG)-powered emergency generator (150-kilowatt [kW]) at the Sunol Valley Chloramination Facility would provide backup power for the new chemical facility.

Project Construction

Project construction is anticipated to occur between October 2012 and June 2014, resulting in an overall construction period of approximately 21 months. **Table 1** presents a summary of the project construction phases, construction equipment to be utilized, duration of each construction phase, construction work hours, and nighttime construction activities. **Table 2** presents the tentative schedule for construction phasing.

Construction Activities Along Calaveras Road

The proposed 7,000-foot-long backup pipeline and the 5,700-foot-long water pipeline to the town of Sunol would be installed along the west side of Calaveras Road from the San Antonio Pump Station to approximately 1,000 feet south of the San Antonio Creek crossing. The section of water pipeline to the town of Sunol would terminate here; the backup pipeline would continue to the northwest, beneath the San Antonio Creek channel, to a new discharge facility on the southern slope of quarry Pit F3-East. Air gaps, vaults, manhole risers, cathodic protection, and other components such as SCADA transmitters would be installed as part of pipeline installation activities along the backup pipeline alignment.

Construction and installation of pipelines and associated components would be performed using traditional open-trench construction methods and would include clearing and grading the ground surface along the alignment, excavating the trenches, preparing and installing the pipeline sections, backfilling the trenches, and revegetating or paving the area, as needed. Open-trench construction for the backup pipeline and the pipeline to the town of Sunol would generally proceed at a rate of about 100 to 150 feet per day over a 15-month period and approximately 29,000 cubic yards of excess spoils would be generated from construction activities along Calaveras Road.

Two construction staging areas (Staging Areas B and C) would border the Calaveras Road right-of-way just south and north of the San Antonio Creek crossing, respectively. Construction workers would use these staging areas throughout the approximately 21-month project construction duration. In general, Staging Areas B and C, and all other staging areas, would be used to store equipment, vehicles, pipe, and other construction materials throughout the construction period.

Construction Activities in the Vicinity of the San Antonio Pump Station

The new chemical facility would be constructed northwest of the existing San Antonio Pump Station, approximately 200 feet west of the existing chemical facility. The facility would be constructed with a concrete foundation, structural frame, and a pre-engineered weather canopy with a metal roof. Maximum excavation depth for construction of the facility would be 20 feet. Chemical feed lines would be installed between the new chemical facility and the new chemical injection stations. Construction of the new chemical facility would take approximately 5 months and generate 800 cubic yards of excess spoils. Once the new chemical facility is brought online, the existing chemical facility would be decommissioned and the building retained for storage.

Staging Area A would be located south of the proposed chemical facility and immediately west of the existing fluoride facility and Sunol Valley Chloramination Facility, on a flat area. This staging

area would be used throughout the 21-month construction duration for parking of equipment and vehicles, stockpiling of construction materials, and field office space for contractor(s) and SFPUC staff.

Construction Activities in the Vicinity of Pits F3-East and F3-West

Construction activities in the vicinity of Pits F3-East and F3-West would be associated with the following facilities: discharge facility, cutoff wall, Alameda Creek Pump Station, wet well, electrical control building, transfer pipeline, dewatering facilities, and a new electrical transformer and overhead powerline. In general, all construction activities in the vicinity of Pits F3-East and F3-West would include vegetation removal, grading and excavation, and backfilling. Large equipment such as long-reach excavators, backhoes, generators, cranes, and bulldozers would be required for the various project components in this area.

The discharge facility would be comprised of a baffled outfall at the northern terminus of the backup pipeline and a 175-foot-long reinforced concrete splash pad over the southern slope of quarry Pit F3-East. The slope surface would be prepared by removing loose/weak material, organic soils, and vegetation. Ground anchors would be constructed to secure the splash pad to the quarry slope, and would require drilling holes, installing steel rods or tendons into the slope, and then grouting the anchors in place. Steel bars would be positioned and tied together to provide permanent reinforcement. The concrete slab would be poured in batches from a concrete pump truck at the top of the slope. The baffled outfall would then be mounted onto a pile foundation at the top of the slope. Construction of the discharge facility would take 6 months and generate 13,700 cubic yards of excess spoils.

Construction of the cutoff wall would require a long-reach excavator, which would be used to excavate an approximately 5,000-foot-long and 80-foot-deep trench along the perimeter of Pits F3-East and F3-West. The trench would be kept full of bentonite slurry to stabilize the trench walls and prevent collapse during excavation. A bulldozer or excavator would be used to backfill the trench with the slurry mixture. The proposed cutoff wall would require an approximately 125-foot-wide work platform around the two quarry pits and along the cutoff wall alignment. Construction of the cutoff wall would take approximately 16 months and generate 9,000 cubic yards of excess spoils.

The Alameda Creek Pump Station would consist of pumps, pipelines, a wet well, and a control building that would house electrical equipment. Minor grading would be required for the Alameda Creek Pump Station, parking area, and driveway. The wet well would be constructed underground and would require excavation of a pit approximately 55 feet by 25 feet to a depth of 45 feet below grade using sheet piles and a clam-shell excavator. Construction of the Alameda Creek Pump Station and control building would take 5 months and generate 10,300 cubic yards of excess spoils.

Installation of the transfer pipeline and dewatering pipeline would require pipeline cutting, pipeline installation, and backfilling. Open trench construction methods would be used for installation of both the approximately 1,260-foot-long transfer pipeline and the approximately 1,400-foot-long dewatering pipeline. Construction of the transfer pipeline and dewatering pipeline would take approximately 3 months and generate approximately 5,200 cubic yards of excess spoils.

TABLE 1
SUMMARY OF CONSTRUCTION ACTIVITIES AND EQUIPMENT

Construction Phase	Excess Spoils (cubic yards)	Construction Equipment		Construction Durations	Construction Work Hours	List of Construction Equipment that would be Operated during Nighttime and Weekend Construction Work	Does this phase involve nighttime hauling or truck deliveries?
Installation of SABPL and 12-inch Water Pipeline to Town of Sunol (Installation of Pipelines, Vaults, Manhole Risers, Air Gap Systems, and Cathodic Protection)	29,000	- Flatbed trucks - Backhoes - Excavators - Pipe cutting and welding equipment - Haul trucks for spoils transport - Trucks for materials delivery - Compaction equipment - Baker tank(s)	- Pickup trucks - Arc welding machine - Generators - Air compressors 80-ton crane - Drill rig - Skip loader - Pavers and rollers	15 months	Mon-Sat, 7am-7pm, except during installation of air gaps, which would result in 2 weeks and 4 weeks of 24-hr construction (total 6 weeks 24-hr construction)	- Welding equipment - Generators - Air compressors	Hauling would occur Monday through Friday during daytime hours. No hauling at night or on weekends.
Construction of Discharge Facility at Pit F3-East (Outfall, Concrete Splash Pad, Electrical Control Building, and Overhead Powerline)	13,700	- Sheet pile driver - Flatbed trucks - Excavators - Backhoe - Boom truck - Air compressors - Baker tank(s) - Drill rig - Generators - Arch welders	- Timber crane mats - Trucks for materials delivery - Dump trucks - Pickup trucks - Concrete transport trucks - Concrete pump truck - Water trucks - Pavers and rollers - Work platform	6 months	Mon-Sat, 7am-7pm	None	Hauling would occur Monday through Friday during daytime hours. No hauling at night or on weekends.
Construction of Cutoff Wall around Pits F3-East and F3-West	9,000	- Long reach excavators - Regular excavators - Bulldozers - Desander plant - Haul trucks for spoils transport	- Slurry mixing plant - Forklift - Dump trucks - Slurry pumps - Timber crane mats	16 months	Mon-Sat, 7am-7pm	None	Hauling would occur Monday through Friday during daytime hours. No hauling occur at night, no hauling on weekends.
Construction of Transfer Pipeline and Dewatering Pipeline	5,200	- Flatbed trucks - Excavators - Backhoes - Pipe cutting and welding equipment - Pickup trucks - Trucks for materials delivery - Generators - Air compressors	- Haul trucks for spoils transport - Compaction equipment - Backer tank(s) - Arc welding machine - Crane - Drill rig - Skip loader	3 months	Mon-Sat, 7am-7pm	None	Hauling would occur Monday through Friday during daytime hours. No hauling at night or on weekends.
Construction of Alameda Creek Pump Station and Wet Well (including Electrical Control Building, Electrical Transformer, and Overhead Powerline)	10,300	- Excavators - Bulldozers - Concrete truck - Flatbed truck - Mobile crane	- Graders - Dump trucks - Welding equipment - Haul trucks for spoils transport	5 months	Mon-Sat, 7am-7pm	None	Hauling would occur Monday through Friday during daytime hours. No hauling at night or on weekends.
Construction of New Chemical Facility (Chemical Facility Building and Chemical Feed Lines)	800	- Excavator - Backhoe - Air compressors - Loader - Boom truck or small crane - Pavers and rollers	- Concrete transport trucks - Concrete pump truck - Flatbed truck - Generators - Pickup trucks - Trucks for materials delivery	5 months	Mon-Sat, 7am-7pm	None	Hauling would occur Monday through Friday during daytime hours. No hauling at night or on weekends.
Spoils Disposal	Project Total = 68,000	- Backhoes - Haul trucks - Water trucks		November 2012 through June 2014 – 20 months	Mon-Fri, 7am-5pm	None	Hauling would occur Monday through Friday during daytime hours. No hauling occur at night, no hauling on weekends.

TABLE 2
CONSTRUCTION PHASING

SABPL Project Construction Durations and Work Hours	Construction Phasing																				
	2012			2013												2014					
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Total Construction Duration (21 months, October 2012 through June 2014)																					
SABPL and Water Pipeline to Town of Sunol (15 months)																					
**Mon-Sat, 7am-7pm, except during installation of air gaps, which would result in 2 weeks and 4 weeks of 24-hr construction (total 6 weeks 24-hr construction)																					
Discharge Facility at Pit F3-East (6 months)																					
**Mon-Sat, 7am-7pm																					
Cutoff Wall (16 months)																					
**Mon-Sat, 7am-7pm																					
Transfer Pipeline, Dewatering Pipeline (3 months)																					
**Mon-Sat, 7am-7pm																					
Alameda Creek Pump Station (5 dry months)																					
**Mon-Sat, 7am-7pm																					
New Chemical Facility (5 months)																					
**Mon-Sat, 7am-7pm																					
Spoils Hauling / Disposal / Placement (20 months)																					
**Mon-Fri, 7am-7pm																					

NOTES:
No spoils hauling Saturdays or Sundays.
Generally only one shift per day (7am to 5pm)
Traffic will assume 20-month total duration to be most conservative.
Total excess spoils = 68,000 cubic yards
Assume 25% of excess spoils (17,000 cubic yards) will be hauled to landfill, the rest will be permanently placed at North Spoils Site or temporarily placed in SMP-30 for subsequent resale and reuse.

The HHWP Calaveras Substation on the west side of Calaveras Road, just south of the San Antonio Creek crossing, would provide power to the Alameda Creek Pump Station. 1,650 linear feet of new overhead powerlines would be constructed from the HHWP Calaveras Substation to a new electrical transformer adjacent to the Alameda Creek Pump Station, and an additional 550 linear feet of new overhead powerlines would extend between the HHWP Calaveras Substation and the electrical control building for the discharge facility at Pit F3-East. Installation of the new powerlines would generally require excavation of up to 10 feet deep, placing the power pole in the hole, and backfilling.

Staging Area D, located just north of Pit F3-West, would be used to store equipment, vehicles, pipe, and other construction materials throughout the 21-month construction period.

Spoils Management and Disposal

Excess soil and rock material would be generated as part of excavation and construction activities. The total volume of excess spoils generated during project construction would be approximately 68,000 cubic yards. Strategies for managing excess excavated material generated during construction would include: (a) placing spoils in a temporary location, which might include quarry Pit F6 or the aggregate processing facility located immediately north of Pit F6, both of which are operated under SMP-30, for subsequent processing, resale, and reuse; (b) permanently placing the spoils in an earthen berm parallel to and west of Calaveras Road at the North Spoils Site; or (c) hauling the spoils offsite to an appropriate landfill facility. The North Spoils Site covers 12 acres and is located immediately south of the I-680 / SR 84 interchange on the west side of Calaveras Road. Because soils in the project area are generally considered to be of good quality, the SFPUC estimates that 25 percent of the excess spoils would be hauled to a landfill, and the remaining 75 percent of the excess spoils would be permanently placed at the North Spoils Site and/or sold for subsequent reuse (e.g., temporarily placed in Pit F6 or the SMP-30 aggregate processing facility during project construction).

Project Operations and Maintenance

Once construction of the SABPL project is complete, the SFPUC would continue to use an existing pipeline (e.g., the existing San Antonio Pipeline) to transfer water to and from San Antonio Reservoir. Discharges of reservoir water to San Antonio Creek would continue unmodified through the existing outlet structure and discharge facility at the base of Turner Dam.

With the proposed project, planned and emergency discharges from the Hetch Hetchy system that are currently routed to San Antonio Creek via the existing San Antonio Pipeline and outlet works at the base of Turner Dam would instead be routed via the proposed backup pipeline to the new discharge facility at Pit F3-East. The SFPUC would work cooperatively with the existing quarry operator to manage water levels in Pits F3-East and F3-West and maintain sufficient capacity for subsequent discharges from the project. After a discharge event from the backup pipeline that raises water levels in the quarry pits above 195 feet msl, the SFPUC would pump the discharged water from the quarry pits to San Antonio Reservoir or the SVWTP via two-step pumping process: (Step 1) The SFPUC would use the dewatering equipment (submersible pumps, pump on floating platform, flexible hoses, and the dewatering pipeline) to pump water from Pits F3-East and F3-West to the Alameda Creek Pump Station. (Step 2) From the Alameda Creek Pump Station, the recovered water

would be pumped via the proposed transfer pipeline and other existing pipelines to San Antonio Reservoir for storage or to the SVWTP for treatment and delivery to customers. The inlet pipe for the submersible pumps at the new discharge facility would be at 190 feet msl. Thus, SFPUC could only recover the discharged water to 190 feet msl; any discharged water below 190 feet msl would remain in the quarry pits. However, as part of their mining operations, Hanson Aggregates would continue to pump water into and out of Pits F3-East and F3-West provided that water levels in the quarry pits remain at or below 195 feet msl.

As necessary, to protect water quality in San Antonio Creek, Alameda Creek, and San Antonio Reservoir, the planned and emergency discharges from the Hetch Hetchy system could be dechlorinated and pH-adjusted at the new chemical facility before being discharged to Pit F3-East. However, because Pits F3-East and F3-West are part of active mining operations and are not currently under state or federal jurisdiction, the SFPUC is not required to dechlorinate and pH-adjust prior to discharging to Pit F3-East provided that the chlorine either dissipates or is removed prior to conveying the discharged water to the creeks or the reservoir. The proposed chemical facility would use calcium thiosulfate for dechlorination. Calcium thiosulfate is not a listed air contaminant. Underground chemical feed lines would extend from the existing fluoride facility located just south of the Sunol Valley Chloramination Facility to the new chemical facility. The proposed chemical facility would use fluoride (in the form of hydrofluorosilic acid) for pH adjustment. The Office of Environmental Health Hazard Assessment (OEHHA) indicates hydrogen fluoride (which is the same as hydrofluorosilic acid except hydrofluorosilic acid is in liquid form) is a toxic air contaminant and provides chronic reference exposure levels for this chemical. Although it is unlikely that the fluoride used to pH-adjust water prior to discharge would generate hazardous levels of toxic air contaminants (TACs), the health risk screening for operational emissions addresses this chemical.

The proposed project would provide the SFPUC with the operational flexibility to simultaneously discharge Hetch Hetchy flows to Pit F3-East via the backup pipeline while accessing water stored in San Antonio Reservoir and conveying the stored water to the SVWTP via the existing San Antonio Pipeline.

The proposed facilities would require periodic operations review and maintenance. The number of vehicle trips for operations review and maintenance would be similar to the vehicle trips associated with the existing San Antonio Pipeline and the existing chemical facility. Project implementation would not generate a significant number of new vehicle trips for maintenance activities.

Pumping Variants for Dewatering Pits F3-East and F3-West

Two variations of the proposed project are under consideration by the SFPUC. The two variants address two different pumping scenarios (one-step vs. two-step pumping) for dewatering Pits F3-East and F3-West after discharges of quality-impaired Hetch Hetchy water from the backup pipeline, and provide the SFPUC with flexibility in the event the SFPUC elects not to construct the Alameda Creek Pump Station.

Pumping Variant 1

Under Pumping Variant 1, dewatering of Pit F3-East after a discharge from the backup pipeline would occur via a one-step pumping process. Pumping Variant 1 would construct two submersible high-pressure pumps adjacent to the new discharge facility at Pit F3-East (as opposed to the two submersible low-pressure pumps that would be constructed under the proposed project). The submersible high-pressure pumps, dewatering pipeline, and existing pipelines would be used to pump water directly from Pit F3-East to San Antonio Reservoir or the Sunol Valley Water Treatment Plant (SVWTP). Like the proposed project, the SFPUC would use the submersible high-pressure pumps adjacent to the new discharge facility to dewater Pit F3-East. The water would be pumped into the dewatering pipeline and subsequently pumped by the high-pressure submersible pumps to other existing pipelines. Pumping Variant 1 would not construct the Alameda Creek Pump Station, wet well, electrical control building for the pump station, electrical transformer, or transfer pipeline. Unlike the proposed project, Pumping Variant 1 would not include dewatering facilities for Pit F3-West; this variant would only construct the facilities to dewater Pit F3-East. All other facilities and improvements proposed under the proposed project would be constructed under Pumping Variant 1.

Pumping Variant 2

Under Pumping Variant 2, dewatering of Pits F3-East and F3-West after a discharge from the backup pipeline could occur using either a one-step or two-step pumping process. Pumping Variant 2 would construct one new submersible high-pressure pump and one new submersible low-pressure pump adjacent to the new discharge facility at Pit F3-East. All other project components would be constructed as proposed under the proposed project. Like the proposed project, the SFPUC would use a portable pump mounted on a floating platform to pump water from Pit F3-West into the dewatering pipeline. After a discharge from the proposed project, the SFPUC would have the option to pump water directly to San Antonio Reservoir or SVWTP via the submersible high-pressure pump, dewatering pipeline, and existing pipelines (one-step pumping process), or use the submersible low-pressure pump to pump water through the dewatering pipeline to the Alameda Creek Pump Station, and the Alameda Creek Pump Station to pump water through the transfer pipeline and existing pipelines to San Antonio Reservoir or SVWTP (two-step pumping process).

Project Setting

Sensitive Receptors

Land uses such as schools, children's daycare centers, hospitals, and convalescent homes are considered to be more sensitive than the general population to poor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress. People engaged in strenuous work or exercise are also more sensitive to poor air quality. Residential areas are considered more sensitive to air quality conditions than commercial and industrial areas, because people generally spend longer periods of time at their residences, resulting in greater exposure to ambient air quality conditions. Recreational uses or parks are also considered

moderately sensitive due to the greater exposure to ambient air quality conditions, and because the presence of pollution detracts from the recreational experience.

No schools, childcare centers, churches, hospitals, or nursing homes are located in the vicinity of the proposed project. **Figure 1** shows the project area and identifies sensitive receptors within 0.5 mile of the project area. There is one sensitive receptor within the 1,000-foot zone of influence for potential health risk impacts: the SFPUC watershed keeper's residence located approximately 225 feet east of the project area and Calaveras Road, just north of the Alameda East Portal. Although the SFPUC watershed keeper's residence is currently unoccupied, the analysis of human health risks and hazards conservatively assumes that this residence will be occupied during project-related construction activities and operations. The second-closest sensitive receptor to the project area is a private ranch residence (Garcia residence) located approximately 1,300 feet southwest of the project area. However, this receptor is located beyond the 1,000 foot of the zone of influence for potential health risk impacts.

Permitted Stationary Sources and Mobile Sources in Project Vicinity

Stationary sources emissions permitted by the BAAQMD, and major roadway sources with greater than 10,000 vehicles per day that are within 1,000 feet of the project area are listed in **Table 3** and shown in **Figure 1**. Locations of these sources in relation to the project area are indicated in Figure 1. No major non-permitted sources (e.g., train yards, distribution facilities, and high volume fueling stations) are located within 1,000 feet of the project area. Calaveras Road in the vicinity of the SFPUC watershed keeper's residence near Alameda East Portal carries less than 10,000 vehicles per day (LCW Consulting, 2006, 2011).

The CEMEX Construction Materials Pacific facility (Site 16195) is located on land owned by the City and County of San Francisco (CCSF) that is currently leased to Oliver De Silva, Inc. and operated under Surface Mining Permit 30 (SMP-30). This facility, which is commonly referred to as the SMP-30 aggregate processing facility, is a sand and gravel processing plant containing 13 identified specific sources of particulate emissions. Emission sources include 4 rock crushers, 6 vibratory screens, a feed hopper, sand and gravel conveyors and stockpiles and haul roads. The facility also includes a non-retail gasoline dispensing facility that generates very small amounts of volatile organic compounds (VOCs). BAAQMD staff have reported that the screening level PM_{2.5} concentration at the fence line of Site 16195 is 119.0 µg/m³ (presumably for 24 hours) (BAAQMD, 2011d). However, these emissions are almost entirely attributable to fugitive dust emissions. The BAAQMD's health risk thresholds apply to exhaust emissions, and not fugitive dust. Furthermore, although this facility may include on-site sources of other TACs associated with the gasoline dispensing facility, this facility is more than 3,000 feet from the SFPUC watershed keeper's residence. Given these distances, the small amounts of VOCs emitted by the gas dispensing operations, and because the majority of this facility's emissions are from fugitive dust and not exhaust, this facility is not considered a source of cumulative risk or hazards for nearby sensitive receptors. Thus, no additional discussion regarding emissions from this facility is provided below.

**TABLE 3
EXISTING PERMITTED STATIONARY AND
MOBILE EMISSIONS SOURCES IN THE PROJECT VICINITY**

Site	Facility Name	Street Address	City	Excess Cancer Risk (Cancer Cases in a Million)	Chronic Hazard Index	Acute Hazard Index	PM _{2.5} (µg/m ³)
15592	SPFUC (Source Type: 100 kW emergency generator)	5555 Calaveras Road	Sunol	20.93	0.007	-	0.038
16195	CEMEX Construction Materials Pacific (Source Type: crushers, screens, conveyors, feed hopper, stockpiles, haul roads, non-retail gasoline dispensing facility)	6527 Calaveras Road	Sunol	0.02	0.00	-	119.000
I-680 at a distance of 10 feet to the east			Sunol	131.784	0.118	0.073	0.815
Combined Cancer Risk and Hazards^a				152.734	0.125	0.073	119.853

^a This would be the risk level if the closest sensitive receptor were exposed for the next 70 years at the point of maximum risk for all three sources.

SOURCE: BAAQMD, 2011b, 2011d, 2011e.

Criteria Air Pollutants

The SABPL project would construct several new water system facilities and improvements to provide reliable conveyance capacity and increased flexibility for managing planned and emergency discharges of quality-impaired water from the Hetch Hetchy system. Construction equipment, trucks, worker vehicles, and ground-disturbing activities would generate direct emissions of criteria air pollutants and ozone precursors. Operation of the proposed facilities would also generate criteria pollutants and ozone precursors related to one LPG-powered emergency generator at the SFPUC Sunol Valley Chloramination Facility that would provide backup power for the new chemical facility). Vehicle trips associated with facility maintenance and periodic inspections would be similar to the existing condition and are not expected to result in an increase in criteria pollutant and precursor emissions.

The air quality impact analysis considers construction and operational impacts associated with the proposed project. Under the project, the backup pipeline would be used only infrequently for emergency and planned maintenance events requiring discharges of quality-impaired Hetch Hetchy water out of the regional water system. The new chemical facility would replace the existing chemical facility but the frequency of use associated with this facility would remain essentially unchanged. Thus, the principal air emissions would occur during construction. Construction-related air emissions are evaluated in accordance with the BAAQMD CEQA Guidelines for assessing and mitigating air quality impacts (BAAQMD, 2011a).

Construction-related Criteria Air Pollutant Emissions

Project construction would generate fugitive dust (including PM₁₀ and PM_{2.5}) during various activities, including excavation, grading, demolition, and vehicle travel on both paved and unpaved surfaces. Other criteria pollutants would also be generated from the exhaust emissions of construction equipment and vehicles. Without controls, emissions of these criteria pollutants could affect the Bay Area Air Basin's attainment status relative to state and federal air quality standards. This impact would be temporary, spanning over the approximately 21-month duration of planned construction.

Construction-related emissions would be generated during construction of all project components. As previously discussed, construction is planned to occur over approximately 21 months, from October 2012 through June 2014.

Construction-related off-road vehicle exhaust emissions were calculated using the OFFROAD2007 emissions module from the California Air Resources Board's (CARB) URBEMIS2007 computer model. The CARB no longer supports use of the OFFROAD2007 module because it over predicts both criteria pollutants and diesel particulate matter (DPM) (Sax, 2011). A replacement model to URBEMIS2007 has been developed (CalEEMod) but no formal replacement to OFFROAD2007 has been released. Because CalEEMod still contains the same construction equipment algorithms as URBEMIS2007, and since URBEMIS is the model specified in the BAAQMD CEQA Guidelines the URBEMIS2007 model was used in the following analysis with the understanding that findings are likely over-predictive.

The BAAQMD CEQA Guidelines require quantification of construction-related equipment exhaust emissions. The BAAQMD's daily criteria pollutant emissions significance thresholds for construction activities are presented in **Table 4**.

TABLE 4
BAAQMD DAILY CRITERIA POLLUTANT EMISSIONS
SIGNIFICANCE THRESHOLDS FOR CONSTRUCTION ACTIVITIES

Pollutant	Significance Thresholds for Average Daily Emissions
ROG	54 pounds per day (lbs/day)
NO _x	54 lbs/day
PM ₁₀ (exhaust)	82 lbs/day
PM _{2.5} (exhaust)	54 lbs/day
PM ₁₀ /PM _{2.5} (fugitive)	Best Management Practices

For all proposed projects, the BAAQMD recommends implementation of all BAAQMD *Basic Construction Mitigation Measures*, and these measures are included as Mitigation Measure M-AQ-1a. If the above thresholds of significance are exceeded prior to implementing the *Basic Construction Mitigation Measures*, the BAAQMD recommends that additional construction mitigation measures be implemented. The *Basic Construction Mitigation Measures* and the URBEMIS mitigation options are worded slightly differently. However, Appendix B of the BAAQMD CEQA Guidelines consider



SOURCE: ESA+Orion, 2011; Date of aerial photo is 2006.

SFPUC San Antonio Backup Pipeline Project

Figure 1

Existing Emissions Sources and Sensitive Receptors

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several URBEMIS measures to be functionally equivalent to the BAAQMD's *Basic Construction Mitigation Measures* in terms of efficiency and performance, even if they are not worded identically. Thus, the URBEMIS fugitive dust mitigation options that are functionally equivalent to those the BAAQMD were used to model emissions with mitigation implementation.

Emissions from the SABPL project's construction equipment and vehicles would be generated from multiple sources, including heavy mobile equipment and delivery/haul trucks, worker vehicles, and semi-stationary sources such as air compressors and generators. Construction-related air pollution emissions were calculated for the SABPL project as a function of construction activity, construction duration, average haul truck mileage, and worker trips (auto/light-truck mileage). The CARB's computer model URBEMIS2007 was used to calculate construction activity emissions based the equipment list and workforce estimates shown in Table 1, but adjusted to reflect average daily conditions (see Appendix B for average daily construction assumptions and model output data). **Table 5** summarizes the SABPL project's estimated average daily construction emissions for years 2012 (averaged over 26 days), 2013 (averaged over 320 days), and 2014 (averaged over 157 days).¹

Average daily emissions were calculated by combining the URBEMIS output for a peak activity, by phase, with a normalizing correction from peak to average as follows (assuming the average work day is 50 percent of a peak day):

On-Site equipment + workers = peak day $\times$ 0.5 $\times$ 6/7
(6 work days – URBEMIS output)

On-road + on-site trucks = peak day $\times$ 5/7
(5 hauling days – EMFAC2007 manual calculation)

The URBEMIS output distinguishes between "summer" and "winter" emissions. On-and off-road diesel exhaust is seasonally independent as to emission factor. Use of daily summer or winter emissions estimates from URBEMIS produces identical average day emissions.

Because each construction phase has different numbers of work days and overlap, average daily emissions must first be calculated per phase before a maximum annual average day can be calculated. As noted above, peak phase activities predicted by the URBEMIS model must be adjusted for peak to mean ratios and by variable work days to establish an average per phase. The maximum average daily emissions occur in 2013, the year when most project construction activities would occur. The estimated daily average construction emissions for 2012 and 2014 are lower than for 2013 because less construction would occur during these years. Because of the large anticipated heavy equipment fleet and the worst-case assumption that maximum daily construction activity could involve overlapping construction activities for up to four project elements, the model results indicate average daily NO_x emissions would substantially exceed the BAAQMD CEQA thresholds under the proposed project as well as under Pumping Variants 1 and 2, a significant impact. Although

¹ See Table B-1 of Appendix B for the number of days assumed under each construction phase for 2012, 2013, and 2014.

TABLE 5
AVERAGE DAILY EMISSIONS OF CRITERIA POLLUTANTS DURING CONSTRUCTION

Construction Phase	ROG	NO _x	PM ₁₀ Exhaust	PM _{2.5} Exhaust
Average Daily Emissions in 2012 (lbs/day)				
Unmitigated	5.7	48.5	2.4	2.2
Mitigated	5.7	32.7	1.8	1.7
BAAQMD CEQA Significance Thresholds	54	54	82	54
Exceeds Thresholds Without Mitigation?	No	No	No	No
Exceeds Thresholds With Mitigation?	No	No	No	No
Average Daily Emissions in 2013 (lbs/day)				
Unmitigated	17.8	156.2	7.5	6.9
Mitigated	17.8	101.7	5.3	4.9
BAAQMD CEQA Significance Thresholds	54	54	82	54
Exceeds Thresholds Without Mitigation?	No	Yes	No	No
Exceeds Thresholds With Mitigation?	No	Yes	No	No
Average Daily Emissions in 2014 (lbs/day)				
Unmitigated	12.6	104.8	5.3	4.8
Mitigated	12.6	69.9	3.9	3
BAAQMD CEQA Significance Thresholds	54	54	82	54
Exceeds Thresholds Without Mitigation?	No	Yes	No	No
Exceeds Thresholds With Mitigation?	No	Yes	No	No

NOTE: Average daily emissions were estimated based on the total number of construction days in each construction year (2012, 2013, and 2014), then averaged over the total number of days in each specified year that every piece of equipment would operate assuming it would operate 50 percent of the time during construction hours on any given day. Emissions associated with spoils hauling, disposal, and placement are included under each construction phase. They are not called out separately so as not to double-count these emissions.

SOURCE: URBEMIS2007 Computer Model (see Appendix B for model output).

implementation of Mitigation Measures M-AQ-1a (BAAQMD Basic Construction Measures) and M-AQ-1b (BAAQMD Additional Construction Measures for NO_x Reduction) would reduce the project's NO_x emissions, mitigated average daily NO_x emissions would still exceed the BAAQMD significance thresholds. Therefore, even with implementation of mitigation, the project's construction-related criteria pollutant emissions would remain significant and unavoidable.

Mitigation Measures

Mitigation Measure M-AQ-1a: BAAQMD Basic Construction Measures.

The SFPUC shall post one or more publicly-visible signs with the telephone number and person to contact at the San Francisco Planning Department regarding complaints related to excessive dust or vehicle idling. This person shall respond to complaints and, if necessary, take corrective action within 48 hours. The telephone number and person to contact at the BAAQMD's Compliance and Enforcement Division shall also be provided on the sign(s) in the event that the complainant also wishes to contact the applicable air district.

In addition, to limit dust, criteria pollutants, and precursor emissions associated with project construction, the following BAAQMD-recommended Basic Construction Measures shall be included in all construction contract specifications for the proposed project:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- Vehicle speeds on unpaved areas shall be limited to 15 miles per hour.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times for construction equipment (including vehicles) shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 2 minutes.² Clear signage of this requirement shall be provided for construction workers at all access points to construction areas.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

Mitigation Measure M-AQ-1b: BAAQMD Additional Construction Measures for NO_x Reduction.³

To reduce NO_x emissions during construction, the following provisions shall be included in all construction contractor specifications for the proposed project:

- a. To reduce NO_x during construction, 40 percent of the total horsepower-hours from diesel-powered off-road equipment with engines greater than 50 horsepower shall be from equipment that satisfies United States Environmental Protection Agency (USEPA) Tier 3 NO_x emission standards. The SFPUC shall demonstrate this to the San Francisco Planning Department by presenting an inventory of all equipment with engines over 50 horsepower that will be used and an estimate of the number of hours each piece of equipment will operate to calculate the total number of horsepower-hours for project construction (equipment horsepower multiplied by the hours of operation). The inventory shall also identify which equipment meets Tier 3 NO_x emissions and demonstrate that they constitute 40 percent of the total horsepower-hours. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-market products, and/or other options as they become available.

² Idling is limited to 5 minutes in Title 13, Section 2485, but the limit has been further reduced to 2 minutes as recommended in the BAAQMD's Additional Control Measures for projects with construction emissions above the threshold.

³ BAAQMD CEQA Guidelines, May 2011, page 8-5.

- b. All construction equipment, diesel trucks, and generators shall be equipped with Best Available Control Technology for emission reductions of NO_x, including all generators meeting Tier 4 standards.
- c. All contractors shall use equipment that meets CARBs most recent certification standard for off-road heavy duty diesel engines for a given model year engine.

Cumulative Construction-related Criteria Air Pollutant Analysis

To address cumulative impacts on regional air quality, the BAAQMD has established thresholds of significance for construction-related criteria pollutants and precursor emissions. These thresholds represent the levels at which a project's individual emissions of criteria pollutants and precursors would result in a cumulatively considerable contribution to San Francisco Bay Area Air Basin's existing air quality conditions. If daily average or annual emissions exceed these thresholds, the project would result in a cumulatively significant impact. As indicated in Table 5 above, construction-related criteria pollutant and precursor emissions associated with the proposed project would exceed the BAAQMD significance threshold for NO_x. With implementation of Mitigation Measures M-AQ1a (BAAQMD Basic Construction Measures) and M-AQ-1b (BAAQMD Additional Construction Measures for NO_x Reduction), the SABPL project's emissions would be reduced, but not to a less-than-significant level. Therefore, even with implementation of mitigation, the SABPL project's contribution (including Pumping Variants 1 and 2) to cumulative air quality impacts related to criteria pollutants and precursor emissions would remain cumulatively considerable (significant and unavoidable).

Operational Criteria Air Pollutant Analysis

Once the proposed improvements are completed, the SFPUC would continue to use the existing San Antonio Pipeline to move water into and out of San Antonio Reservoir; discharges from the reservoir to San Antonio Creek would occur solely through the existing outlet structure and discharge facility at the base of Turner Dam. With the proposed project, planned and emergency discharges from the Hetch Hetchy system that are currently routed to San Antonio Creek would be routed to Pit F3-East via the backup pipeline. Like the existing condition, the SFPUC would continue to use the existing San Antonio Pump Station to pump quality-impaired Hetch Hetchy water to San Antonio Reservoir (when flows are less than 160 mgd) and to pump water from the reservoir to the SVWTP. Unlike the existing condition, the SFPUC would operate new pumping facilities at the discharge facility at Pit F3-East, in Pit F3-West, and at the Alameda Creek Pump Station, and a LPG-powered portable emergency generator (150 kW) would be used to power the new chemical facility during power outages. The emergency generator would be a new direct source of emissions and would require a permit to operate from the BAAQMD. Based on an assumed one-hour test per week, direct operational emissions have been estimated and are presented in **Table 6** assuming full power (150 kW) operations during each generator test. The estimated fuel consumption rate for a 150 kW LPG-powered generator was obtained from a generator supplier and is based on the consumption rate of the Generac Guardian Elite Model VIRQT15068LPV generator (see specifications sheet in Appendix B). Other suppliers reported almost identical consumption rates. Fuel use is reported to be 11.72 gallons per hour (431.3 cubic feet per hour) at half power and 22.57 gallons per hour (830.6 cubic feet per hour) at full power or load for a 150 kW LPG-powered generator.

TABLE 6
PROJECT OPERATIONAL CRITERIA POLLUTANT EMISSIONS

	ROG	NO _x	PM ₁₀	PM _{2.5}
Emission Factor (grams/kW hour)	0.10	0.12	0.08	0.08
	Average Daily Emissions (lbs/day)			
LPG-Powered (150 kW) Emergency Generator (one hour per week) ^a	0.033	0.040	0.026	0.026
BAAQMD CEQA Significance Thresholds	54	54	82	54
	Average Annual Emissions (tons/year)			
LPG-Powered (150 kW) Emergency Generator (52 hours per year)	0.0009	0.0010	0.0007	0.0007
BAAQMD CEQA Significance Thresholds	10	10	15	10

NOTE:

^a Average daily emissions = one-hour test emissions per week, divided by 7 days per week

SOURCE: SCAQMD, Default Emission Factors for Propane Engines, 2007 (see Appendix B).

To evaluate worst-case conditions, the weekly one-hour test was assumed to be at 100 percent load. Emissions associated with generator testing were calculated as follows:

- Emissions (pounds per test day) = EMFAC (pounds per gallon) x 22.57 gallons per hour x 1 hour per day
- Average Daily Emissions = Emissions (pounds per test day) / 7 (once per week)

Emission factors for propane combustion in the above Model QT150A generator were obtained from Generac. The specifications did not include a particulate matter emissions factor. Exhaust particulate emissions for LPG combustion are stated in the EPA NONROAD computer model to be 0.06 grams/brake-power-hour. Anticipated operational emissions for generator testing are shown in **Table 6**. Hourly and annual emissions would be well below BAAQMD CEQA thresholds. Since the proposed LPG generator would replace an existing 100-kW diesel generator, net increases in criteria pollutants associated with testing and operation would be even less than indicated in this table.

After completion of construction activities, the proposed facilities and improvements would require periodic operations review and maintenance, similar to existing conditions, and would not generate a significant number of new vehicle trips. The number of trips related to supply deliveries with the project would be the same or similar when compared to existing conditions. Thus, impacts related to criteria pollutant emissions from vehicle trips during operation would be less than significant.

Operation of the proposed pumping facilities would not be a new source of indirect air emissions as a result of increased electricity demand because the primary source of electrical energy for the proposed facilities would be hydroelectric power. Therefore, no regional increase in combustion-related criteria air pollutants is expected to result from project implementation (or implementation of

Pumping Variants 1 and 2) due to increased electrical demand associated with operation of project facilities, and no impact would result.

Except for the emissions associated with maintenance of the LPG-powered emergency generator and the infrequent use of this generator during power outages, the proposed operation would not result in increased air quality emissions. The backup pipeline, new chemical facility, discharge facility at Pit F3-East, and the Alameda Creek Pump Station would require periodic operations review and maintenance, similar to existing conditions, and would not generate a significant number of new vehicle trips. With the proposed project, the number of trips related to supply deliveries would be the same or similar to existing conditions. Therefore, air pollutant emissions associated with vehicle trips for the proposed project as well as Pumping Variants 1 and 2 would remain the same as under existing conditions.

Cumulative Operational Criteria Air Pollutant Analysis

To address cumulative impacts on regional air quality, the BAAQMD has established thresholds of significance for operational criteria pollutants and precursor emissions. These thresholds represent the levels at which a project's individual emissions of criteria pollutants and precursors would result in a cumulatively considerable contribution to San Francisco Bay Area Air Basin's existing air quality conditions. If daily average or annual emissions exceed these thresholds, the project would result in a cumulatively significant impact. As indicated in Table 6 above, operational criteria pollutant and precursor emissions associated with the proposed project would not exceed the BAAQMD's significance thresholds. Therefore, the SABPL project's contribution to cumulative air quality impacts related to emissions of ozone, PM₁₀, and PM_{2.5} would not be cumulatively considerable (less than significant). This conclusion is also applicable to Pumping Variants 1 and 2.

Health Risk Analysis

The SABPL project would construct several new water system facilities and improvements to provide reliable conveyance capacity and increased flexibility for managing planned and emergency discharges of water from the Hetch Hetchy system. Construction equipment, trucks, worker vehicles, and ground-disturbing activities would generate direct emissions of criteria air pollutants and precursors, and diesel-operated equipment/vehicles/generators would result in emissions of diesel particulate matter (DPM), a toxic air contaminant (TAC). Operation of the proposed facilities would also generate TAC emissions related to the proposed 150-kW LPG-powered emergency generator for the new chemical facility, and possibly from the use of fluoride at the new chemical facility. Vehicle trips associated with facility maintenance and periodic inspections would be similar to the existing condition and are not anticipated to result in an increase in TAC emissions.

Screening Level Construction-related Health Risk Analysis

Combustion emissions from construction equipment and vehicles (i.e., heavy equipment and delivery/haul trucks, worker commute vehicles, air compressors, and generators) would be generated during project construction and could expose sensitive receptors to DPM and other TACs.

Offsite DPM and other TAC emissions include those generated by construction worker vehicles and by diesel haul/delivery trucks used during construction, particularly trucks used to transport excavated materials from the project area and clean fill and other materials to the project area. TAC emissions from construction worker commute trips would be minor compared to the emissions generated by construction equipment and haul/delivery trucks. In addition to these offsite emissions, diesel-powered equipment would release DPM along the internal construction site access routes. Combustion and exhaust contain a number of different TACs and a speciation list with associated risk factors is listed in Appendix C. DPM exhaust emissions from off-road heavy equipment and from on-road haul trucks operating within the project area were calculated using currently accepted calculation protocols.⁴ BAAQMD CEQA Guidelines currently specify use of the OFFROAD2007 computer module to estimate off-road equipment exhaust, and the EMFAC2007 module for on-road trucking. As discussed above in Section III, Criteria Pollutants, the CARB no longer supports use of the OFFROAD module because the module is known to be over-predictive, but no replacement module has been released. Thus, consistent with the BAAQMD CEQA Guidelines, the OFFROAD module in the URBEMIS computer model was used to estimate carcinogenic DPM emissions during project construction. The BAAQMD has developed screening tables, the most recent of which are dated May 2011, for air toxics evaluation during construction to determine if a proposed project is sufficiently limited and setbacks are adequate to ensure that impacts to sensitive receptors from exposure to carcinogenic DPM emissions during project construction are less than significant. The screening tables, however, were developed primarily for residential, commercial, and industrial park development and do not correlate well with the proposed construction activities for the SABPL project. In addition, the screening tables indicate that, even for a small non-residential development project, a setback distance of 100 meters (328 feet) is needed to ensure impacts associated with excess cancer risk are less than significant. The SFPUC watershed keeper's residence is less than 225 feet from the project area and Calaveras Road, and less than 300 feet from the access road leading to the new chemical facility site, Staging Area A, and the southern terminus of the backup pipeline. Therefore, the potential health risk at this receptor cannot be screened out without further analysis and a more detailed health risk screening analysis is required and presented below.

The BAAQMD's *Recommended Methods for Screening and Modeling Local Risks and Hazards* (BAAQMD, 2011c) were used to complete this screening-level health risk assessment. The BAAQMD recommends a two-tiered approach for screening-level health risk assessments: a screening-level dispersion model is initially applied to project emissions using generally over-predictive assumptions and if the predicted health risk is not within acceptable levels, then a more sophisticated dispersion modeling is necessary.

A screening-level individual cancer analysis was conducted using the U.S. EPA SCREEN3 computer model to determine the maximum inhalation cancer risk from project-related construction activities at the closest sensitive receptor (the SFPUC watershed keeper's residence located 225 feet east of the project area). The model output for this analysis is included in Appendix B. Emissions within each source area were assumed uniformly distributed by off-road equipment and truck mobility. The

⁴ Haul truck travel assumptions used in this analysis: 25 percent of trucks would travel offsite to either Vasco or Altamont Landfills with average trip lengths of 25 miles (50 miles round trip), while 75 percent of trucks would remain onsite traveling an average of one-half mile (one mile roundtrip) within the site.

BAAQMD's recommended methodology notes that the U.S. EPA SCREEN3 model output is a peak one-hour concentration and that a screening-level conversion factor of 0.1 is typically applied to convert the peak hour to an annual average. The recommended methodology uses the "full meteorology" option to make this conversion. However, the model predicts that area source maxima for near-ground level releases occur at night with near calm winds. Nighttime project construction would occur for a total of six weeks. During this time, there would be very limited equipment operations during the nighttime hours due to mitigation that would be implemented to minimize noise impacts at nearby receptors (Mitigation Measure M-NO-1 [Administrative and Source Controls] under Impact NO-1 in Section 5.7, Noise and Vibration of the SABPL project EIR). The BAAQMD's recommended methodology (specifically Table 8 in the referenced document) only allows stability ranging from neutral (Pasquill "D") to very unstable (Pasquill "A") for daytime dispersion conditions. Atmospheric conditions for dispersion of construction-related DPM emissions were therefore assumed to be best characterized by slightly unstable (Pasquill "C") and light winds (2 to 3 meters per second) with the model searching for the direction that produces the maximum impact.

The dose estimation for the DPM exposure pathway for DPM inhalation depends upon the daily breathing rate, the exposure frequency, and the exposure duration. That dose is then compared to the acute or chronic inhalation health risk:

$$\text{Dose} = \text{BR} \times \text{EF} \times \text{ED} / \text{AT}$$

Where BR= breathing rate

EF = exposure frequency

ED= exposure duration

AT= averaging time

The excess cancer risk associated with DPM inhalation is expressed as follows:

$$\text{Risk} = \text{DPM Concentration} \times \text{Dose} \times \text{CPF} \times \text{ASF}$$

Where the DPM concentration is the concentration predicted by SCREEN3, the dose is the adjusted inhalation factor, CPF is the cancer potency factor for DPM and ASF is the age-specific sensitivity factor. Within the limits of screening level accuracy, the equation above reduces to:

$$\text{Risk} = [(\text{Conc.} \times 300 \times 10^{-6}) \times \text{T1} + 0 \times \text{T2}] / 70$$

Where T1 = construction duration in years

T2 = 70 - T1 (no construction), and

Conc. = annual average exposure during construction

If infants are presumed exposed to DPM for the approximately 21-month construction duration, their ASF factor is 10. Ages 2-16 have an ASF of 3, and adults have an ASF of 1. In the absence of information to the contrary, an ASF of 10 was assumed for the maximally exposed individual (MEI). Equipment exhaust pollution also contains contaminants that may have non-cancer health effects. Such effects may occur from long-term exposure (chronic) or short-term effects (acute). The standard non-cancer risk representation from exhaust pollutants is in terms of a "health index" (HI). HI is

calculated by comparing peak concentrations (acute or chronic) to a reference exposure level (REL). RELs are published by the California Office of Environmental Health Hazard and Environmental Assessment (OEHHA). HI is thus calculated by:

$$HI = \text{Conc.} / \text{REL}$$

An HI of less than 1.0 is considered less-than-significant. The chronic REL for DPM is 5.0 µg/m³. However, there is no acute REL for DPM. The acute HI for diesel is therefore evaluated relative to the total organic compounds (TOCs) in diesel exhaust for which there are RELs.

Construction activities relative to the closest sensitive receptor were allocated to three primary source areas:⁵

- Pits F3-East and F3-West Vicinity – Includes construction of the new discharge facility at Pit F3-East, cutoff wall around Pits F3-East and F3-West, Alameda Creek Pump Station, transfer pipeline, and dewatering facilities, and use of Staging Area D.
- Calaveras Road Vicinity – Includes installation of the backup pipeline and the 12-inch-diameter water pipeline to the town of Sunol, spoils placement at the North Spoils Site, and use of Staging Areas B and C.
- San Antonio Pump Station Vicinity – Includes construction of the new chemical facility and use of Staging Area A.

Emissions within each source area were assumed uniformly distributed by off-road equipment and truck mobility. The incremental contribution from each source area was summed to calculate a peak one-hour DPM exposure. The annual DPM exposure was estimated using a conservative estimate that the annual average equals one-tenth of the peak hour. Estimated incremental emissions contributions from each source area are presented in **Table 7**. As indicated in Table 7, the SABPL project's construction-related DPM exposure and associated health risks at the closest receptor, the SFPUC watershed keeper's residence east of Calaveras Road, would not exceed the BAAQMD's cancer and chronic non-cancer risk thresholds, and therefore, this impact would be less than significant. This same significance determination applies to Pumping Variants 1 and 2.

Acute exposure health risk derives from the total organic compounds (TOCs) contained in the total organic fraction of diesel exhaust. One-hour TOC exposures at the nearest sensitive receptor (SFPUC watershed keeper's residence) were calculated from the ratio of TOC to PM_{2.5} in the BAAQMD emission inventory for off-road heavy equipment. In the latest published inventory (2008), the average daily emissions were as follows:

TOC: 43.23 tons/day

PM_{2.5}: 5.60 tons/day

⁵ The primary source areas identified as Pits F3-East and F3-West Vicinity, Calaveras Road Vicinity, and San Antonio Pump Station Vicinity, correlate to Source Areas 3, 2, and 1, respectively, in Appendix B.

TABLE 7
CONSTRUCTION-RELATED CANCER RISK AND CHRONIC NON-CANCER HEALTH RISK
AT THE CLOSEST SENSITIVE RECEPTOR OR MEI
(SFPUC WATERSHED KEEPER'S RESIDENCE 225 FEET EAST OF CALAVERAS ROAD)

Source Area	Estimated Peak Hour Emission Contribution
Pits F3-East and F3-West Vicinity	0.03614 µg/m ³
Calaveras Road Vicinity	0.06317 µg/m ³
San Antonio Pump Station Vicinity	0.10660 µg/m ³
Parameter	PM _{2.5} Exposure, Cancer Risk, and Non-Cancer Chronic Hazard Index from Project Construction Activities
One-Hour PM _{2.5}	0.20591 µg/m ³
Annual Average PM _{2.5}	0.02059 µg/m ³
BAAQMD Annual Average PM _{2.5} Significance Threshold	0.3 µg/m ³
Exceeds Threshold?	No
ASF Weighted Concentration (Annual x 10)	0.20591 µg/m ³
70-year Weighted Average (Annual Weighted x 1.75 / 70)	0.00051475 µg/m ³
Infant Cancer Risk ^a (ASF = 10)	1.54 x 10 ⁻⁶
Youth Cancer Risk ^a (ASF = 3)	0.46 x 10 ⁻⁶
Adult Cancer Risk ^a (ASF = 1)	0.15 x 10 ⁻⁶
BAAQMD Cancer Risk Significance Threshold	Excess Cancer Risk >10 x 10 ⁻⁶
Exceeds Threshold?	No
Chronic Non-Cancer Hazard Index (0.02059 (Annual) / 5)	0.004
BAAQMD Chronic Non-Cancer Significance Threshold	Hazard Index >1.0
Exceeds Threshold?	No
Acute Non-Cancer Hazard Index	0.0233
BAAQMD Acute Non-Cancer Significance Threshold	Hazard Index >1.0
Exceeds Threshold?	No

NOTES:

PM_{2.5} represents combustion PM_{2.5} from DPM and does not include fugitive dust.

µg/m³ = microgram per cubic meter

- ^a When age-sensitivity factors are included, the cancer risk would vary depending on whether there are infants, youths, or only adults at the SFPUC watershed keeper's residence.

SOURCE: U.S. EPASCREEN3 Computer Model (see Appendix B for model output).

Ambient TOC exposure was calculated as follows:

$$\text{Hourly TOC} = 43.23 / 5.60 (= 7.72) \times \text{Hourly PM}_{2.5}$$

The SCREEN3 model predicted a maximum one-hour PM_{2.5} concentration of 0.20591 µg/m³ at the SFPUC watershed keeper's residence. The maximum TOC is:

$$\text{Hourly TOC} = 7.72 \times 0.20591 \text{ µg/m}^3 = 1.59 \text{ µg/m}^3$$

To provide a conservative analysis, all equipment TOCs were assumed to be air contaminants (whether acute, chronic or both).

Table 8 lists specific organic gases comprising TOC exposure (using the speciation table in Appendix C) and corresponding acute reference exposure levels (RELs). Acrolein and formaldehyde create very small acute inhalation health risks, the contribution from all other TOCs would be negligible. As indicated in this table, the project's construction-related TOC exposure and associated health risks at the closest occupied receptor, the SFPUC watershed keeper's residence, would not exceed the BAAQMD's acute non-cancer risk threshold and therefore would be less than significant. This same significance determination applies to Pumping Variants 1 and 2.

TABLE 8
CONSTRUCTION-RELATED SPECIATED ACUTE NON-CANCER HEALTH RISK
AT SFPUC WATERSHED KEEPER'S RESIDENCE EAST OF CALAVERAS ROAD

Organic Gas	TOC Fraction ^a	Concentration (µg/m ³)	Acute REL (µg/m ³)	Hazard Index
Acetaldehyde	0.2457	0.3911	470	0.00084
Acrolein	0.0106	0.0169	2.5	0.00678
Benzene	0.0584	0.0929	1,300	0.00007
1,3 Butadiene	0.0682	0.1085	—	—
Ethylbenzene	0.0034	0.0054	—	—
Formaldehyde	0.541	0.8619	55	0.01568
Hexane	0.0084	0.0135	—	—
Naphthalene	0.0062	0.0098	—	—
PAHs (no Naph)	0.0114	0.0181	—	—
Toluene	0.0331	0.0527	37,000	<0.00002
Xylene	0.0331	0.0212	22,000	<0.00002
Total				0.02336
BAAQMD Acute Non-cancer CEQA Significance Threshold				Hazard Index >1.0

NOTES: "—" = chronic REL only; acute REL does not apply. PAHs = polycyclic aromatic hydrocarbons.

^a Assumes conservatively that all TOCs are toxic air contaminants (acute or chronic).

SOURCE: SCAQMD, 2010.

Cumulative Screening Level Construction-related Health Risk Screening Analysis

To address cumulative impacts on local air quality conditions due to toxic air contaminant (TAC) emissions during project construction, the BAAQMD recommends assessing impacts within 1,000 feet of the proposed project, taking into account both individual and nearby cumulative sources (i.e., proposed project plus existing and foreseeable future projects). The BAAQMD has established the following cumulative thresholds of significance that should be applied to the project in combination with all identified sources within this 1,000-foot radius zone of influence: 100 excess cancer cases in a million; 1.0 chronic and acute non-cancer hazard index; and 0.8 µg/m³ of PM_{2.5} annual average from all local sources.

The SABPL project would result in an increase in emissions of PM_{2.5} during construction from haul and delivery trucks. Although project-related health risks associated with DPM exposure would be less than significant (as indicated in Table 7 for PM_{2.5}), it is possible that cumulative increases in DPM

emissions could occur due to concurrent implementation of a number of planned construction projects. The maximum exposed individual (MEI) for this project is located at the SFPUC watershed keeper's residence located on the east side of Calaveras Road near the Alameda East Portal. This analysis conservatively assumes this residence would be occupied during project construction activities.

Cumulative health risks could result from the SABPL project's construction activities, simultaneous construction of other projects in the vicinity, plus any existing identified risk sources within the project vicinity. Cumulative risk and hazard impacts at the MEI from cumulative construction projects in the Sunol Valley are shown in **Table 9**.

TABLE 9
CUMULATIVE CONSTRUCTION ACTIVITY RISK AND
HAZARD AT MAXIMALLY EXPOSED INDIVIDUALS

Risk and Source	SFPUC Watershed Keeper East of Calaveras Road (cases in a million)	BAAQMD Threshold (cases in a million)
<i>Excess Cancer Risk:</i>		
Existing SFPUC Generator (100-kW)	1.67	
I-680 Traffic at a Distance of 8,300 feet to the North	6.40	
SABPL Project Construction (ASF = 10)	1.54	
Other SFPUC Construction Projects	90.50	
Cumulative or Combined Cancer Risk	100.11	100
<i>Chronic Hazard Index:</i>		
Existing SFPUC Generator (100-kW)	0.0056	
I-680 Traffic at a Distance of 8,300 feet to the North	0.0046	
SABPL Project Construction	0.0040	
Other SFPUC Construction Projects	0.11	
Cumulative Chronic Hazard Risk	0.1242	10
<i>PM_{2.5} Increment (µg/m³):</i>		
Existing SFPUC Generator (100-kW)	0.0030	
I-680 Traffic at a Distance of 8,300 feet to the North	0.0410	
SABPL Project Construction	0.0206	
Cumulative	0.0646	0.8 µg/m³

NOTE: Derivations of risks are described in text above.

Potentially concurrent construction projects include the SFPUC Calaveras Dam Replacement project (construction is anticipated to begin in late 2011), the SFPUC New Irvington Tunnel (NIT) project (currently under construction), and the SFPUC Sunol Valley Water Treatment Plant Expansion and Treated Water Reservoir (SVWTP Expansion) project (currently under construction). The estimated project-specific excess cancer risks and chronic non-cancer hazard index for these three approved cumulative projects are presented below. In addition, it is possible that construction of the proposed SFPUC Upper Alameda Creek Filter Gallery (Filter Gallery) project would also overlap with construction of the SABPL project. However, this project is located more than 1,000 feet from the

SFPUC watershed keeper's residence and would not contribute to cumulative construction risk and hazard impacts. Environmental review for the Filter Gallery project is currently underway.

- Based on the prior analysis conducted for the Calaveras Dam Replacement project (San Francisco Planning Department, 2011) and BAAQMD guidance, the excess cancer risk would be 52 in a million for an infant and chronic non-cancer hazard index would be 0.06 at the SFPUC watershed keeper's residence on the east side of Calaveras Road, the closest sensitive receptor to project-related construction vehicle and truck traffic.
- Based on the prior analysis conducted for the NIT project (San Francisco Planning Department, 2009a) and BAAQMD guidance, the excess cancer risk would be 36 in a million for an infant and the chronic non-cancer hazard index would be 0.05 at the Maximally Exposed Individual (not specified) due to project-related construction vehicle and truck traffic.
- Based on prior analysis conducted for the SVWTP Expansion project (San Francisco Planning Department, 2009b) and BAAQMD guidance, the excess cancer risk would be 2.5 in a million for an infant at the SFPUC watershed keeper's residence on the east side of Calaveras Road due to project-related construction vehicle and truck traffic.

The combined excess cancer risk for infants associated with simultaneous construction of these three SFPUC projects on the Maximally Exposed Individual for the SABPL project (the SFPUC watershed keeper's residence on the east side of Calaveras Road) would be 90.5 cases in a million. The combined chronic hazard index would be 0.11.

In addition to construction emissions associated with the proposed project and other cumulative projects in the Sunol Valley, the BAAQMD also requires that existing stationary and mobile emissions sources within 1,000 feet of the project area (identified in Table 3, above) also be considered. Any potential cumulative health risk would, therefore, derive from project activities plus any existing identified risk sources within the project vicinity. Existing stationary and mobile cumulative emissions sources within 1,000 feet of the project area are identified in Table 3, above. These include the SFPUC's existing diesel-gas-powered emergency generator (Site 15592) and traffic on the I-680 freeway. The BAAQMD has developed risk estimates from each source, but these estimates reflect the maximum health risks at the point of maximum impact. Application of a distance adjustment factor is needed to estimate risks at the MEI location (SFPUC watershed keeper's residence on the east side of Calaveras Road) based on the distance from the source. The distance-adjusted risk values are summarized in Table 9.

The SFPUC operates a 100 kW emergency generator, an emergency standby generator set, and three emergency water pumps at 5555 Calaveras Road (Site 15592). Average daily emissions from these sources (BAAQMD, 2011f) are as follows:

Pollutant	Average Daily Emissions
Benzene	0.0515 lbs/day
Carbon Dioxide	599 lbs/day
Carbon Monoxide	2.51 lbs/day
Diesel Particulate Matter	0.736 lbs/day
Formaldehyde	0.004 lbs/day
Methane	0.020 lbs/day

Pollutant	Average Daily Emissions
Nitrogen Oxides	10.7 lbs/day
Other Organic Compounds	0.841 lbs/day
Other Particulates	0.008 lbs/day
Sulfur Dioxide	0.066 lbs/day
All Others	<0.001 lbs/day

The BAAQMD has conducted a screening-level health risk assessment for these emissions at the point of maximum impact. The BAAQMD has also developed a distance adjustment multiplier (BAAQMD, 2011g, provided in Appendix D) for the screening level cancer risk and chronic hazard index for stationary diesel sources. For the one identified sensitive receptor within 1,000 feet of project-related construction activities (the SFPUC watershed keeper's residence east of Calaveras Road), the following contribution to cumulative impacts may result from Site 15592 (located approximately 200 meters from the SFPUC watershed keeper's residence):

	Maximum Screening Level	Distance Adjustment Factor	Background Levels at MEI (SFPUC Watershed Keeper's Residence)
Excess Cancer Risk (cases per 10 ⁶)	20.93	0.08	1.67
Chronic Hazard Index	0.007	0.08	0.00056
Screening Level PM _{2.5} (µg/m ³)	0.038	0.08	0.00304

Roadway risks and hazards cannot be extrapolated using distance adjustment multipliers as for stationary sources used above. The most current BAAQMD exposure risk data from freeway traffic emissions shows the following data at the segment of I-680 closest to the project area (Link 208, south side, 1,000 feet to centerline):

Excess Cancer Risk (per 10 ⁶)	14.0
Chronic Hazard Index	0.01
Acute Hazard Index	0.02
PM _{2.5} (µg/m ³)	0.089

Inspection of the drop-off curve from as close as 200 meters to 1,000 meters shows a decrease with distance that can be approximated by $14 / (x / 1000)^{0.85}$ (where x is the setback distance). The use of this formula matches the risk value almost exactly as follows (excess risk per one million):

Distance (meters)	Excess Lifetime Cancer Risk (cases per million)	
	BAAQMD Risk Table	Extrapolation Formula
200	52	55
300	39	39
500	26	25
1,000	14	14
Extrapolated to 2,500 meters for SFPUC Watershed Keeper's Residence	-	6.4

Application of the same decay curve to the other health risk parameters at the closest potential sensitive receptor at 8,300 feet (2,500 meters) away produces the following cumulative baseline emissions for the I-680 traffic:

Excess Cancer Risk	6.4 in a million
Chronic Hazard Index	$0.01 \times 0.459^* = 0.0046$
PM _{2.5} (µg/m ³)	$0.089 \times 0.459^* = 0.0041$

*= $1/(2500/1000)^{0.85}$ distance adjustment

As indicated in Table 9 and the above-described derivations, the combined health risks from all existing sources and potential construction sources within 1,000 feet of the project are 100.11 excess cancer risks per one million; a chronic hazard index of 0.12; and PM_{2.5} concentrations of 0.06. Cumulative health risks at the SFPUC watershed keeper's residence would slightly exceed the BAAQMD's CEQA cumulative significance thresholds of 100 excess cancer cases in a million if emissions from all identified sources occurred simultaneously, but would not exceed the 1.0 chronic and acute non-cancer hazard index and 0.8 µg/m³ of PM_{2.5} annual average emissions thresholds. Cumulative health risks at this residence could further exceed the cumulative cancer risk threshold of 100 if mobile equipment associated with on-going mining/quarry activities at Pit F6 (associated with the processing operation at Site 16195) is operated during project construction and if other cumulative construction projects occur within the Sunol Valley that are not identified above. However, since the SABPL project's contribution to cumulative health risks would be well below the project-level health risk thresholds of 10 excess cancer cases in a million identified in the BAAQMD CEQA Guidelines, the SABPL project would not contribute considerably to potentially significant cumulative health risks.

Screening Level Operational Health Risk Screening Analysis

The only source of TAC emissions associated with operation of the proposed facilities would be the LPG-powered emergency generator (150 kW portable generator), which would be located at the Sunol Valley Chloramination Facility to provide backup power to new chemical facility during power outages. TACs associated with exhaust emissions from LPG-powered generators would include very small amounts of a variety of TACs. The principal LPG-combustion TACs are formaldehyde, ammonia, and benzene, which have acute non-cancer health risks. Fuel consumption for maximum power output for a one-hour test per week is 22.6 gallons. The BAAQMD has developed TAC emissions-based trigger levels for stationary sources. These trigger levels have been applied in this analysis as screening criteria for the proposed emergency generator. If the trigger levels are not exceeded, the proposed LPG-powered emergency generator would not be expected to result in a significant health risk. If the trigger levels are exceeded, additional refined modeling would be required to determine the resulting health risk to nearby sensitive receptors.

The South Coast Air Quality Management District (SCAQMD, 2010) has published TAC emission factors for LPG combustion in emergency generators. Table B-3 of the SCAQMD's reporting protocols lists 22 TACs that may be released from a 4-stroke, 22 rich-burn LPG-powered generator (see Appendix C). Of those 22 compounds, the BAAQMD has adopted trigger levels for 20 of them.

Table 10 lists the hourly and annual emission levels of those TACs from generator testing compared to the applicable trigger levels. No acute or chronic trigger levels would be exceeded by generator exhaust. Therefore, health risks associated with testing and maintenance of the proposed generator would pose a less-than-significant health risk.

For all TACS to be released from a permitted source, the BAAQMD has developed guidelines to determine whether estimated emissions represent a significant health risk and these guidelines are contained in Regulation 2, Rule 5, New Source Review for TACs. The BAAQMD has developed emissions-based trigger levels, and if these levels are exceeded, a more detailed impact analysis is required. **Table 10** shows that TAC emissions associated with testing of the LPG-powered emergency generator would reach or exceed applicable trigger levels. Therefore, no further analysis of operational TAC emissions resulting from project implementation is required.

TABLE 10
EMERGENCY GENERATOR OPERATIONAL TAC EMISSIONS

TAC	Emission Factors (lbs/ 1,000 gallons)	Hourly Emissions (lbs)	BAAQMD Acute Trigger Level (lbs/hour)	Annual Emissions (lbs)	BAAQMD Chronic Trigger Level (lbs/year)
Acetaldehyde	0.252	0.006	1.0	0.296	3.8
Acrolein	0.238	0.005	0.0055	0.280	14.0
Ammonia	0.300	0.007	7.1	0.352	7,700
Benzene	0.143	0.003	2.9	0.168	3.8
Carbon Tetrachloride	0.0016	<0.001	4.2	0.002	2.5
Chloroform	0.00124	<0.001	0.33	0.001	2.0
Ethylbenzene	0.00224	<0.001	-	0.003	43.0
Ethylene Dibromide	0.00193	<0.001	-	0.002	1.5
Ethylene Dichloride	0.00102	<0.001	-	0.001	5.3
Formaldehyde	1.86	0.042	0.12	2.186	18.0
Methanol	0.277	0.006	62.0	0.326	150,000
Methylene Chloride	0.00373	<0.001	31.0	0.004	110.0
Naphthalene	0.00879	<0.001	-	0.103	3.2
Styrene	0.00108	<0.001	46.0	0.001	35,000
1,1,2,2-Tetrachloroethane	0.00229	<0.001	-	0.003	1.9
Toluene	0.0505	0.001	52.0	0.059	12,000
1,1,2-Trichloroethane	0.00138	<0.001	-	0.002	6.6
Vinyl Chloride	0.00065	<0.001	400.0	0.001	1.4
Xylene	0.0176	<0.001	49.0	0.021	27,000

NOTE: The BAAQMD's Regulation 2, Rule 5, *New Source Review of Toxic Air Contaminants*, and BAAQMD CEQA Guidelines and Significance Thresholds specify that a cancer risk greater than 10 in a million or acute/chronic hazard index greater than 1.0 is a significant impact.

SOURCE: SCAQMD, 2010 for LPG speciation for TACs subject to BAAQMD Trigger Levels; BAAQMD, Regulation 2 Permits, Rule 5, New Source Review of TACs, Table 2-5-1, for Trigger Levels.

Source parameters for the proposed standby generator (exhaust velocity, stack height, stack temperature, etc.) were obtained from a portable emergency generator supplier (see Appendix B). A screening level dispersion analysis for generator exhaust was conducted consistent with BAAQMD risk assessment guidelines (BAAQMD, 2011c). As a worst-case assumption, LPG particulate emissions were assumed to have the same inhalation risk factor as DPM.⁶ Small risk contributions from gaseous pollutants with detectable emissions and established unit risk factors (acetaldehyde, benzene, and formaldehyde) were estimated as follows:

$$\text{RISK}(i) = \text{RISK (PM)} \times \text{EMIS}(i) / \text{EMIS(PM)} \times \text{URF}(i) / 300$$

Where EMIS is the emission rate and URF(i) is the unit risk factor of the “i” species

The screening level dispersion model (U.S. EPA SCREEN3) was run for one hour of generator testing using the reported particulate emission factor for LPG combustion. Calculated levels of gaseous pollutants were determined from the speciated mass risk ratio of gaseous to particulate emissions.

Annual average exhaust PM_{2.5} exposure is calculated at the SFPUC watershed keeper’s residence as follows:

$$\text{Peak Hour} = 1.039 \mu\text{g}/\text{m}^3$$

$$\text{Peak to Annual} = 0.1 \times \text{Peak} = 0.1039 \mu\text{g}/\text{m}^3$$

$$\text{Testing to Total} = 52 / 8760 \times 0.1039$$

$$\text{Annual Average} = 0.00062 \mu\text{g}/\text{m}^3$$

The annual average PM_{2.5} impact would be well below the BAAQMD CEQA significance threshold of 0.3 $\mu\text{g}/\text{m}^3$. The PM_{2.5} dispersion calculation result was then applied to all gaseous exhaust pollutants that have published unit risk factors. The results of the risk screening modeling are shown in **Table 11**.

TABLE 11
EXCESS INDIVIDUAL CANCER RISK FROM
WEEKLY GENERATOR TESTING (CASES PER MILLION)

Source	SFPUC Watershed Keeper’s Residence
Particulate Matter	0.315
Acetaldehyde	0.004
Benzene	0.017
Formaldehyde	0.054
Total	0.390
BAAQMD Cancer Risk Significance Threshold	10.0

⁶ LPG is considered a much cleaner fuel than diesel. It does, however, emit small amounts of toxic air contaminants such as benzene and 1,3-butadiene when burned. Since particulate emissions from LPG combustion are very small and toxicity data from LPG-related particulates is very limited, a conservative assumption that LPG toxicity is equivalent to DPM toxicity is used in this analysis.

Hydrogen fluoride is stored at the existing fluoride facility at the south end of the Sunol Valley Chloramination Facility. The fluoride is conveyed to existing water facilities through underground chemical feed lines. The proposed new chemical feed line that would extend between the existing fluoride facility to the new chemical facility would not increase the potential exposure of workers or nearby residents to health risks associated with this chemical. In addition, current operational and maintenance practices for the system would continue at the same levels following completion of the proposed project, including regularly scheduled maintenance of project facilities. Therefore, air pollutant emissions associated with maintenance traffic would remain the same as under existing conditions.

Cumulative Screening Level Operational Health Risks

The SABPL project would result in an increase in emissions of TOC and particulate matter when the LPG-powered emergency generator at the new chemical facility is operated. Two sensitive receptors in the Sunol Valley, the Garcia residence and SFPUC watershed keeper's residence east of Calaveras Road, could be affected as described above. However, since the SFPUC watershed keeper's residence is closer to Calaveras Road and operational sources of emissions, it would be the maximally-exposed individual (MEI). It is possible that significant cumulative increases in DPM emissions could occur from operation of the LPG-powered emergency generator in combination with other emissions sources located within 1,000 feet of the project area or MEI. The only other cumulative project within 1,000 feet of the SABPL project area and the MEI is the proposed Filter Gallery project, which would share the Alameda Creek Pump Station with the SABPL project. Despite the potential for facilities to be shared between the two projects, the SFPUC has not made a decision regarding the primary source of power for the Filter Gallery project. Power for the Filter Gallery project would either be from: (a) the HHWP Calaveras Substation at Calaveras Road, just south of San Antonio Creek, or (b) the PG&E Sunol Substation at Calaveras Road, just south of I-680. If SFPUC decides to connect to the HHWP Calaveras Substation for power supplies, which draws from hydroelectric power, no increase in combustion-related criteria air pollutants is expected to result from Filter Gallery project operations. If the SFPUC decides to connect to the PG&E Sunol Substation for power supplies, Filter Gallery project operations could result in an increase in combustion-related criteria air pollutants. However, because PG&E power is drawn from a regional grid, it is not possible to ascribe the electrical energy consumption emissions to any particular air basin (or to accurately quantify them because the grid draws from a variety of resources such as coal, natural gas, wood/agricultural waste, etc., each of which has different emission levels per megawatt).

When operational emissions associated with the SABPL project are considered with other existing permitted and roadway emissions sources within 1,000 feet of the project (listed in Table 3), the cumulative operational emissions at the maximally-exposed individual (MEI) would be well below the BAAQMD cumulative significance thresholds for cancer and non-cancer risks, as shown in **Table 12**. Cumulative operational emissions would be even lower when the existing SFPUC 100-kW diesel generator is replaced with the proposed 150-kW LPG generator, as indicated in Table 12. Operation of the SABPL project's LPG-powered emergency generator would result in very small amounts of LPG-combustion TACs. The SABPL project and other cumulative sources shown in Table 12 would not

TABLE 12
RISK AND HAZARDS FROM CUMULATIVE SOURCES
AT THE MAXIMALLY EXPOSED INDIVIDUAL (SFPUC WATERSHED KEEPER'S RESIDENCE)

Site	Facility Name	Street Address	City	Excess Cancer Risk (Cancer Cases in a Million)	Chronic Hazard Index	PM _{2.5} (μ/m ³)
-	Proposed LPG-powered Emergency Generator (Source Type: 150 kW Emergency Generator)	5555 Calaveras Road	Sunol	0.32	<0.01	0.00062
15592	Existing Diesel-powered Emergency Generator (Source Type: 100 kW Emergency Generator)	5555 Calaveras Road	Sunol	1.67	0.0056	0.00304
I-680 at a Distance of 8,300 Feet to the North			Sunol	6.4	0.0046	0.0041
Combined Risks from Permitted Stationary Sources and Mobile Sources				8.39	0.0202	0.008
Adjusted Combined Risks with Removal of the 100-kW Diesel Emergency Generator (Site 15592) after Installation of 150-kW LPG Generator				6.72	0.0146	0.005
BAAQMD Cumulative Significance Thresholds				100	10	0.8

SOURCES: BAAQMD, 2011a, 2011b, 2011d, 2011e, 2001g.

exceed the BAAQMD risk thresholds; therefore, the cumulative operational risk and hazards at the MEI would be less than significant. This same conclusion applies to Pumping Variants 1 and 2.

Conclusions

Criteria Air Pollutants

The SABPL project's estimated peak daily NO_x emissions would substantially exceed BAAQMD CEQA thresholds, a significant impact for the proposed project as well as Pumping Variants 1 and 2. Implementation of **Mitigation Measures M-AQ-1a (BAAQMD Basic Construction Measures)** and **M-AQ-1b (BAAQMD Additional Construction Measures for NO_x Reduction)**, would reduce the project's NO_x emissions, but mitigated peak daily emissions would still exceed the BAAQMD significance thresholds. Therefore, even with implementation of mitigation, the SABPL project's construction-related criteria pollutant emissions would remain significant and unavoidable. Since the SABPL project's NO_x emissions could not be reduced to less-than-significant levels, the SABPL project's contribution to cumulative air quality impacts related to criteria pollutant and precursor emissions would also be cumulatively considerable (significant and unavoidable).

The SABPL project would add pumping facilities and an LPG-powered emergency generator, but estimated operational emissions associated with these new facilities for the proposed project as well as Pumping Variants 1 and 2 were determined to be less than significant when compared to BAAQMD significance thresholds. The SABPL project's emissions associated with maintenance and operation of other project facilities would remain the same as under existing conditions.

Health Risk Screening Analysis

The project's construction-related DPM exposure and associated health risks at the closest sensitive receptor (maximally-exposed individual, MEI) for the proposed project, as well as for Pumping Variants 1 and 2, would not exceed the BAAQMD's adopted excess cancer risk threshold as well as the chronic and acute non-cancer risk thresholds, and therefore, would be less than significant. Cumulative increases in DPM emissions could result from simultaneous construction of several SFPUC projects in the Sunol Valley in conjunction with emissions generated by existing permitted stationary sources, but the project's contribution to cumulative increases in risks and hazards at the MEI were determined to be less than cumulatively considerable (less than significant) since the project's contribution would be well below the BAAQMD's project-level health risk thresholds.

The only source of TAC emissions associated with operation of the proposed facilities would be the LPG-powered emergency generator, and cancer and non-cancer health risks associated with generator operation would remain well below the BAAQMD thresholds. Therefore, health risks associated with testing and maintenance of the proposed generator would pose a less-than-significant health risk. Cumulative operational emissions from the SABPL project in addition to other existing permitted and roadway emissions sources would be well below the BAAQMD cumulative significance thresholds for cancer and non-cancer risks at the MEI. Therefore, cumulative operational risk and hazards at the project MEI would be less than significant.

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APPENDIX A

Approved Scope of Work

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Memorandum

To: Kelly White, ESA

From: Joyce Hsiao, Valerie Geier, and Hans Giroux, Orion Environmental Associates

Date: January 10, 2011, revised February 25, 2011, revised March 7, 2011, revised March 8, 2011, revised March 23, 2011

Subject: Scope of Work for CEQA Air Quality Technical Report – SFPUC San Antonio Backup Pipeline Project (CS-954A)

This memorandum presents the proposed scope of work for preparation of the Air Quality Technical Report for the San Francisco Public Utilities Commission's (SFPUC) San Antonio Backup Pipeline Project (SABPL) as required by the San Francisco Planning Department, Major Environmental Analysis (MEA) department's guidelines for compliance with California Environmental Quality Act (CEQA) documentation and consistent with the 2010 Bay Area Air Quality Management District (BAAQMD) CEQA Guidelines (BAAQMD, 2010a). This scope of work is broken down into the following sections:

1. Project Description Assumptions
2. Project Setting Assumptions (including project area map showing sensitive receptors and existing major emissions sources in the project area)
3. Proposed Methodology and Level of Analysis
4. Contents of the Air Quality Technical Report
5. Assumptions for Reviewing and Finalizing the Technical Report

1. Project Description Assumptions

The proposed San Antonio Backup Pipeline (SABPL) project is located in an unincorporated area of Alameda County, extending roughly 2 miles along the west side of Calaveras Road, south of the intersection of Interstate 680 and State Route 84. The SABPL project would construct several new water system facilities and improvements to provide reliable conveyance capacity and increased flexibility for managing planned and emergency discharges of water from the Hetch Hetchy system. Construction equipment, trucks, worker vehicles, and ground-disturbing activities would generate direct emissions of criteria air pollutants and precursors, and diesel-operated equipment/vehicles/generators would result in emissions of diesel particulate matter, a toxic air

contaminant (TAC). Operation of the proposed facilities would also generate TACs emissions related to one liquid propane-powered backup generator for the new chemical facility), and possibly from the use of fluoride at the new chemical facility. Vehicle trips associated with facility maintenance and periodic inspections would be similar to the existing condition and are not anticipated to result in an increase in TAC emissions.

Thus, based on the project description assumptions as described further below, the air quality analysis will include an assessment of criteria air pollutants for construction and operational emissions, and health risk screenings for both construction and operation phase emissions.

The SABPL proposed project is described below, followed by a description of two project variants that provide alternate means by which to dewater Pit F3-East after a discharge from the project.

SABPL Proposed Project

The SABPL project would include the following components (and auxiliary facilities):

- ☐ 7,000-foot-long, 66-inch-diameter San Antonio Backup Pipeline (SABPL);
- ☐ Discharge Facility at quarry Pit F3-East (including discharge valve vault, electrical control building, baffled outfall, and reinforced concrete apron);
- ☐ Chemical facility (including emergency backup generator);
- ☐ Cutoff wall around quarry Pits F3-East and F3-West;
- ☐ Dewatering facilities at Pit F3-East (including two low-pressure submersible pumps and Dewatering Pipeline);
- ☐ Alameda Creek Pump Station, wet well, and control building (including electrical transformer);
- ☐ Transfer Pipeline; and
- ☐ Other improvements, including Supervisory Control and Data Acquisition (SCADA) transmitters, corrosion control, and a replacement of a 5,700-foot-long section of 12-inch-diameter water pipeline to the town of Sunol.

Construction activities associated with project components are described in more detail below.

Construction Activities Along Calaveras Road

The proposed 7,000-foot-long SABPL and the 5,700-foot-long water pipeline to the town of Sunol would be installed along the west side of Calaveras Road from the San Antonio Pump Station to approximately 1,000 feet south of the San Antonio Creek crossing. The section of water pipeline to the town of Sunol would terminate here; the SABPL would continue to the northwest, beneath the San Antonio Creek channel, to a new discharge facility on the southern

slope of quarry Pit F3-East. Air gaps, vaults, manhole risers, cathodic protection, and other components such as SCADA transmitters would be installed as part of pipeline installation activities along the pipeline alignment. Construction and installation of these pipelines and associated components would be performed using traditional open-trench construction methods and would include clearing and grading the ground surface along the alignment, excavating the trenches, preparing and installing the pipeline sections, backfilling the trenches, and revegetating or paving the area, as needed. Open-trench construction for the SABPL and the pipeline to the town of Sunol would generally proceed at a rate of about 100 to 150 feet per day over a 15-month period and approximately 29,000 cubic yards of excess spoils would be generated from construction activities along Calaveras Road.

Two construction staging areas (Staging Areas B and C) would border Calaveras Road right-of-way just south and north of the San Antonio Creek crossing, respectively. It is anticipated that these staging areas would be used for the full 20- to 24-month project construction duration. In general, Staging Areas B and C, and all other staging areas, would be used to store equipment, vehicles, pipe, and other construction materials throughout the construction period.

Construction Activities in the Vicinity of the San Antonio Pump Station

The new chemical facility would be constructed northwest of the existing San Antonio Pump Station, approximately 200 feet west of the existing chemical facility. The facility would be constructed with a concrete foundation, structural frame, and a pre-engineered weather canopy with a metal roof. Maximum excavation depth for construction of the facility would be 20 feet. Chemical feed lines would be installed between the facility and the new chemical injection stations. Construction of the new chemical facility would take approximately 5 months and generate 800 cubic yards of excess spoils. Once the new chemical facility is brought online, the existing chemical facility would be decommissioned.

Staging Area A would be located south of the proposed chemical facility and immediately west of the existing fluoride facility and Sunol Valley Chloramination Facility, on a flat and gravel area. This staging area would be used for parking of equipment and vehicles, stockpiling of construction materials, and field office space for contractor(s) and SFPUC staff.

Construction Activities in the Vicinity of Pits F3-East and F3-West

Construction activities in the vicinity of Pits F3-East and F3-West would be associated with the following facilities: discharge facility, cutoff wall, Alameda Creek Pump Station and control building, Transfer Pipeline, dewatering facilities, and a new electrical transformer and overhead powerlines. In general, all construction activities in the vicinity of Pits F3-East and F3-West would include vegetation removal, grading and excavation, and backfilling. Large equipment such as long-reach excavators, backhoes, generators, cranes, and bulldozers would be required for the various project components in this area.

The discharge facility would be comprised of a baffled outfall at the northern terminus of the SABPL and a 175-foot-long reinforced concrete splash pad over the southern slope of quarry Pit F3-East. The slope surface would be prepared by removing loose/weak material, organic soils, and vegetation. Ground anchors would be constructed to secure the splash pad to the quarry slope, and would require drilling holes, installing steel rods or tendons into the slope, and then grouting the anchors in place. Steel bars would be positioned and tied together to provide permanent reinforcement. The concrete slab would be poured in batches from a concrete pump truck at the top of the slope. The baffled outfall would then be mounted onto a pile foundation at the top of the slope. Construction of the discharge facility would take 6 months and generate 13,700 cubic yards of excess spoils.

Construction of the cutoff wall would require a long-reach excavator, which would be used to excavate an approximately 5,000-foot-long and 80-foot-deep trench along the perimeter of Pits F3-East and F3-West. The trench would be kept full of bentonite slurry to stabilize the trench walls and prevent collapse during excavation. A bulldozer or excavator would be used to backfill the trench with the slurry mixture. The proposed cutoff wall would require an approximately 125-foot-wide work platform along the cutoff wall alignment. Construction of the cutoff wall would take approximately 16 months and generate 9,000 cubic yards of excess spoils.

The Alameda Creek Pump Station would consist of pumps, pipelines, a wet well, and a control building that would house electrical equipment. Minor grading would be required for the Alameda Creek Pump Station, parking area, and driveway. The wet well would be constructed underground and would require excavation of a pit approximately 55 feet by 25 feet to a depth of 45 feet below grade using sheet piles and a clam-shell excavator. Construction of the Alameda Creek Pump Station and control building would take 5 months and generate 10,300 cubic yards of excess spoils.

Installation of the Transfer Pipeline and Dewatering Pipeline would require pipeline cutting, pipeline installation, and backfilling. Open trench construction methods would be used for installation of both the approximately 1,260-foot-long Transfer Pipeline and the approximately 1,400-foot-long Dewatering Pipeline. Construction of the Transfer Pipeline and Dewatering Pipeline would take approximately 3 months and generate approximately 5,200 cubic yards of excess spoils.

The Hetch Hetchy Water & Power (HHWP) Calaveras Substation on the west side of Calaveras Road, just south of the San Antonio Creek crossing would provide power to the Alameda Creek Pump Station. 1,650 linear feet of new overhead powerlines would be constructed from the HHWP Calaveras Substation to a new electrical transformer adjacent to the Alameda Creek Pump Station, and an additional 550 linear feet of new overhead powerlines would extend between the HHWP Calaveras Substation and the electrical control building for the discharge facility at Pit F3-East. Installation of the new powerlines would generally require excavation of up to 10 feet deep, placing the pole in the hole, and backfilling.

Staging Area D, located just north of Pit F3-West, would be used to store equipment, vehicles, pipe, and other construction materials throughout the construction period.

Spoils Management and Disposal

Excess soil and rock material would be generated as part of excavation and construction activities. The total volume of excess spoils generated during project construction would be approximately 68,000 cubic yards. Strategies for managing excess excavated material generated during construction would include: (a) placing spoils in a temporary location, which might include quarry Pit F6 or the aggregate processing facility located immediately north of Pit F6, both of which are operated under SMP-30, for subsequent processing, resale, and reuse; (b) permanently placing the spoils in an earthen berm parallel to and west of Calaveras Road at the North Spoils Site; or (c) hauling the spoils offsite to an appropriate landfill facility (SFPUC, 2010b). The North Spoils Site covers 12 acres and is located immediately south of the I-680 / SR 84 interchange on the west side of Calaveras Road.

Power Supplies

New Hetch Hetchy overhead powerlines would provide electrical power to the Alameda Creek Pump Station and control building, and the valves and equipment associated with the new discharge facility at Pit F3-East. SCADA and security equipment for the Alameda Creek Pump Station and the discharge facility at Pit F3-East will each be powered with an uninterruptible battery power supply. Emergency backup power for the discharge facility at Pit F3-East will be comprised of an uninterruptible battery power supply with sufficient power for one full discharge. No permanent emergency backup power is proposed for the Alameda Creek Pump Station.

The dewatering facilities at Pit F3-East would be used to pump water from Pit F3-East to the Alameda Creek Pump Station. These facilities include submersible hoses and up to three submersible pumps (two active and one on standby). Electrical power for operation of the submersible pumps would be provided by the Hetch Hetchy Water & Power Calaveras Substation. No emergency backup power is proposed for the dewatering facilities.

Electrical power for the new chemical facility at San Antonio Pump Station would be provided by HHWP via new underground powerlines between the Sunol Valley Chloramination Facility and the new chemical facility. The new chemical facility would also be equipped with a portable liquid propane-powered emergency generator (150-horsepower).

Operations and Maintenance

Once construction of the SABPL project is complete, the SFPUC would continue to use the SAPL to transfer water to and from San Antonio Reservoir. Discharges of reservoir water to San Antonio Creek would continue unmodified through the existing outlet structure and discharge facility at the base of Turner Dam.

With the proposed project, planned and emergency discharges from the Hetch Hetchy system that are currently routed to San Antonio Creek via the existing SAPL and outlet works at the base of Turner Dam would instead be routed via the SABPL to the new discharge facility at Pit F3-East. The SFPUC would work cooperatively with the existing quarry operator to manage water levels in Pit F3-East and maintain sufficient capacity for subsequent discharges from the project. After a discharge event from the SABPL, water would be pumped from Pit F3-East to San Antonio Reservoir or the SVWTP via two-step pumping process: (Step 1) The SFPUC would use the dewatering equipment (submersible pumps, hoses, and the Dewatering Pipeline) to pump water from Pit F3-East to the Alameda Creek Pump Station. (Step 2) From the Alameda Creek Pump Station, the recovered water would be pumped via the proposed Transfer Pipeline and other existing pipelines to San Antonio Reservoir for storage or to the SVWTP for treatment and delivery to customers.

The planned and emergency discharges from the Hetch Hetchy system could be dechlorinated and pH-adjusted at the new proposed chemical facility before being discharged to Pit F3-East. The proposed chemical facility would use calcium thiosulfate for dechlorination. Calcium thiosulfate is not a listed air contaminant. Underground chemical feed lines would extend from the existing fluoride facility located just south of the Sunol Valley Chloramination Facility to the new chemical facility. The proposed chemical facility would use fluoride for pH adjustment. Office of Environmental Health Hazard Assessment (OEHHA) indicates hydrogen fluoride is a toxic air contaminant and provides chronic reference exposure levels for this chemical. Although it is unlikely that the fluoride used to pH-adjust water prior to discharge would generate hazardous levels of TACs, the health risk screening for operational emissions will address this chemical.

The proposed project would provide the SFPUC with the operational flexibility to simultaneously discharge Hetch Hetchy flows to Pit F3-East via the SABPL while accessing water stored in San Antonio Reservoir and conveying the stored water to the SVWTP via the existing SAPL.

The proposed facilities would require periodic operations review and maintenance. The number of vehicle trips for operations review and maintenance would be similar to the vehicle trips associated with the existing San Antonio Pipeline and the existing chemical facility. Project implementation would not generate a significant number of new vehicle trips for maintenance activities.

**TABLE 1
SUMMARY OF CONSTRUCTION ACTIVITIES AND EQUIPMENT**

Construction Phase	Excess Spoils (cubic yards)	Construction Equipment		Schedule / Duration
Installation of SABPL and 12-inch Water Pipeline to Town of Sunol (Installation of Pipelines, Vaults, Manhole Risers, Air Gap Systems, and Cathodic Protection)	29,000	☐ Flatbed trucks ☐ Backhoes ☐ Excavators ☐ Pipe cutting and welding equipment ☐ Haul trucks for spoils transport ☐ Trucks for materials delivery ☐ Compaction equipment	☐ Baker tank(s) ☐ Pickup trucks ☐ Arch welding machine ☐ Generators ☐ Air compressors ☐ 80-ton crane ☐ Drill rig ☐ Skip loader ☐ Pavers and rollers	15 months
Construction of Discharge Facility at Pit F3-East (Outfall, Concrete Splash Pad, Electrical Control Building)	13,700	☐ Sheet pile driver ☐ Flatbed trucks ☐ Excavators ☐ Backhoe ☐ Boom truck ☐ Air compressors ☐ Baker tank(s) ☐ Drill rig ☐ Generators ☐ Arch welders ☐ Timer crane mats	☐ Trucks for materials delivery ☐ Dump trucks ☐ Pickup trucks ☐ Concrete transport trucks ☐ Concrete pump truck ☐ Water trucks ☐ Pavers and rollers ☐ Work platform	6 months
Construction of Cutoff Wall around Pits F3-East and F3-West	9,000	☐ Long reach excavators ☐ Regular excavators ☐ Bulldozers ☐ Desander plant ☐ Haul trucks for spoils transport	☐ Slurry mixing plant ☐ Forklift ☐ Dump trucks ☐ Slurry pumps ☐ Timber crane mats	16 months
Construction of Transfer Pipeline and Dewatering Pipeline	5,200	☐ Flatbed trucks ☐ Excavators ☐ Backhoes ☐ Pipe cutting and welding equipment ☐ Pickup trucks ☐ Trucks for material delivery	☐ Generators ☐ Air compressors ☐ Haul trucks for spoils transport ☐ Compaction equipment ☐ Backer tank(s) ☐ Arch welding machine ☐ Crane ☐ Drill rig ☐ Skip loader	3 months

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Construction Phase	Excess Spoils (cubic yards)	Construction Equipment		Schedule / Duration
Construction of Alameda Creek Pump Station and Wet Well (including Electrical Control Building)	10,300	☐ Excavators ☐ Bulldozers ☐ Concrete truck ☐ Flatbed truck ☐ Mobile crane	☐ Graders ☐ Dump trucks ☐ Welding equipment ☐ Haul trucks for spoils transport	5 months
Construction of New Chemical Facility (Chemical Facility Building and Chemical Feed Lines)	800	☐ Excavator ☐ Backhoe ☐ Air compressors ☐ Loader ☐ Boom truck or small crane ☐ Pavers and rollers ☐ Concrete transport trucks	☐ Concrete pump truck ☐ Flatbed truck ☐ Generators ☐ Pickup trucks ☐ Trucks for materials delivery	5 months
Spoils Disposal	Project Total = 68,000	☐ Backhoes ☐ Haul trucks ☐ Water trucks		20 months between November 2012 and June 2014

Table 2
Construction Phasing

SABPL Construction Durations and Work Hours	2012					2013												2014											
	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Total Construction Duration (20-24 months, between November 2012 and October 2014)																													
SABPL and 12-Inch PL to town of Sunol (15 months)																													
**Mon-Sat, 7am-7pm, except during installation of air gaps, which would result in 2 weeks and 4 weeks of 24-hr construction (total 6 weeks 24-hr construction)																													
Discharge facility at Pit F3-East (6 months)																													
**Mon-Sat, 7am-7pm																													
Cutoff wall (16 months)																													
**Mon-Sat, 7am-7pm																													
Transfer PL, Dewatering PL (3 months)																													
**Mon-Sat, 7am-7pm																													
Alameda Creek Pump Station (5 dry months)																													
**Mon-Sat, 7am-7pm																													
Chemical Facility (5 months)																													
**Mon-Sat, 7am-7pm																													
Spoils Hauling / Disposal / Placement																													
**Mon-Fri, 7am-7pm (18-24 months)																													

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SOURCE: ESA+Orion, 2011; Date of aerial photo is 2006.

SFPUC San Antonio Backup Pipeline Project
Figure 1
SABPL Project Area and 1,000-Foot Buffer

SABPL Variant 1

Under Variant 1, dewatering of Pit F3-East after a discharge from the project would occur via a one-step pumping process. Variant 1 would construct only one submersible high-pressure pump adjacent to the new discharge facility at Pit F3-East (as opposed to the two submersible low-pressure pumps that would be constructed under the proposed project) to pump water directly from the quarry pit to San Antonio Reservoir or SVWTP. Variant 1 would not construct the Alameda Creek Pump Station, wet well, electrical transformer, or Transfer Pipeline. All other facilities and improvements proposed under the proposed project would be constructed under Variant 1. The Air Quality TM will assess if Variant 1 would result in greater or lower TAC emissions when compared to the proposed project.

SABPL Variant 2

Under Variant 2, dewatering of Pit F3-East after a discharge from the project could occur using either a one-step or two-step pumping process. Variant 2 would construct one new submersible high-pressure pump and one new submersible low-pressure pump adjacent to the new discharge facility at Pit F3-East. All other project components would be constructed as proposed under the proposed project. After a discharge from the proposed project, the SFPUC would have the option to pump water directly to San Antonio Reservoir or SVWTP via the submersible high-pressure pump, Dewatering Pipeline, and existing pipelines (one-step pumping process), or use the submersible low-pressure pump to pump water to the Alameda Creek Pump Station, and subsequently through the Transfer Pipeline and existing pipelines to San Antonio Reservoir or SVWTP (two-step pumping process). The Air Quality Technical Report will assess if Variant 2 would result in greater or lower TAC emissions when compared to the proposed project.

2. Project Setting Assumptions

The area of the Sunol Valley where the proposed facilities would be located is developed primarily with quarry and nursery operations and water facilities, or is undeveloped. **Figure 1** shows the project area, along with one identified sensitive receptor—a currently unoccupied SFPUC watershed keeper's residence—located within 1,000 feet of the project area. If the SFPUC can assure that this residence will remain vacant during construction, then no health risk assessment for construction activities will be conducted. However, to be consistent with assumptions used in the Calaveras Dam Replacement Project (CDRP) EIR and, we will assume that this residence may become occupied during construction of the SABPL project. Another private residence (Garcia residence) is located to the southwest of the project area, but it is located just beyond the 1,000-foot buffer area.

Stationary sources permitted by the BAAQMD and major roadway sources (>10,000 ADT) that are within 1,000 feet of the project area are listed in **Table 3**; ESA+Orion will contact the BAAQMD for information on these sources. Locations of these sources in relation to the project

area are indicated in Figure 1. No major non-permitted sources (e.g., train yards, distribution facilities, and high volume fueling stations) are located within 1,000 feet of the project area. Vehicle volumes for Calaveras Road in the vicinity of the SFPUC watershed keeper's residence are less than 10,000 vehicles per day.

TABLE 3
BAAQMD SCREENING-LEVEL RISKS AND HAZARDS FROM EXISTING PERMITTED STATIONARY SOURCES AND ROADWAYS, SABPL PROJECT VICINITY

Site # ¹	Facility Name	Street Address	City	Excess Cancer Risk in Millions	Chronic Hazard Index	Acute Hazard Index	PM2.5 (µ/m ³)
15592	SPFUC (Source Type: 100 kW Standby Generator)	5555 Calaveras Road	Sunol	Contact District Staff	Contact District Staff	Contact District Staff	Contact District Staff
16195	CEMEX Construction Materials Pacific (Source Type: Non-Retail Gas Dispensing)	6527 Calaveras Road	Sunol	Contact District Staff	Contact District Staff	Contact District Staff	Contact District Staff
I-680 at 1,000 Feet			Sunol	99	0.0	0.0	0.38
BAAQMD Individual Project Significance Thresholds				10	1	1	0.3
BAAQMD Cumulative Significance Thresholds				100	10	10	0.8

¹ See Figure 1 for locations of these sites.

SOURCE: BAAQMD (2010)

3. Proposed Methodology and Level of Analysis

During construction, use of construction equipment, trucks, worker vehicles, and ground disturbing activities would generate direct emissions of criteria air pollutants and precursors emissions. Diesel-operated equipment/vehicles/generators would likely be used during construction, resulting in diesel emissions, a TAC. Therefore, construction-related criteria air pollutants will be evaluated in addition to health risks associated with PM2.5 and the particulate and gaseous components of diesel emissions (including acrolein).

Operational emissions would be associated primarily with vehicle-generated criteria pollutants emissions during facility maintenance and inspection activities, but there would be a negligible increase in TAC emissions from these vehicles due to the limited number needed for operation and maintenance. TACs could also be emitted during operation of proposed facilities due to use

of one liquid propane-powered generator¹ and use of fluoride at the new chemical facility. The Air Quality TM will evaluate both criteria air pollutant emissions associated with project operations and health risks associated with project operations.²

Criteria Air Pollutants

Construction-related Criteria Air Pollutant Analysis

Criteria air pollutant emissions associated with project-related construction equipment operations will be estimated using the OFFROAD2007 model and EMFAC2007 (Version 2.3) emission factors.³ This model and these factors will also be used to estimate any increase in emissions associated with project-related vehicle operations during maintenance and inspection of project facilities.

The analysis of construction impacts will derive model inputs using appropriate references to estimate assumptions for how identified construction equipment would be operated, including the traffic study for truck operations (to calculate on-road emissions from trucking of construction materials and employee commuting) and information from SFPUC project engineers for equipment mix, equipment operational characteristics, grading volume assumptions, and construction-phase durations contained in the project description. Model inputs (including model defaults) used in this analysis will be outlined. However, since the California Air Resources Board (CARB) has indicated that the current version of the OFFROAD2007 model overpredicts emissions (CARB, 2010), some adjustments to model outputs will need to be made if the results are over the thresholds. If needed, the adjustments will be in accordance with protocol approved by MEA. Adjustments to the model will be based on CARB published factors for age of fleet, load factor while running, and hours per day of operations. This methodology will be clearly detailed in the Air Quality Technical Report.

These criteria pollutant emissions estimates will be compared to the BAAQMD-adopted CEQA thresholds of significance for daily construction emissions and, if appropriate, for annual emissions due to the extended duration of construction. This comparison will serve as the basis for determining if the project would result in a significant adverse impact when compared to the BAAQMD-adopted significance criteria, and whether BAAQMD Basic and Additional

¹ An emergency backup generator would be used at the new chemical facility in the event of a power outage.

² While there would be indirect emissions associated with electricity generation for operation of pumping equipment, the operational impact analysis will focus on direct emissions within the San Francisco Bay Area Air Basin (SFBAAB) per the BAAQMD CEQA Guidelines. Because indirect emissions would likely occur outside the SFBAAB, air quality analysis of these indirect emissions is more appropriately addressed in the greenhouse gas analysis.

³ Particulate matter emissions from exhaust will be estimated separately from fugitive dust emissions.

Construction Mitigation Measures or any additional measures would be adequate to reduce impacts to below significance thresholds.

Cumulative Construction-related Criteria Air Pollutant Analysis

Cumulative increases in construction-related emissions would result from the simultaneous construction of the proposed project in combination with other SFPUC projects in the Sunol Valley area. Based on input from the SFPUC regarding phasing of overlapping projects and air quality emissions estimates from the EIRs for these projects, cumulative increases in criteria pollutant emissions will be presented. Significance will be determined by comparing cumulative emissions to the BAAQMD construction-related significance thresholds for criteria pollutants and determining whether the project's contribution to cumulative regional increases is cumulatively considerable both without and with mitigation.

Operational Criteria Air Pollutant Analysis

The project's operational emissions would be limited to operation of one liquid propane-powered emergency generator (150 horsepower portable generator). Since this generator is for "emergency" use only, the intermittent and unpredictable use of this generator as well as the portable nature of one of this generator preclude accurate estimation of potential criteria pollutant emissions. However, health risks could be estimated if the SFPUC can provide a defensible estimate of operating hours for testing and emergency conditions. If the SFPUC can provide estimated operating hours for the one generator, criteria air pollutant emissions associated with project-related equipment operations will be estimated using the OFFROAD2007 model. If this information is not available, the operational analysis will implement a similar approach to the one used in the Baden-San Pedro Valve Lots MND, which is presented as follows:

"BAAQMD permits to construct and operate the replacement generator would be required because the generator would be over 50 horsepower. Although issuance of these permits cannot be the sole factor in determining that a potentially significant impact is mitigated to a less-than-significant level, the BAAQMD would be prohibited from issuing such a permit unless the generator met the following requirements: it is equipped with the best available control technology; no ambient air quality standards are violated or made measurably worse; public health risks have been determined in a health risk screening analysis to be less than significant (if applicable); appropriate public notification occurs if the generator would be located within 1,000 feet of a school; and any increase in emissions is offset if emissions exceed applicable BAAQMD threshold levels. Therefore, existing rules and regulations are designed to ensure that the air quality impacts of new facilities are less than significant."

Cumulative Operational Criteria Air Pollutant Analysis

Cumulative increases in operational emissions would result from the simultaneous operation of the proposed project in combination with other SFPUC projects in the Sunol Valley area. Significance of the project's contribution to cumulative degradation of regional air quality will be

determined by comparing the project's emissions to BAAQMD operational-related significance thresholds for criteria pollutants under unmitigated and mitigated conditions. This comparison will determine whether the project's contribution to cumulative increases in the region would be cumulatively considerable both without and with mitigation.

Risks and Hazards

Construction-related Health Risk Analysis

The health risks impact evaluation will require converting project emissions into ambient concentrations, which involves application of a dispersion analysis to project scenarios, followed by a determination of the ambient air toxics levels as a human health risk using adopted Office of Environmental Health Hazard Assessment (OEHHA) guidance.

The construction health risk analysis will utilize methodologies outlined in the BAAQMD's document entitled, *Recommended Methods for Screening and Modeling Local Risks and Hazards* (May 2010; BAAQMD, 2010c) as necessary to determine a project's health risk impacts. For the health risk analysis, BAAQMD recommends using EMFAC and OFFROAD directly (not through URBEMIS modeling). The SCREEN3 dispersion model will be utilized to estimate PM2.5 levels at the closest sensitive receptors (i.e., maximally exposed individual), then OEHHA guidance will be used to determine associated cancer and non-cancer risks. These estimated levels will be compared to the BAAQMD's adopted project-level risks and hazards significance thresholds for cancer risk, non-cancer risk, and ambient PM2.5 concentrations. Consistent with the BAAQMD's methodology, if a more detailed analysis is warranted, the Industrial Source Complex (ISC) model will be utilized to estimate project-related emissions,⁴ while the CAL3QHCR model will be utilized as necessary to estimate on-road health risks. A menu of mitigation measures that must be implemented to support project impact findings will be developed.

Cumulative Construction-related Health Risk Analysis

The project-level analysis will then be used as a basis for the cumulative impact analysis to determine the project's contribution to significant, cumulative impacts associated with TAC emissions from project construction and from other stationary and mobile sources and other known construction projects, including the New Irvington Tunnel, SVWTP Expansion and Treated Water Reservoirs, Calaveras Dam Replacement, and various pipeline inspection projects. The cumulative impact analysis will consider all existing permitted and roadway emissions sources as well as potential future emissions sources within 1,000 feet of the proposed project (as identified in Table 3). The cumulative impact on identified sensitive receptors will be determined by comparing cumulative emissions from project construction plus any other concurrent

⁴ ISC is 8760 SCREEN3 runs using actual meteorology rather than artificial screening level data that is used in a single SCREEN3 run.

construction activities and known stationary and mobile sources to BAAQMD-adopted cumulative risks and hazards significance criteria. BAAQMD-approved mitigation measures that can be feasibly implemented by the SFPUC will be identified for any significant cumulative impacts. Any determination of a cumulatively considerable contribution to health risks will be subject to approval from MEA.

Operational Health Risk Analysis

As noted above, the project's operational emissions would be limited to operation of one liquid propane-powered emergency generator (one 150 horsepower portable generator). Since this generator is for "emergency" use only, the intermittent and unpredictable use of this generator as well as the portable nature of one of this generator preclude accurate estimation of these potential emissions and the associated health risks. Nevertheless, health risks could be estimated based on operational time limit that will be specified in the BAAQMD permit to operate. The health risks impact evaluation will require converting project emissions into ambient concentrations, which involves application of a dispersion analysis to project scenarios, followed by a determination of the ambient air toxics levels as a human health risk using adopted Office of Environmental Health Hazard Assessment (OEHHA) guidance.

Cumulative Operational Health Risks

Cumulative increases in operational emissions would result from the simultaneous operation of the proposed project in combination with other SFPUC projects in the Sunol Valley area. Risks and hazards impact evaluations completed for other SFPUC projects in Sunol Valley (CDRP, SVWTP, NIT, Alameda Siphons, Alameda Creek Filter Galley, etc.) will be compiled and adjusted as necessary to account for age sensitivity, and then added to the project's estimated cancer and non-cancer risk factors. Significance of the project's contribution to cumulative degradation of regional air quality will be determined by comparing the project's emissions to BAAQMD cumulative operational-related significance thresholds for risks and hazards under unmitigated and mitigated conditions. This comparison will determine whether the project's contribution to cumulative increases in the region would be cumulatively considerable both without and with mitigation.

4. Contents of the Air Quality Technical Report

The technical report will include the following sections, consistent with MEA and BAAQMD CEQA 2010 Guidelines:

- ☐ **Project Description**
- ☐ **Project Setting**
- ☐ **Criteria Air Pollutants**

- ☐ **Health Risk Analysis**
- ☐ **Conclusion**
- ☐ **Approved Scope of Work:** The approved scope of work will be included as an appendix to the Air Quality Technical Report
- ☐ **Technical Appendices:** Copies of model outputs and any permits obtained from BAAQMD or other regulatory entity (if applicable) will be included as technical appendices.

5. Assumptions for Reviewing and Finalizing the Technical Report

Based on ongoing discussions between the ESA+Orion team and the SFPUC in December 2010 and January 2011 regarding construction working assumptions, it is assumed that the project description and associated assumptions for construction and operation are correct. It is assumed that there will be no further changes in the project description. During preparation of the first draft Air Quality Technical Report, the ESA+Orion team will work with the SFPUC as needed to ensure that proposed mitigation measures are feasible.

ESA+Orion will prepare two rounds of the Air Quality Technical Report on the proposed SABPL project as described above for review by MEA, and ESA+Orion will respond to comments and incorporate edits by the reviewers in each subsequent submittal. It is assumed that MEA will provide one set of non-conflicting comments on each draft submittal, and that resolution of any outstanding issues will be conducted through conference calls or meetings as needed. ESA+Orion will then prepare a Final Air Quality Technical Report that will serve as the basis for the CEQA air quality analysis in the form of either a reference document or an appendix included as part of the CEQA document.

References

Bay Area Air Quality Management District (BAAQMD), *California Environmental Quality Act Air Quality Guidelines*, June 2010a.

Bay Area Air Quality Management District (BAAQMD), *Roadway Screening Tables*, San Francisco County, October 2010. Available online at: http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/Roadway_Screening_Tables_Oct_2010.ashx. Records Accessed on December 21, 2010b.

Bay Area Air Quality Management District (BAAQMD), *Stationary Source Risk & Hazards Analysis Tool*, San Francisco Permitted Sources, May 3, 2010. Available online at: <http://www.baaqmd.gov/Home/Divisions/Planning%20and%20Research/CEQA%20GUIDELINES/Tools%20and%20Methodology.aspx>. Records Accessed on December 21, 2010c.

California Air Resources Board (CARB), Workshops on Information Regarding the Off-Road,
Truck and Bus and Drayage Truck Regulations, September 3, 2010.

APPENDIX B

Model Outputs and Assumptions

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TABLE B-1
SABPL AVERAGE CONSTRUCTION EQUIPMENT USAGE FOR 2012
Overall Construction Schedule: 21 months, October 2012 through June 2014

		Total # of Work Days
SABPL and 12-Inch PL to town of Sunol (15 months)	2 Flatbed trucks	
	2 Backhoes	
	2 Excavators	
	2 Pipe cutting and welding equipment	
	4 Haul trucks for spoils transport	
	2 Trucks for materials delivery	
	1 Compaction equipment	
	1 Baker tank(s)	
	2 Pickup trucks	
	1 Arch welding machine	
	2 Generators	
	2 Air compressors	
	1 80-ton crane	
	1 Drill rig	
	1 Skip loader	
	2 Pavers and rollers	
Total Equipment #	29	
Full Schedule:	1-Dec 2012 to 28-Feb 2014	392
2012 Schedule:	2 Mos. In 2012	26
	Total Equip for Average of 52 days, 4 hrs/day (operating 50% of 8-hour day), 6 days/wk for 2012	
	Mon-Sat, 7 a.m. to 7 p.m.	
Spoils Hauling / Disposal / Placement (20 months)	2 Backhoes	
	4 Haul trucks	
	2 Water trucks	
Total Equipment #	18	
Full Schedule:	1-Nov 2012 to 30-Jun 2014	522
2012 Schedule:	2 Mos. In 2012	26
	Total Equip for Average of 52 days, 4 hrs/day (operating 50% of 8-hour day), 6 days/wk for 2012	
	Mon-Sat, 7 a.m. to 7 p.m.	

* Not an emission source, not included in total

No spoils hauling Saturdays or Sundays.

Generally only one shift per day (7am to 5pm)

Traffic will assume 20-month total duration to be most conservative.

Total excess spoils = 68,000 cubic yards

Assume 25% of excess spoils (17,000 cu yds) will be hauled to landfill, the rest will be permanently placed at North
Spoils Site or temporarily placed in SMP-30 for subsequent resale.

TABLE B-2
SABPL AVERAGE CONSTRUCTION EQUIPMENT USAGE FOR 2013
Overall Construction Schedule: 21 months, October 2012 through June 2014

ALL CONSTRUCTION PHASES OVERLAP TO SOME EXTENT DURING 2013:

Construction Phase	Construction	Total # of Days
SABPL and 12-Inch PL to town of Sunol (15 months)	2 Flatbed trucks	
	2 Backhoes	
	2 Excavators	
	2 Pipe cutting and welding equipment	
	4 Haul trucks for spoils transport	
	2 Trucks for materials delivery	
	1 Compaction equipment	
	1 Baker tank(s)	
	2 Pickup trucks	
	1 Arch welding machine	
	2 Generators	
	2 Air compressors	
	1 80-ton crane	
	1 Drill rig	
	1 Skip loader	
	2 Pavers and rollers	
Total Pieces of Equipment =		28
Full Schedule =	Dec 2012 thru Feb 2014 =	392 days
2013 Schedule =	12 months in 2012 =	320 days

NOTES: 1. Assume all equipment operating 320 days for 4 hrs/day (operating 50% of 8-hr day), 6 days/wk for 2013.
2. 6 weeks of 24-hour construction in 2013

Construction Phase	Equipment	Total # of Days
Discharge facility at Pit F3-East (6 months)	1 Sheet pile driver	
	2 Flatbed trucks	
	2 Excavators	
	1 Backhoe	
	1 Boom truck	
	2 Air compressors	
	2 Baker tank(s)	
	1 Drill rig	
	2 Generators	
	2 Arch welders	
	2 Timber crane mats	
	2 Trucks for materials delivery	
	2 Dump trucks	
	2 Pickup trucks	
	2 Concrete transport trucks	
	1 Concrete pump truck	
	2 Water trucks	
	2 Pavers and rollers	
	Work platform*	
Total Pieces of Equipment =		31
Full Schedule =	Oct 2013 thru Mar 2014 =	157 days
2013 Schedule =	3 months in 2013 =	78 days

NOTES: 1. Assume all equipment operating 78 days for 4 hrs/day (operating 50% of 8-hr day), 6 days/wk for 2013.

Construction Phase	Equipment	Total # of Days
Construction of Slurry Cutoff Wall around Pits F3-East and F3-West (16 months)	2 Long reach excavators	
	2 Regular excavators	
	2 Bulldozers	
	1 Desander plant	
	2 Haul trucks for spoils transport	
	1 Slurry mixing plant	
	1 Forklift	
	2 Dump trucks	
	2 Slurry pumps	
	2 Timber crane mats	
Total Pieces of Equipment =		17
Full Schedule =	Jan 2013 thru Apr 2014 =	418 days
2013 Schedule =	12 months in 2013 =	313 days

NOTES: 1. Assume all equipment operating for 313 days, 4 hrs/day (operating 50% of 8-hour day), 6 days/wk for 2013

Construction Phase	Equipment	Total # of Days
Transfer PL, Dewatering PL (3 months)	2 Flatbed trucks	
	2 Excavators	
	2 Backhoes	
	1 Pipe cutting and welding equipment	
	2 Pickup trucks	
	2 Trucks for materials delivery	
	2 Generators	
	2 Air compressors	
	4 Haul trucks for spoils transport	
	1 Compaction equipment	
	1 Backer tank(s)	
	1 Arch welding machine	
	1 Crane	
	1 Drill rig	
	1 Skip loader	
Total Pieces of Equipment =		25
Full Schedule =	Oct 2013 thru Dec 2013 =	78 days
2013 Schedule =	3 months in 2013 =	78 days

NOTES: 1. Assume all equipment operating for 78 days, 4 hrs/day (operating 50% of 8-hour day), 6 days/wk for 2013

Construction Phase	Equipment	Total # of Days
Alameda Creek Pump Station (5 dry months)	2 Excavators	
	2 Bulldozers	
	1 Concrete truck	
	1 Flatbed truck	
	1 Mobile crane	
	2 Graders	
	2 Dump trucks	
	1 Welding equipment	
	4 Haul trucks for spoils transport	
Total Pieces of Equipment =		16
Full Schedule =	Apr 2013 thru Aug 2013 =	131
2013 Schedule =	5 months in 2013 =	131

NOTES: 1. Assume all equipment operating for 131 days, 4 hrs/day (operating 50% of 8-hour day), 6 days/wk for 2013

Construction Phase	Equipment	Total # of Days
Construction of New Chemical Facility (5 months)	1 Excavator	
	1 Backhoe	
	2 Air compressors	
	1 Loader	
	1 Boom truck or small crane	
	2 Pavers and rollers	
	2 Concrete transport trucks	
	1 Concrete pump truck	
	1 Flatbed truck	
	2 Generators	
	2 Pickup trucks	
	2 Trucks for materials delivery	
Total Pieces of Equipment =		18
Full Schedule =	Apr 2013 thru Aug 2013 =	131 days
2013 Schedule =	5 months in 2013	131 days

NOTES: 1. Assume all equipment operating for 131 days, 4 hrs/day (operating 50% of 8-hour day), 6 days/wk for 2013

	Mon-Sat, 7 a.m. to 7 p.m.	

Construction Phase	Equipment	Total # of Days
Spoils Hauling / Disposal / Placement (20 months)	2 Backhoes	
	4 Haul trucks	
	2 Water trucks	
Total Pieces of Equipment =		18
Full Schedule =	Nov 2012 thru June 2014 =	522 days
2013 Schedule =	12 months in 2013 =	313 days

NOTES: 1. Assume all equipment operating for 313 days, 4 hrs/day (operating 50% of 8-hour day), 6 days/wk for 2013

* Not an emission source, not included in total

NOTES:

1. No spoils hauling Saturdays or Sundays.
2. Generally only one shift per day (7am to 5pm)
3. Total excess spoils = 68,000 cubic yards
4. Assume 25% of excess spoils (17,000 cu yds) will be hauled to landfill, the rest will be permanently placed at North Spoils Site or temporarily placed in SMP-30 for subsequent resale.

TABLE B-3
SABPL AVERAGE CONSTRUCTION EQUIPMENT USAGE FOR 2014
Overall Construction Schedule: 21 months, October 2012 through June 2014

		Total # of Work Days
SABPL and 12-Inch PL to town of Sunol (15 months)	2 Flatbed trucks	
	2 Backhoes	
	2 Excavators	
	2 Pipe cutting and welding equipment	
	4 Haul trucks for spoils transport	
	2 Trucks for materials delivery	
	1 Compaction equipment	
	1 Baker tank(s)	
	2 Pickup trucks	
	1 Arch welding machine	
	2 Generators	
	2 Air compressors	
	1 80-ton crane	
	1 Drill rig	
	1 Skip loader	
	2 Pavers and rollers	
	Total Equipment # 29	
	Full Schedule: 1-Dec 2012 to 28-Feb 2014	392
	2014 Schedule: 2 Mos. In 2014	52
	Total Equip for Average of 52 days, 4 hrs/day (operating 50% of 8-hour day), 6 days/wk for 2014	
	Mon-Sat, 7 a.m. to 7 p.m.	
Discharge facility at Pit F3- East (6 months)	1 Sheet pile driver	
	2 Flatbed trucks	
	2 Excavators	
	1 Backhoe	
	1 Boom truck	
	2 Air compressors	
	2 Baker tank(s)	
	1 Drill rig	
	2 Generators	
	2 Arch welders	
	2 Timber crane mats	
	2 Trucks for materials delivery	
	2 Dump trucks	
	2 Pickup trucks	
	2 Concrete transport trucks	
	1 Concrete pump truck	
	2 Water trucks	
	2 Pavers and rollers	
	Work platform*	
	Total Equipment # 31	
	Full Schedule: 1-Oct 2013 to 31 Mar 2014	157
	2014 Schedule: 3 Mos. In 2014	78
	Total Equip for Average of 78 days, 4 hrs/day (operating 50% of 8-hour day), 6 days/wk for 2014	
	Mon-Sat, 7 a.m. to 7 p.m.	

		Total # of Work Days
Construction of Slurry Cutoff Wall around Pits F3-East and F3-West (16 months)	2 Long reach excavators	
	2 Regular excavators	
	2 Bulldozers	
	1 Desander plant	
	2 Haul trucks for spoils transport	
	1 Slurry mixing plant	
	1 Forklift	
	2 Dump trucks	
	2 Slurry pumps	
	2 Timber crane mats	
Total Equipment #	17	
Full Schedule:	1-Jan 2013 to 30 Apr 2014	418
2014 Schedule:	4 Mos. In 2014	104
	Total Equip for Average of 104 days, 4 hrs/day (operating 50% of 8-hour day), 6 days/wk for 2014	
	Mon-Sat, 7 a.m. to 7 p.m.	
Spoils Hauling / Disposal / Placement (20 months)	2 Backhoes	
	4 Haul trucks	
	2 Water trucks	
Total Equipment #	18	
Full Schedule:	1-Nov 2012 to 30-Jun 2014	522
2014 Schedule:	6 Mos. In 2014	157
	Total Equip for Average of 157 days, 4 hrs/day (operating 50% of 8-hour day), 6 days/wk for 2014	
	Mon-Sat, 7 a.m. to 7 p.m.	

Appendix B URBEMIS Output and Construction Modeling

URBEMIS Off Road Construction Equipment-Peak Day (Not Average)

2012

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Pipeline to Sunol											
Unmitigated Equipment	12.3	101.5	51.4	0.0	2.5	5.1	7.6	0.5	4.7	5.2	12838.2
Mitigated Equipment	12.3	64.7	51.4	0.0	1.2	3.7	4.9	0.3	3.4	3.7	12838.2
Discharge Facility											
Unmitigated Equipment	12.2	105.9	49.8	0.0	2.5	4.9	7.5	0.5	4.6	5.1	14242
Mitigated Equipment	12.2	65.8	49.8	0.0	1.2	3.6	4.8	0.3	3.3	3.5	14242
Slurry Wall Cutoff											
Unmitigated Equipment	7.1	55.1	36.2	0.0	2.5	3.0	5.5	0.5	2.7	3.3	5947.3
Mitigated Equipment	7.1	31.3	36.2	0.0	1.2	1.8	3.0	0.3	1.6	1.9	5947.3
Transfer PL											
Unmitigated Equipment	9.2	84.0	39.3	0.0	2.5	3.6	6.1	0.5	3.3	3.8	11251.5
Mitigated Equipment	9.2	47.2	39.3	0.0	1.2	2.2	3.4	0.3	2.0	2.3	11251.5
Alameda Creek Pump Station											
Unmitigated Equipment	5.9	46.3	28.3	0.0	2.5	2.2	4.8	0.5	2.1	2.6	4970.8
Mitigated Equipment	5.9	23.7	28.3	0.0	2.3	1.2	1.2	2.4	0.3	1.1	4970.8
New Chem Facility											
Unmitigated Equipment	10.2	91.1	43.0	0.0	2.5	4.5	7.1	0.5	4.2	4.7	10672.7
Mitigated Equipment	10.2	59.0	43.0	0.0	1.2	3.4	4.6	0.3	3.1	3.4	10672.7

2013 URBEMIS Off Road Construction Equipment-Peak Day (Not Average)

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Pipeline to Sunol											
Unmitigated Equipment	11.4	94.5	50.0	0.0	2.5	4.8	7.3	0.5	4.4	4.9	12838.4
Mitigated Equipment	11.4	60.4	50.0	0.0	1.2	3.5	4.7	0.3	3.2	3.5	12838.4
Discharge Facility											
Unmitigated Equipment	11.3	98.1	48.6	0.0	2.5	4.7	7.2	0.5	4.3	4.8	14242.3
Mitigated Equipment	11.3	61.2	48.6	0.0	1.2	3.3	4.5	0.3	3.1	3.3	14242.3
Slurry Wall Cutoff											
Unmitigated Equipment	6.7	51.6	32.5	0.0	2.5	2.8	5.3	0.5	2.6	3.1	5947.5
Mitigated Equipment	6.7	29.3	32.5	0.0	1.2	1.6	2.8	0.3	1.5	1.7	5947.5
Transfer PL											
Unmitigated Equipment	8.5	77.8	38.2	0.0	2.5	3.3	5.9	0.5	3.1	3.6	11251.7
Mitigated Equipment	8.5	43.8	38.2	0.0	1.2	2.0	3.2	0.3	1.9	2.1	11251.7
Alameda Creek Pump Station											
Unmitigated Equipment	5.6	43.6	27.3	0.0	2.5	2.1	4.6	0.5	1.9	2.5	4971
Mitigated Equipment	5.6	22.3	27.3	0.0	1.2	1.1	2.3	0.3	1.0	1.3	4971
New Chem Facility											
Unmitigated Equipment	9.5	85.0	41.9	0.0	2.5	4.3	6.8	0.5	3.9	4.5	10672.7
Mitigated Equipment	9.5	55.2	41.9	0.0	1.2	3.2	4.4	0.3	2.9	3.2	10672.7

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2014 URBEMIS Off Road Construction Equipment-Peak Day (Not Average)

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Pipeline to Sunol											
Unmitigated Equipment	10.5	83.3	48.6	0	2.5	4.3	6.8	0.5	3.9	4.5	12838.7
Mitigated Equipment	10.5	55.6	48.6	0	1.2	3.2	4.4	0.3	2	3.2	12838.7
Discharge Facility											
Unmitigated Equipment	10.5	88.7	47.4	0	2.5	4.2	6.7	0.5	3.8	4.4	14242.5
Mitigated Equipment	10.5	55.8	47.4	0	1.2	3.0	4.2	0.3	2.8	3.0	14242.5
Slurry Wall Cutoff											
Unmitigated Equipment	6.3	48.2	34.3	0	2.5	2.5	5.0	0.5	2.3	2.8	5937.6
Mitigated Equipment	6.3	27.4	34.3	0	1.2	1.5	2.7	0.3	1.3	1.6	5937.6
Transfer PL											
Unmitigated Equipment	7.8	70.6	37	0	2.52	3.0	5.5	0.5	2.7	3.2	11251.9
Mitigated Equipment	7.8	39.87	37	0	1.2	1.8	3.0	0.3	1.7	1.9	11251.9
Alameda Creek Pump Station											
Unmitigated Equipment	5.3	40.7	26.3	0	2.51	1.9	4.4	0.5	1.7	2.3	4971.1
Mitigated Equipment	5.3	21.19	26.3	0	1.19	1.0	2.2	0.3	0.1	1.2	4971.1
New Chemical Facility											
Unmitigated Equipment	8.9	78.2	40.7	0	2.52	3.9	6.4	0.5	3.6	4.1	10673.1
Mitigated Equipment	8.9	51.15	40.7	0	1.2	2.9	4.1	0.3	2.7	2.9	10673.1

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**Average Daily Normalized Emissions-Half of URBEMIS Calculated Off-Road Equipment Emissions
Normalized for Truck Haul Miles 5/7 days per week –Off-Road Equipment 6/7 days week**

2012

1 Pipeline to Sunol (lbs/day)

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Unmitigated Equipment	5.3	43.5	22.0	0.0	1.1	2.2	3.3	0.2	2.0	2.2	5501.8
Mitigated Equipment	5.3	27.7	22.0	0.0	0.5	1.6	2.1	0.1	1.5	1.6	5501.8
On-road haul miles	0.4	4.9	1.6	0.0	0.0	0.2	0.0	0.0	0.2	0.0	674.6
Onsite haul miles	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
Total unmitigated	5.7	48.5	23.7	0.0	1.1	2.4	3.3	0.2	2.2	2.2	6182.4
Total mitigated	5.7	32.7	23.7	0.0	0.5	1.8	2.1	0.1	1.7	1.6	6182.4

2 Discharge Facility (lbs/day)

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Unmitigated Equipment	5.2	45.4	21.3	0.0	1.1	2.1	3.2	0.2	2.0	2.2	6103.4
Mitigated Equipment	5.2	28.2	21.3	0.0	0.5	1.5	2.1	0.1	1.4	1.5	6103.4
On-road haul miles	0.6	6.9	2.3	0.0	0.0	0.4	0.0	0.0	0.3	0.0	939.6
Onsite haul miles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0
Total unmitigated	5.8	52.2	23.6	0.0	1.1	2.5	3.2	0.2	2.3	2.2	7046.0
Total mitigated	5.8	35.1	23.6	0.0	0.5	1.9	2.1	0.1	1.7	1.5	7046.0

3 Slurry Cutoff (lbs/day)

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Unmitigated Equipment	3.0	23.6	15.5	0.0	1.1	1.3	2.4	0.2	1.2	1.4	2548.7
Mitigated Equipment	3.0	13.4	15.5	0.0	0.5	0.7	1.3	0.1	0.7	0.8	2548.7
On-road haul miles	0.1	1.4	0.4	0.0	0.0	0.1	0.0	0.0	0.1	0.0	186.7
Onsite haul miles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0
Total unmitigated	3.2	25.0	15.9	0.0	1.1	1.3	2.4	0.2	1.2	1.4	2738.4

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Total mitigated	3.2	14.8	15.9	0.0	0.5	0.8	1.3	0.1	0.8	0.8	2738.4

4 Transfer Pipeline lbs/day

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Unmitigated Equipment	3.9	36.0	16.8	0.0	1.1	1.5	2.6	0.2	1.4	1.6	4821.8
Mitigated Equipment	3.9	20.2	16.8	0.0	0.5	0.9	1.4	0.1	0.9	1.0	4821.8
On-road haul miles	0.4	4.9	1.6	0.0	0.0	0.2	0.0	0.0	0.2	0.0	674.6
Onsite haul miles	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
Total unmitigated	4.4	41.0	18.5	0.0	1.1	1.7	2.6	0.2	1.6	1.6	5502.4
Total mitigated	4.4	25.2	18.5	0.0	0.5	1.1	1.4	0.1	1.1	1.0	5502.4

5 Alameda Creek Pump Station

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Unmitigated Equipment	2.5	19.8	12.1	0.0	1.1	1.0	2.0	0.2	0.9	1.1	2130.2
Mitigated Equipment	2.5	10.2	12.1	0.0	1.0	0.5	0.5	1.0	0.1	0.5	0.6
On-road haul miles	0.2	2.7	0.9	0.0	0.0	0.1	0.0	0.0	0.1	0.0	373.4
Onsite haul miles	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
Total unmitigated	2.7	22.6	13.1	0.0	1.1	1.1	2.0	0.2	1.0	1.1	2509.7
Total mitigated	2.7	12.9	13.1	0.0	1.0	0.7	0.5	1.0	0.2	0.5	380.0

6 New Chemical Facility

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Unmitigated Equipment	4.4	39.0	18.4	0.0	1.1	1.9	3.0	0.2	1.8	2.0	4573.8
Mitigated Equipment	4.4	25.3	18.4	0.0	0.5	1.5	2.0	0.1	1.3	1.4	4573.8
On-road haul miles	0.5	5.5	1.9	0.0	0.0	0.3	0.0	0.0	0.2	0.0	752.9
Onsite haul miles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total unmitigated	4.9	44.5	20.3	0.0	1.1	2.2	3.0	0.2	2.0	2.0	5326.7
Total mitigated	4.9	30.8	20.3	0.0	0.5	1.7	2.0	0.1	1.6	1.4	5326.7

2013 daily (lbs/day)

1 Pipeline to Sunol

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Unmitigated Equipment	4.9	40.5	21.4	0.0	1.1	2.1	3.1	0.2	1.9	2.1	5501.9
Mitigated Equipment	4.9	25.9	21.4	0.0	0.5	1.5	2.0	0.1	1.4	1.5	5501.9
On-road haul miles	0.4	4.9	1.6	0.0	0.0	0.2	0.0	0.0	0.2	0.0	674.6
Onsite haul miles	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
Total unmitigated	5.3	45.5	23.1	0.0	1.1	2.3	3.1	0.2	2.1	2.1	6182.5
Total mitigated	5.3	30.9	23.1	0.0	0.5	1.7	2.0	0.1	1.6	1.5	6182.5

2 Discharge Facility

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Unmitigated Equipment	4.8	42.0	20.8	0.0	1.1	2.0	3.1	0.2	1.8	2.1	6103.5
Mitigated Equipment	4.8	26.2	20.8	0.0	0.5	1.4	1.9	0.1	1.3	1.4	6103.5
On-road haul miles	0.6	6.9	2.3	0.0	0.0	0.4	0.0	0.0	0.3	0.0	939.6
Onsite haul miles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0
Total unmitigated	5.4	48.9	23.1	0.0	1.1	2.3	3.1	0.2	2.1	2.1	7046.1
Total mitigated	5.4	33.1	23.1	0.0	0.5	1.8	1.9	0.1	1.6	1.4	7046.1

3 Slurry Cutoff

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Unmitigated Equipment	2.9	22.1	13.9	0.0	1.1	1.2	2.3	0.2	1.1	1.3	2548.8
Mitigated Equipment	2.9	12.6	13.9	0.0	0.5	0.7	1.2	0.1	0.6	0.7	2548.8
On-road haul miles	0.1	1.4	0.4	0.0	0.0	0.1	0.0	0.0	0.1	0.0	186.7
Onsite haul miles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0
Total unmitigated	3.0	23.5	14.4	0.0	1.1	1.3	2.3	0.2	1.2	1.3	2738.5

Total mitigated	3.0	13.9	14.4	0.0	0.5	0.8	1.2	0.1	0.7	0.7	2738.5

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4 Transfer Pipeline

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Unmitigated Equipment	3.6	33.3	16.4	0.0	1.1	1.4	2.5	0.2	1.3	1.5	4821.9
Mitigated Equipment	3.6	18.8	16.4	0.0	0.5	0.9	1.4	0.1	0.8	0.9	4821.9
On-road haul miles	0.4	4.9	1.6	0.0	0.0	0.2	0.0	0.0	0.2	0.0	674.6
Onsite haul miles	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
Total unmitigated	4.1	38.3	18.0	0.0	1.1	1.6	2.5	0.2	1.5	1.5	5502.5
Total mitigated	4.1	23.8	18.0	0.0	0.5	1.1	1.4	0.1	1.0	0.9	5502.5

5 Alameda Creek Pump Station

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Unmitigated Equipment	2.4	18.7	11.7	0.0	1.1	0.9	2.0	0.2	0.8	1.0	2130.3
Mitigated Equipment	2.4	9.6	11.7	0.0	0.5	0.5	1.0	0.1	0.4	0.5	2130.3
On-road haul miles	0.2	2.7	0.9	0.0	0.0	0.1	0.0	0.0	0.1	0.0	373.4
Onsite haul miles	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
Total unmitigated	2.6	21.5	12.6	0.0	1.1	1.0	2.0	0.2	1.0	1.0	2509.8
Total mitigated	2.6	12.3	12.6	0.0	0.5	0.6	1.0	0.1	0.6	0.5	2509.8

6 New Chemical Facility

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Unmitigated Equipment	4.1	36.4	18.0	0.0	1.1	1.8	2.9	0.2	1.7	1.9	4573.8
Mitigated Equipment	4.1	23.7	18.0	0.0	0.5	1.4	1.9	0.1	1.3	1.4	4573.8
On-road haul miles	0.5	5.5	1.9	0.0	0.0	0.3	0.0	0.0	0.2	0.0	752.9
Onsite haul miles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total unmitigated	4.6	41.9	19.8	0.0	1.1	2.1	2.9	0.2	1.9	1.9	5326.7
Total mitigated	4.6	29.2	19.8	0.0	0.5	1.6	1.9	0.1	1.5	1.4	5326.7

2014 (lbs/day)

1 Pipeline to Sunol

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Unmitigated Equipment	4.5	35.7	20.8	0.0	1.1	1.8	2.9	0.2	1.7	1.9	5502.0
Mitigated Equipment	4.5	23.8	20.8	0.0	0.5	1.4	1.9	0.1	0.9	1.4	5502.0
On-road haul miles	0.4	3.9	1.4	0.0	0.0	0.2	0.0	0.0	0.1	0.0	674.1
Onsite haul miles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
Total unmitigated	4.9	39.6	22.2	0.0	1.1	2.1	2.9	0.2	1.8	1.9	6182.1
Total mitigated	4.9	27.7	22.2	0.0	0.5	1.6	1.9	0.1	1.0	1.4	6182.1

2 Discharge Facility

ctivity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Unmitigated Equipment	4.5	38.0	20.3	0.0	1.1	1.8	2.9	0.2	1.6	1.9	6103.6
Mitigated Equipment	4.5	23.9	20.3	0.0	0.5	1.3	1.8	0.1	1.2	1.3	6103.6
On-road haul miles	0.4	5.5	1.9	0.0	0.0	0.3	0.0	0.0	0.2	0.0	938.9
Onsite haul miles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0
Total unmitigated	4.9	43.5	22.2	0.0	1.1	2.1	2.9	0.2	1.9	1.9	7045.5
Total mitigated	4.9	29.4	22.2	0.0	0.5	1.6	1.8	0.1	1.4	1.3	7045.5

3 Slurry Cutoff

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Unmitigated Equipment	2.7	20.7	14.7	0.0	1.1	1.1	2.1	0.2	1.0	1.2	2544.6
Mitigated Equipment	2.7	11.7	14.7	0.0	0.5	0.6	1.1	0.1	0.6	0.7	2544.6
On-road haul miles	0.1	1.1	0.4	0.0	0.0	0.1	0.0	0.0	0.1	0.0	186.7
Onsite haul miles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0
Total unmitigated	2.8	21.7	15.1	0.0	1.1	1.1	2.1	0.2	1.1	1.2	2734.3
Total mitigated	2.8	12.8	15.1	0.0	0.5	0.7	1.1	0.1	0.6	0.7	2734.3

4 Transfer Pipeline

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Unmitigated Equipment	3.3	30.3	15.9	0.0	1.1	1.3	2.3	0.2	1.2	1.4	4822.0
Mitigated Equipment	3.3	17.1	15.9	0.0	0.5	0.8	1.3	0.1	0.7	0.8	4822.0
On-road haul miles	0.4	3.9	1.4	0.0	0.0	0.2	0.0	0.0	0.1	0.0	674.1
Onsite haul miles	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
Total unmitigated	3.7	34.2	17.2	0.0	1.1	1.5	2.3	0.2	1.3	1.4	5502.1
Total mitigated	3.7	21.0	17.2	0.0	0.5	1.0	1.3	0.1	0.9	0.8	5502.1

5 Alameda Creek Pump Station

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Unmitigated Equipment	2.3	17.4	11.3	0.0	1.1	0.8	1.9	0.2	0.7	1.0	2130.4
Mitigated Equipment	2.3	9.1	11.3	0.0	0.5	0.4	0.9	0.1	0.0	0.5	2130.4
On-road haul miles	0.1	0.2	0.7	0.0	0.0	0.1	0.0	0.0	0.1	0.0	674.1
Onsite haul miles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
Total unmitigated	2.4	17.7	12.0	0.0	1.1	0.9	1.9	0.2	0.8	1.0	2810.4
Total mitigated	2.4	9.3	12.0	0.0	0.5	0.5	0.9	0.1	0.1	0.5	2810.4

6 New Chemical Facility

Activity	ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Unmitigated Equipment	3.8	33.5	17.4	0.0	1.1	1.7	2.7	0.2	1.5	1.8	4574.0
Mitigated Equipment	3.8	21.9	17.4	0.0	0.5	1.2	1.8	0.1	1.1	1.3	4574.0
On-road haul miles	0.4	4.3	1.5	0.0	0.0	0.2	0.0	0.0	0.2	0.0	752.3
Onsite haul miles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total unmitigated	4.2	37.8	18.9	0.0	1.1	1.9	2.7	0.2	1.7	1.8	5326.3
Total mitigated	4.2	26.2	18.9	0.0	0.5	1.5	1.8	0.1	1.4	1.3	5326.3

Annual Construction Emissions (short tons per year) –Daily times indicated number of days/2000 lbs/ton

Days are total days in phase. Daily emissions have already been averaged for number of work days per week (6/7 for equipment and 5/7 for haul)

1. Pipeline To Sunol (short tons/year)

Activity	ROG	NO _x	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Calendar Days¹											
2012	30.4										
unmit	0.09	0.74	0.36	0.00	0.02	0.04	0.05	0.00	0.03	0.03	94.0
mit	0.09	0.50	0.36	0.00	0.01	0.03	0.03	0.00	0.03	0.02	94.0
2013	365										
unmit	1.0	8.3	4.2	0.0	0.2	0.4	0.6	0.0	0.4	0.4	1128.3
mit	1.0	5.6	4.2	0.0	0.1	0.3	0.4	0.0	0.3	0.3	1128.3
2014	60.9										
unmit	0.1	1.2	0.7	0.0	0.0	0.1	0.1	0.0	0.1	0.1	188.2
mit	0.1	0.8	0.7	0.0	0.0	0.0	0.1	0.0	0.0	0.0	188.2

¹ Daily emissions already account for six days per week of construction and five days per week of hauling. So calendar days are used to calculate annual emissions.

2. Discharge Facility (short tons/year)

Activity	ROG	NO _x	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Calendar Days¹											
2013	91.3										
unmit	0.2	2.2	1.1	0.0	0.0	0.1	0.1	0.0	0.1	0.1	321.3
mit	0.2	1.5	1.1	0.0	0.0	0.1	0.1	0.0	0.1	0.1	321.3
2014	91.3										
unmit	0.2	2.0	1.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	321.3
mit	0.2	1.3	1.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	321.3

¹ Daily emissions already account for six days per week of construction and five days per week of hauling. So calendar days are used to calculate annual emissions.

3. Slurry Cutoff (short tons/year)

Activity		ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Calendar Days ¹												
2013	365											
unmit		0.6	4.3	2.6	0.0	0.2	0.2	0.4	0.0	0.2	0.2	499.8
mit		0.6	2.5	2.6	0.0	0.1	0.1	0.2	0.0	0.1	0.1	499.8
2014	121.7											
unmit												
mit		0.2	1.3	0.9	0.0	0.1	0.1	0.1	0.0	0.1	0.1	166.4

¹ Daily emissions already account for six days per week of construction and five days per week of hauling. So calendar days are used to calculate annual emissions.

4. Transfer Pipeline (short tons/year)

Activity		ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Calendar Days ¹												
2013	91.3											
unmit		0.2	1.8	0.8	0.0	0.0	0.1	0.1	0.0	0.1	0.1	251.2
mit		0.2	1.1	0.8	0.0	0.0	0.0	0.1	0.0	0.0	0.0	251.2

¹ Daily emissions already account for six days per week of construction and five days per week of hauling. So calendar days are used to calculate annual emissions.

5. Alameda Creek Pump Station (short tons/year)

Activity		ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Calendar Days ¹												
2013	152.2											
unmit		0.2	1.6	1.0	0.0	0.1	0.1	0.2	0.0	0.1	0.1	191.0
mit		0.2	0.9	1.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	191.0

¹ Daily emissions already account for six days per week of construction and five days per week of hauling. So calendar days are used to calculate annual emissions.

6. New Chemical Facility (tons per year)

Activity		ROG	NOx	CO	SO ₂	PM10 Dust	PM-10 Exhaust	PM10 Total	PM2.5 Dust	PM-2.5 Exhaust	PM2.5 Total	CO ₂
Calendar Days ¹												
2013	152.2											
unmit		0.3	3.2	1.5	0.0	0.1	0.2	0.2	0.0	0.1	0.1	405.4
mit		0.3	2.2	1.5	0.0	0.0	0.1	0.1	0.0	0.1	0.1	405.4

¹ Daily emissions already account for six days per week of construction and five days per week of hauling. So calendar days are used to calculate annual emissions.

Form B2

PERMITTED EMISSIONS

FROM FUEL COMBUSTION - INTERNAL COMBUSTION ENGINES & TURBINES

Emissions Report

July 1, 2007 - December 31, 2007

- Read instructions on the back before completing form.
- Carry all emission calculations to 2 decimal places.
- Record each row on Form ES.

FACILITY NAME

FACILITY I.D. NUMBER

EQUIP. CODE (a)	FUEL CODE (b)	Fuel Usage (c)	Organic Gases (d)	Methane (e)	Nitrogen Oxides (f)	Sulfur Oxides (g)	Carbon Monoxide (h)	Particulate Matter (i)
1. SUBTOTAL EMISSIONS (lbs)								
2. SUM OF SUBTOTALS (lbs) from all B2 forms (including this one)*								
3. Divide Line 2 by 2000 then transfer to Form C, Line 2 (tons)*								

***If you have more than one page,complete
Lines 2 and 3 ONLY ON THE FINAL PAGE.**

PAGE # OF TOTAL PAGES IN FORM B2

S.C.A.Q.M.D. reserves the right to audit the reported emissions. All records and calculations used in completing this summary are recommended to be retained for a minimum of five years.



South Coast Air Quality Management District
Form B2 7/1/08

Form B2 - Permitted Emissions From Fuel Combustion - Internal Combustion Engines & Turbines

Note 1: DO NOT report fuel and emissions from on-road, off-road, or in-plant mobile source vehicles (i.e., self-propelled vehicles) such as forklifts.

Note 2: DO NOT report RECLAIM NOx and SOx emissions on this form. Instead use Form CR. Please refer to the General Instruction Book under Frequently Asked Questions for guidance on reporting either RECLAIM or non-RECLAIM emissions. Report all permitted cogeneration or resource recovery fuel usage on Form E1.

Note 3: Emissions from SCAQMD-permitted portable equipment currently registered with the Statewide Portable Equipment Registration Program should be reported on this form only for the period prior to the issuance of the registration certificate by the California Air Resources Board. Refer to the General Instruction Book under Frequently Asked Questions for more details. Please provide a copy of the registration certificate.

Note 4: Fuel combustion results in toxics emissions. These toxics emissions must be reported on Form TAC.

Facility Name and ID No.: Please fill in your facility name and facility ID number in the designated spaces, exactly as indicated on Form X (Signature Sheet) in your package.

Equipment (Eq.), Fuel Codes and Fuel Usage: Fill in the appropriate equipment code in column (a), fuel code in column (b), and the fuel usage (for six-month: 7/1/07-12/31/07) in column (c). **Please use a separate row for each fuel/equipment combination and emission factor.** Select equipment code based on the size of your equipment. If you do not know the size of your equipment, use 10c for portable ICE and 11c for stationary ICE as defaults. If fuel usage is not measured separately (i.e., one common fuel meter for several equipments), use the equipment sizes or ratings (e.g., horse power, HP) to distribute fuel usage for each equipment type (see example for Form B2U in Appendix O of the General Instruction Book). **Please use proper units (i.e., mmscf for gaseous fuels and 1000 gallons for liquid fuels)** Do not report the fuel usage in hours. If the fuel usage is tracked by hours of operation, convert to fuel usage in requested units using manufacturer's data.

Eq. Code	Equipment Type-Portable Internal Combustion Engines (ICE)
10a	Portable ICE, 2 Stroke-Lean Burn
10b	Portable ICE, 2 Stroke-Lean Burn, with Catalyst
10c	Portable ICE, 4 Stroke-Lean Burn
10d	Portable ICE, 4 Stroke-Lean Burn, with Catalyst
10e	Portable ICE, 4 Stroke-Rich Burn
10f	Portable ICE, 4 Stroke-Rich Burn, with Catalyst

Eq. Code	Equipment Type-Stationary Internal Combustion Engines (ICE)
11a	Stationary ICE, 2 Stroke-Lean Burn
11b	Stationary ICE, 2 Stroke-Lean Burn, with Catalyst
11c	Stationary ICE, 4 Stroke-Lean Burn
11d	Stationary ICE, 4 Stroke-Lean Burn, with Catalyst
11e	Stationary ICE, 4 Stroke-Rich Burn
11f	Stationary ICE, 4 Stroke-Rich Burn, with Catalyst

Eq. Code	Equipment Type
12	Turbines
14	Micro Turbine

Fuel Code	Fuel Type
1	Natural Gas (mmscf)
2	LPG, Propane, Butane (1000 gals)
3	Diesel / Distillate Oil (1000 gals)
4	Gasoline (10 RVP) (1000 gals)
5	Landfill Gas (mmscf)
6	Digester Gas (mmscf)

Fuel Code	Fuel Type
7	Residual Fuel Oil (1000 gals)
8	Fuel Oil [0.05% S] (1000 gals)
9	Refinery Gas/Refinery Mixed Gas/Petroleum Process Gas (mmscf)
10	Jet Fuel (Jet-A and Jet-B) (1000 gals)
11	Compressed Natural Gas [CNG] (1000 gals)
12	Coal (tons)

Fuel Code	Fuel Type
13	Coke (tons)
14	Tire (tons)
15	Wood (tons)
16	Bio-Diesel (1000 gals)
17	Biomass Derived Gas (mmscf)
18	Methanol (1000 gals)

Fuel Code	Fuel Type
19	Kerosene (1000 gals)
20	Process Associated Gas (mmscf)
21	Municipal Solid Waste (tons)
22	Lignite (tons)
23	Bark (tons)
24	Spent Solvent (1000 gals)

Emission Factors: Write the appropriate emission factors for each fuel/equipment combination in the small box in the upper right-hand corner of every cell. Please use correct units for each of the factors (i.e., the emission factor for gaseous fuels should be in lbs/mmscf and for liquid fuels in lbs/1000 gallons). Use emission factors which most accurately reflect emissions from your equipment. You must use the available equipment-specific emission factors even if these factors are higher than the default emission factors, listed in Table 1 below. All emission factors (except default emission factors listed in Table 1) must be supported with documentation which should be attached to the completed report. Preference for use of emission factors should be in the following order:

- Continuous emissions monitoring (CEMS) data (if applicable). You must submit CEMS summary data.
- Source tests pre-approved by AQMD (if applicable). You must submit a copy of the source test results and supporting data.
- Rule or permit emission factors or Best Available Control Technologies (BACT) emission levels (if applicable). You must submit a list of equipment by rule and by permit number that comply with the rule or permit limit, or with the BACT levels. NOx emission factors for stationary IC engines subject to Rule 1110.2 are listed in Table 2, below.
- Other available data (e.g., manufacturer's data) with supporting documentation. Default emission factors that represent uncontrolled emissions are listed in Table 1, below. For emissions from turbines, use data from the Continuous Emission Monitoring System (CEMS), if available. Otherwise, use source test data or refer to EPA Document AP-42, Supplement F, Section 3.1 for appropriate emission factors. Default emission factors should only be used if no other emission factors are available.

Emissions: Calculate the emissions for each pollutant by multiplying the fuel usage by the emission factor for each pollutant using the appropriate units. Enter the calculated emissions in the corresponding cell for each pollutant.

Subtotal Emissions: If you use more than one Form B2, in the space provided indicate the page number and the total number of B2 Forms. For example, if you use 4 forms, indicate in the boxes - page 1 of 4, page 2 of 4, etc. Total the emissions for each column (on each page) and place the total on Line 1, Subtotal Emissions (lbs).

Sum of Subtotals: Complete Lines 2 and 3 only on the last page of Form B2. On Line 2 enter the sum of the subtotals from Line 1 of all B2 forms. To convert the totals to tons, divide the total in pounds by 2000, round to two (2) decimal places and enter the total emissions (tons) on Line 3. Transfer the totals (tons) to Form C, Line 2 in the respective columns.

Table 1: Default emission factors For Internal Combustion Engines (ICE) and Micro Turbines

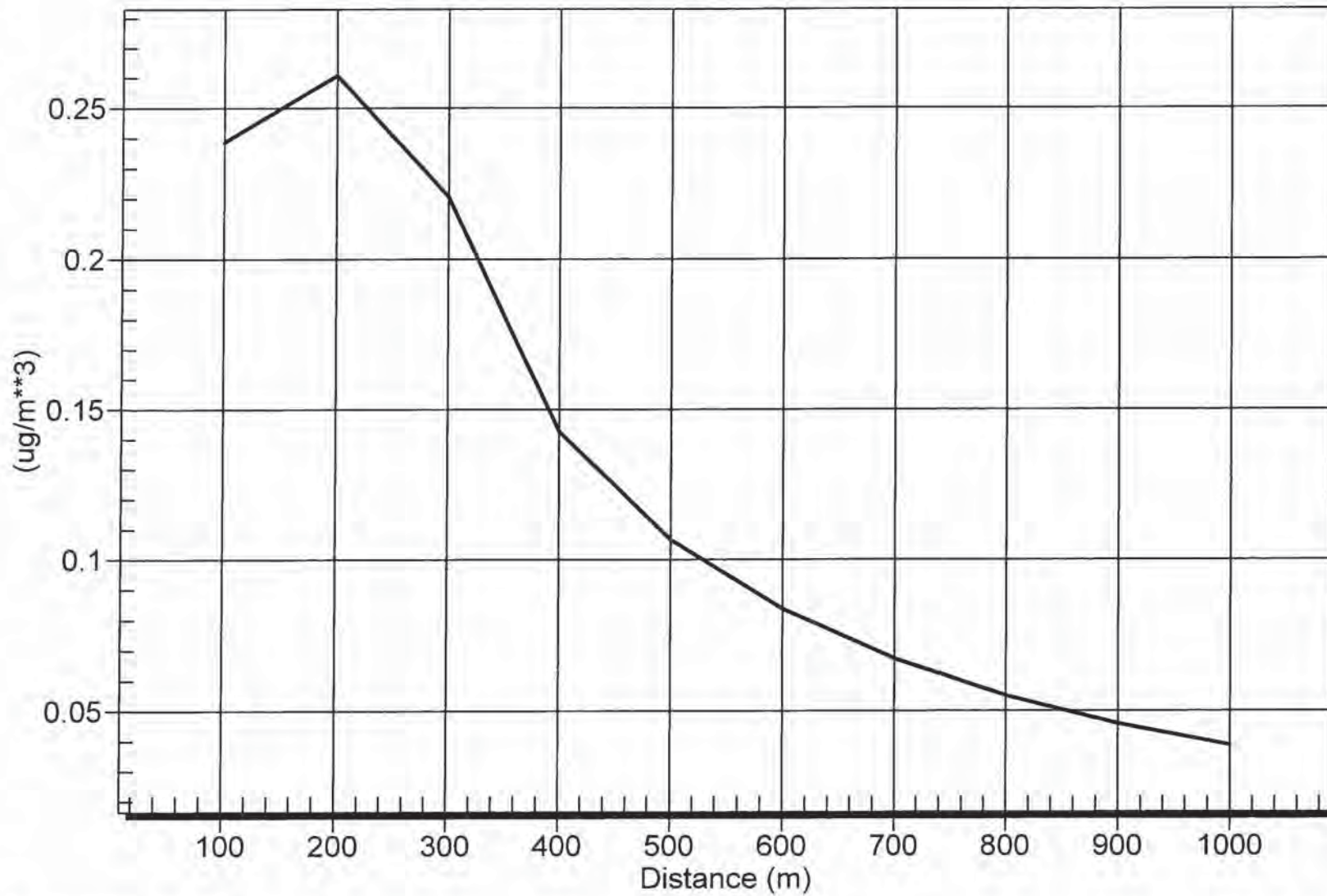
Fuel	Organic Gases	Methane	Nitrogen Oxides	Sulfur Oxides	Carbon Monoxide	Particulate Matter
Natural gas (mmscf)-2 Stroke (Lean-Burn) ICE	122.00	1,479.00	3,233.00	0.60	394.00	39.00
Natural gas (mmscf)-4 Stroke (Lean-Burn) ICE & micro turbine	120.00	1,275.00	4,162.00	0.60	323.00	----
Natural gas (mmscf)-4 Stroke (Rich-Burn) ICE	30.00	235.00	2,254.00	0.60	3,794.00	10.00
LPG, Propane, Butane (1000 gallons) All size ICE and Micro Turbine	83.00	-----	139.00	0.35	129.00	5.00
Diesel / Distillate Oil (1000 gallons) All size ICE and Micro Turbine	37.50	-----	469.00	7.10	102.00	33.50
Gasoline (1000 gallons) All size ICE and Micro Turbine	206.00	-----	102.00	5.30	3,940.00	6.50

Table 2: Rule 1110.2 Compliant Emission Factors (Stationary ICE)

Fuel	Nitrogen Oxides
Natural gas (mmscf)	238.70
LPG, Propane, Butane (1000 gallons)	15.30
Diesel / Distillate Oil (1000 gallons)	33.40
Gasoline (1000 gallons)	21.50

Automated Distance Vs. Concentration

Terrain Height = 0.00 m.



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K-82

06/17/11

11:23:11

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Area Source 1

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	AREA
EMISSION RATE (G/(S-M**2))	=	0.239560E-07
SOURCE HEIGHT (M)	=	3.0000
LENGTH OF LARGER SIDE (M)	=	457.0000
LENGTH OF SMALLER SIDE (M)	=	195.0000
RECEPTOR HEIGHT (M)	=	0.0000
URBAN/RURAL OPTION	=	RURAL

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS
ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**
2.

*** STABILITY CLASS 3 ONLY ***
*** ANEMOMETER HEIGHT WIND SPEED OF 2.50 M/S ONLY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR
FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
100.	0.2387	3	2.5	2.5	800.0	3.00	3.
200.	0.2608	3	2.5	2.5	800.0	3.00	0.
300.	0.2206	3	2.5	2.5	800.0	3.00	21.
400.	0.1426	3	2.5	2.5	800.0	3.00	14.
500.	0.1066	3	2.5	2.5	800.0	3.00	1.
600.	0.8369E-01	3	2.5	2.5	800.0	3.00	0.
700.	0.6725E-01	3	2.5	2.5	800.0	3.00	0.
800.	0.5503E-01	3	2.5	2.5	800.0	3.00	0.
900.	0.4578E-01	3	2.5	2.5	800.0	3.00	0.
1000.	0.3864E-01	3	2.5	2.5	800.0	3.00	0.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 100. M:

240. 0.2710 3 2.5 2.5 800.0 3.00 1.

 *** SCREEN DISCRETE DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR
 FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.1066	3	2.5	2.5	800.0	3.00	1.
740.	0.6193E-01	3	2.5	2.5	800.0	3.00	0.

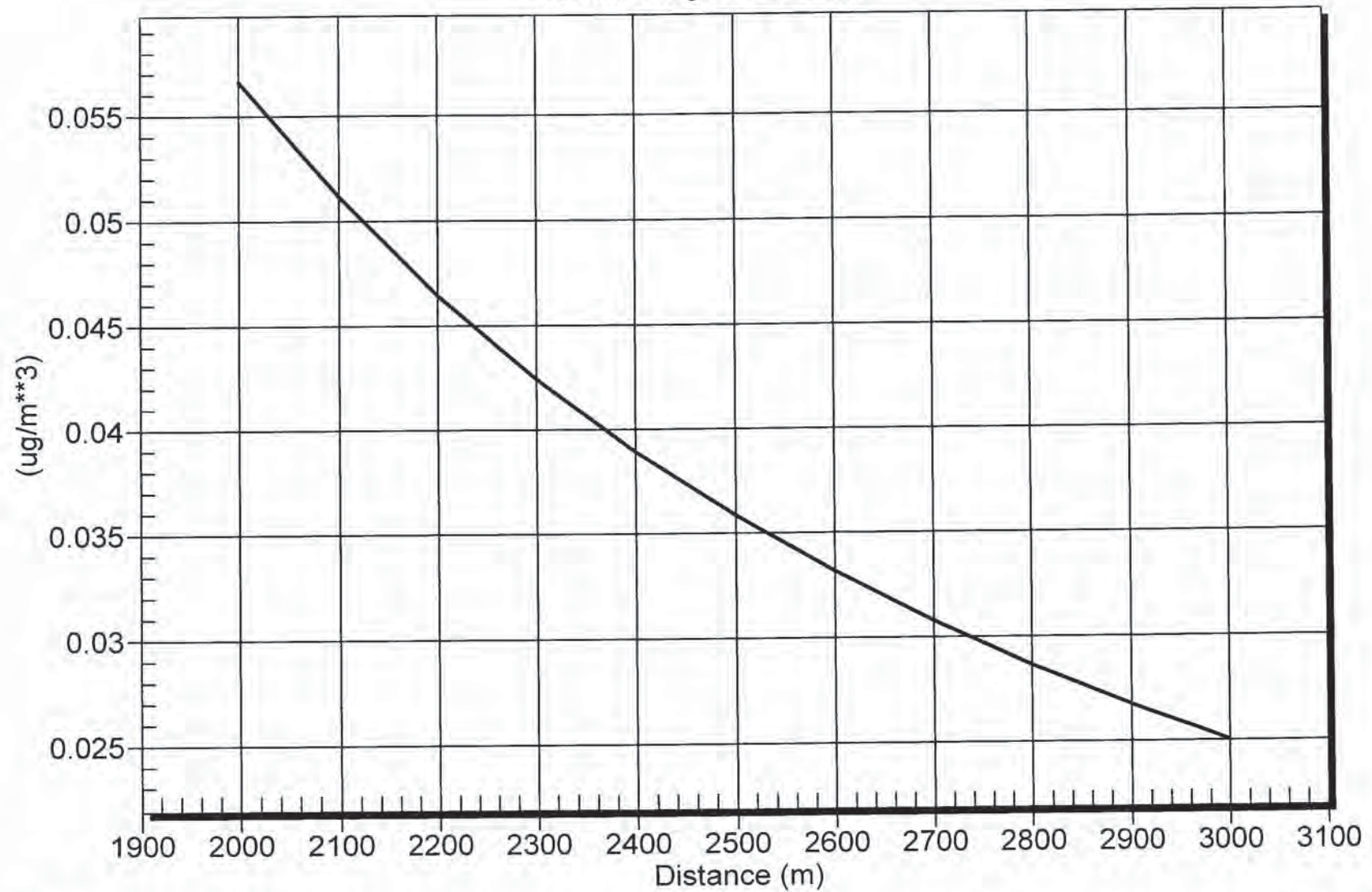
 *** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.2710	240.	0.

 ** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **

Automated Distance Vs. Concentration

Terrain Height = 0.00 m.



06/16/11

14:59:52

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Area Source 2

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	AREA
EMISSION RATE (G/(S-M**2))	=	0.239560E-07
SOURCE HEIGHT (M)	=	3.0000
LENGTH OF LARGER SIDE (M)	=	1847.0000
LENGTH OF SMALLER SIDE (M)	=	195.0000
RECEPTOR HEIGHT (M)	=	0.0000
URBAN/RURAL OPTION	=	RURAL

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**
2.

*** STABILITY CLASS 3 ONLY ***
*** ANEMOMETER HEIGHT WIND SPEED OF 2.50 M/S ONLY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR
FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
2000.	0.5663E-01	3	2.5	2.5	800.0	3.00	0.
2100.	0.5115E-01	3	2.5	2.5	800.0	3.00	0.
2200.	0.4644E-01	3	2.5	2.5	800.0	3.00	0.
2300.	0.4242E-01	3	2.5	2.5	800.0	3.00	0.
2400.	0.3891E-01	3	2.5	2.5	800.0	3.00	0.
2500.	0.3584E-01	3	2.5	2.5	800.0	3.00	0.
2600.	0.3315E-01	3	2.5	2.5	800.0	3.00	0.
2700.	0.3077E-01	3	2.5	2.5	800.0	3.00	0.
2800.	0.2864E-01	3	2.5	2.5	800.0	3.00	0.
2900.	0.2674E-01	3	2.5	2.5	800.0	3.00	0.
3000.	0.2503E-01	3	2.5	2.5	800.0	3.00	0.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 2000. M:
 2000. 0.5663E-01 3 2.5 2.5 800.0 3.00 0.

 *** SCREEN DISCRETE DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR
 FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
1900.	0.6317E-01	3	2.5	2.5	800.0	3.00	0.
2323.	0.4157E-01	3	2.5	2.5	800.0	3.00	0.

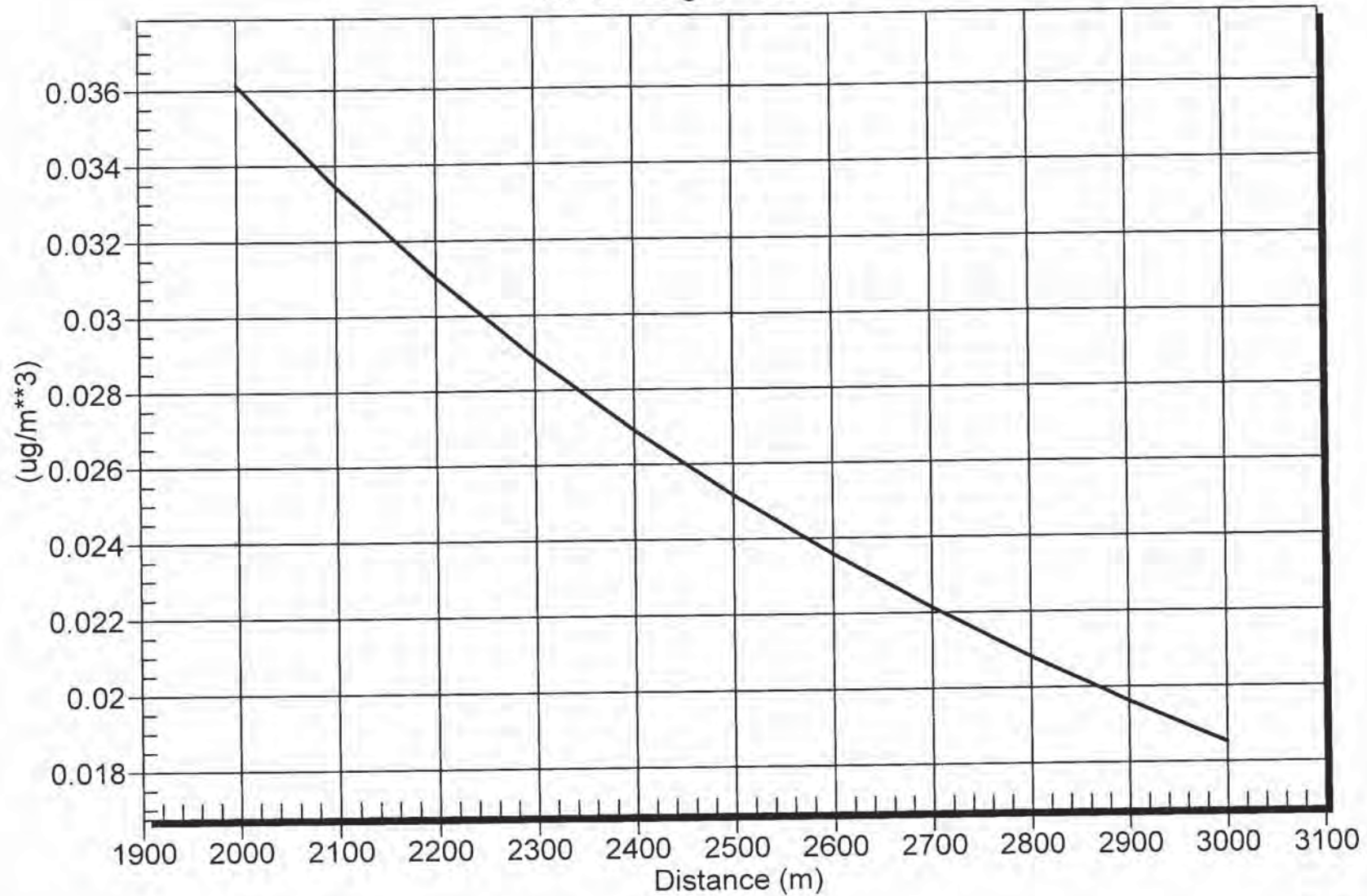
 *** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.6317E-01	1900.	0.

 ** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **

Automated Distance Vs. Concentration

Terrain Height = 0.00 m.



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06/16/11

14:52:34

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Area Source 3

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	AREA
EMISSION RATE (G/(S-M**2))	=	0.239560E-07
SOURCE HEIGHT (M)	=	3.0000
LENGTH OF LARGER SIDE (M)	=	778.0000
LENGTH OF SMALLER SIDE (M)	=	389.0000
RECEPTOR HEIGHT (M)	=	0.0000
URBAN/RURAL OPTION	=	RURAL

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS
ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**
2.

*** STABILITY CLASS 3 ONLY ***
*** ANEMOMETER HEIGHT WIND SPEED OF 2.50 M/S ONLY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR
FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
2000.	0.3614E-01	3	2.5	2.5	800.0	3.00	0.
2100.	0.3344E-01	3	2.5	2.5	800.0	3.00	0.
2200.	0.3102E-01	3	2.5	2.5	800.0	3.00	0.
2300.	0.2886E-01	3	2.5	2.5	800.0	3.00	0.
2400.	0.2691E-01	3	2.5	2.5	800.0	3.00	0.
2500.	0.2516E-01	3	2.5	2.5	800.0	3.00	0.
2600.	0.2357E-01	3	2.5	2.5	800.0	3.00	0.
2700.	0.2213E-01	3	2.5	2.5	800.0	3.00	0.
2800.	0.2081E-01	3	2.5	2.5	800.0	3.00	0.
2900.	0.1962E-01	3	2.5	2.5	800.0	3.00	0.
3000.	0.1852E-01	3	2.5	2.5	800.0	3.00	0.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 2000. M:
 2000. 0.3614E-01 3 2.5 2.5 800.0 3.00 0.

 *** SCREEN DISCRETE DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR
 FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
2000.	0.3614E-01	3	2.5	2.5	800.0	3.00	0.
2713.	0.2195E-01	3	2.5	2.5	800.0	3.00	0.

 *** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.3614E-01	2000.	0.

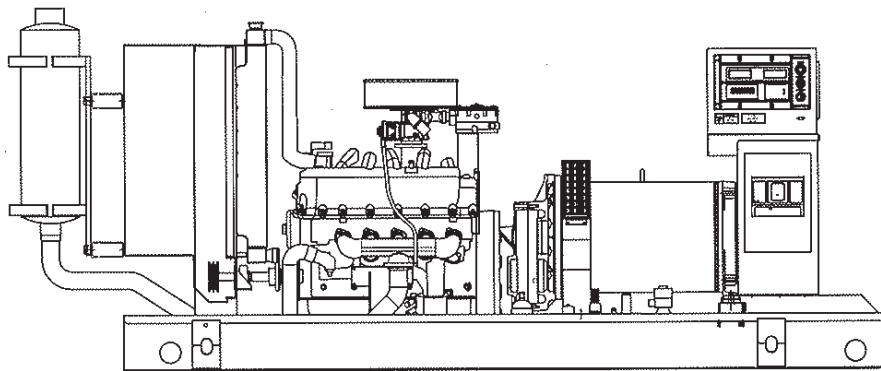
 ** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **

SG150

Liquid Cooled Gas Engine Generator Sets

Standby Power Rating

150KW 60 Hz / 150KVA 50 Hz



Power Matched

GENERAC 6.8GN ENGINE

Naturally Aspirated - Gear Driven
Meets EPA Emission Regulations

FEATURES

- **INNOVATIVE DESIGN & PROTOTYPE TESTING** are key components of GENERAC'S success in "IMPROVING POWER BY DESIGN." But it doesn't stop there. Total commitment to component testing, reliability testing, environmental testing, destruction and life testing, plus testing to applicable CSA, NEMA, EGSA, and other standards, allows you to choose GENERAC POWER SYSTEMS with the confidence that these systems will provide superior performance.
- **TEST CRITERIA:**
 - ✓ PROTOTYPE TESTED
 - ✓ SYSTEM TORSIONAL TESTED
 - ✓ ELECTRO-MAGNETIC INTERFERENCE
 - ✓ NEMA MG1 EVALUATION
 - ✓ MOTOR STARTING ABILITY
 - ✓ SHORT CIRCUIT TESTING
 - ✓ UL2200 COMPLIANCE AVAILABLE
- **SOLID-STATE, DIGITAL, FREQUENCY COMPENSATED VOLTAGE REGULATION.** This state-of-the-art power maximizing regulation system is standard on all Generac models. It provides optimized FAST RESPONSE to changing load conditions and MAXIMUM MOTOR STARTING CAPABILITY by electronically torque-matching the surge loads to the engine.
- **SINGLE SOURCE SERVICE RESPONSE** from Generac's dealer network provides parts and service know-how for the entire unit, from the engine to the smallest electronic component. You are never on your own when you own a GENERAC POWER SYSTEM.
- **GENERAC TRANSFER SWITCHES, SWITCHGEAR AND ACCESSORIES.** Long life and reliability is synonymous with GENERAC POWER SYSTEMS. One reason for this confidence is that the GENERAC product line includes its own transfer systems, accessories, switchgear and controls for total system compatibility.

GENERAC®

APPLICATION & ENGINEERING DATA

SG150

GENERATOR SPECIFICATIONS

TYPE	Synchronous
ROTOR INSULATION.....	Class H
STATOR INSULATION.....	Class H
TOTAL HARMONIC DISTORTION.....	<3.5%
TELEPHONE INTERFERENCE FACTOR (TIF)	<50
ALTERNATOR OUTPUT LEADS 3 PHASE	4 wire
BEARINGS	Sealed Ball
COUPLING.....	Gear Drive
LOAD CAPACITY (STANDBY RATING).....	150 kW
EXCITATION SYSTEM.....	PMG or Brushless

NOTE: Emergency loading in compliance with NFPA 99, NFPA 110. Generator rating and performance in accordance with ISO8528-5, BS5514, SAE J1349, ISO3046, and DIN6271 standards.

VOLTAGE REGULATOR

TYPE	Full Digital
SENSING	3 Phase
REGULATION.....	± 1/4%
FEATURES.....	Built into H-100 Control Panel V/F Adjustable Adjustable Voltage and Gain

GENERATOR FEATURES

- ☐ Revolving field heavy duty generator
- ☐ Quiet drive coupling
- ☐ Operating temperature rise 120 °C above a 40 °C ambient
- ☐ Insulation is Class H rated at 150 °C rise
- ☐ All prototype models have passed three phase short circuit testing

CONTROL PANEL FEATURES

- ☐ TWO FOUR LINE LCD DISPLAYS READ:
 - Voltage (all phases)
 - Power factor
 - kVAR
 - Engine speed
 - Run hours
 - Fault history
 - Coolant temperature
 - Low oil pressure shutdown
 - Overvoltage
 - Low coolant level
 - Not in auto position (flashing light)
 - ATS selection
 - Current (all phases)
 - kW
 - Transfer switch status
 - Low fuel pressure
 - Service reminders
 - Oil pressure
 - Time and date
 - High coolant temperature shutdown
 - Overspeed
 - Low coolant level
 - Exercise speed
- ☐ INTERNAL FUNCTIONS:
 - IT function for alternator protection from line to neutral and line to line short circuits
 - Emergency stop
 - Programmable auto crank function
 - 2 wire start for any transfer switch
 - Communicates with the Generac HTS transfer switch
 - Built-in 7 day exerciser
 - Adjustable engine speed at exerciser
 - RS232 port for GenLink® control
 - RS485 port remote communication
 - Canbus addressable
 - Governor controller and voltage regulator are built into the master control board
 - Temperature range -40 °C to 70 °C

ENGINE SPECIFICATIONS

MAKE	Generac
MODEL.....	V Type
CYLINDERS.....	10
DISPLACEMENT.....	6.8 Liter
BORE	3.55
STROKE.....	4.17
COMPRESSION RATIO.....	9:1
INTAKE AIR SYSTEM.....	Naturally Aspirated
VALVE SEATS	Hardened
LIFTER TYPE.....	Hydraulic

GOVERNOR SPECIFICATIONS

TYPE	Electronic
FREQUENCY REGULATION.....	Isochronous
STEADY STATE REGULATION.....	± 0.25%

All functions are factory preset.
Individual parameter adjustments can be made via GenLink®.

ENGINE LUBRICATION SYSTEM

OIL PUMP	Gear
OIL FILTER.....	Full flow spin-on cartridge
CRANKCASE CAPACITY.....	6 Quarts

ENGINE COOLING SYSTEM

TYPE	Closed
WATER PUMP.....	Belt driven
NUMBER OF FAN BLADES.....	7
FAN DIAMETER.....	23 inches
FAN MODE.....	Puller
COOLANT HEATER.....	1500W 120V

FUEL SYSTEM

FUEL TYPE.....	Natural gas, propane vapor
CARBURETOR.....	Down Draft
SECONDARY FUEL REGULATOR.....	Standard
FUEL SHUT OFF SOLENOID	Standard
OPERATING FUEL PRESSURE.....	11" - 14" H ₂ O

ELECTRICAL SYSTEM

BATTERY CHARGE ALTERNATOR.....	12V 30 Amp
STATIC BATTERY CHARGER	12V 2 Amp
RECOMMENDED BATTERY	Group 24F, 525CCA
SYSTEM VOLTAGE.....	12 Volts

Rating definitions - Standby: Applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. (All ratings in accordance with BS5514, ISO3046 and DIN6271). (All ratings in accordance with BS5514, ISO3046, ISO8528 and DIN6271).

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OPERATING DATA

		STANDBY			
GENERATOR OUTPUT VOLTAGE/KW-60Hz		<u>N.G.</u>	<u>AMP</u>	<u>LP</u>	<u>AMP</u>
120/240V, 1-phase, 1.0 pf	NOTE: Consult your Generac dealer for additional voltages.	136	567	144	600
120/208V, 3-phase, 0.8 pf		142	493	150	520
120/240V, 3-phase, 0.8 pf		142	427	150	451
277/480V, 3-phase, 0.8 pf		142	214	150	225
600V, 3-phase, 0.8 pf		142	171	150	180
GENERATOR OUTPUT VOLTAGE/KVA-50Hz		<u>N.G.</u>	<u>AMP</u>	<u>LP</u>	<u>AMP</u>
110/220V, 1-phase, 1.0 pf	NOTE: Consult your Generac dealer for additional voltages.	114	518	120	545
115/200V, 3-phase, 0.8 pf		142	512	150	433
100/200V, 3-phase, 0.8 pf		142	512	150	433
231/400V, 3-phase, 0.8 pf		142	256	150	216
MOTOR STARTING		<u>240V</u>		<u>480V</u>	
Maximum at 35% instantaneous voltage dip with standard alternator—50/60 Hz		290/348 KVA		387/464 KVA	
FUEL		<u>N.G. ft³/hr</u>		<u>Propane gal/hr</u>	
Fuel consumption—60 Hz—100% Load*		2061		22.57	
Fuel consumption—50 Hz—100% Load*		1711		18.73	
COOLING					
Coolant capacity	System lit. (US gal.)	23.7 (6.3)			
	Engine lit. (US gal.)	12.3 (3.3)			
	Radiator lit. (US gal.)	11.4 (3.0)			
Coolant flow/min.	60 Hz lit. (US gal.)	262 (69)			
Heat rejection to coolant	BTU/hr.	450,000			
Inlet air	60 Hz m³/min. (cfm)	170 (6000)			
Maximum operating air temperature***	°C (°F)	50 (122)			
Maximum air temperature onto radiator***	°C (°F)	60 (140)			
COMBUSTION AIR REQUIREMENTS					
Flow at rated power	60 Hz m³/min. (cfm)	12.7 (447)			
EXHAUST					
Exhaust flow at rated output	60 Hz m³/min. (cfm)	43 (1507)			
Max. recommended back pressure	Kpa (Hg)	10 (2.9)			
Exhaust temp. at rated output	°C (°F)	768 (1350)			
Exhaust outlet size	(flange)	2.5 I.D.			
ENGINE					
Rated RPM	60/50 Hz	3600/3000			
HP at rated KW**	60/50 Hz	224/186			
Piston speed	60 Hz m/min. (ft./min.)	761 (2499)			
	50 Hz m/min. (ft./min.)	634 (2081)			
BMEP	60 Hz	118.5			
DERATION FACTORS					
Temperature	0.3% for every 10°C above - °C	25			
	1.65% for every 10°F above - °F	77			
Altitude	1.0% for every 100 m above - m	183			
	3.0% for every 1000 ft. above - ft.	600			

* Refer to "Emissions Data Sheets" for maximum fuel flow for EPA and SCAQMD permitting purposes.

** Refer to "Emissions Data Sheets" for maximum bHP for EPA and SCAQMD permitting purposes.

*** Values given are maximum temperatures to which power adjustments can be applied. Consult your Generac Power Systems representative if operating conditions exceed these maximums.

STANDARD ENGINE & SAFETY FEATURES

SG150

- High Coolant Temperature Automatic Shutdown
- Low Coolant Level Automatic Shutdown
- Low Oil Pressure Automatic Shutdown
- Overspeed Automatic Shutdown (Solid-state)
- Crank Limiter (Solid-state)
- Oil Drain Extension
- Radiator Drain Extension
- Factory-Installed Cool Flow Radiator
- Closed Coolant Recovery System
- UV/Ozone Resistant Hoses
- Rubber-Booted Engine Electrical Connections
- Isochronous Governor

- Fuel Lockoff Solenoid
- Secondary Fuel Regulator (N.G. and L.P.)
- Stainless Steel Flexible Exhaust Connection
- Battery Charge Alternator
- Battery Cables
- Battery Tray
- Vibration Isolation of Unit to Mounting Base
- 24 Volt, Solenoid-Activated Starter Motor
- Air Cleaner
- Fan Guard
- Control Console

OPTIONS

■ OPTIONAL COOLING SYSTEM ACCESSORIES

- Radiator Duct Adapter

■ OPTIONAL FUEL ACCESSORIES

- Flexible Fuel Lines
- Liquid Withdrawal LPG

■ OPTIONAL ELECTRICAL ACCESSORIES

- Battery, (2) - 12 Volt, 135 A.H., 4DLT
- Battery, (2) - 12 Volt, 225 A.H., 8D
- Battery Heater
- 2A Battery Charger
- 10A Dual Rate Battery Charger

■ OPTIONAL ALTERNATOR ACCESSORIES

- Alternator Upsizing
- Alternator Strip Heater
- Alternator Tropicalization
- Main Line Circuit Breaker

■ CONTROL CONSOLE OPTIONS

- Digital Controller H100 *see specification 0172110SBY*

■ ADDITIONAL OPTIONAL EQUIPMENT

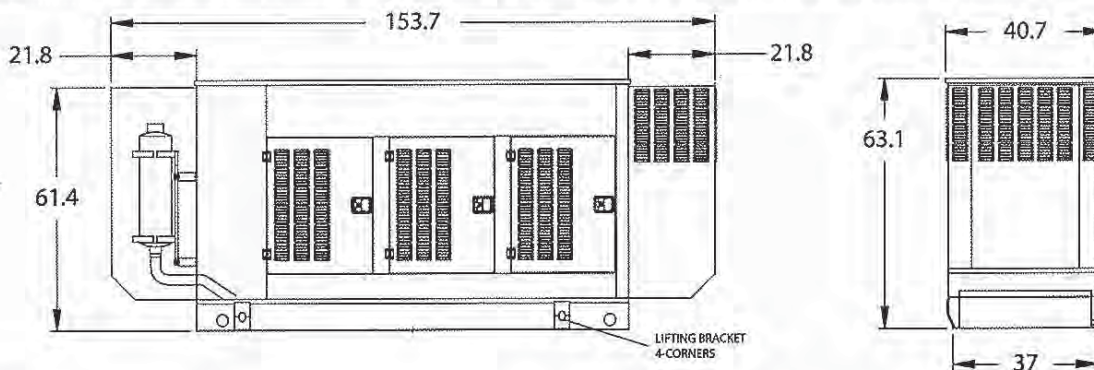
- Automatic Transfer Switch (GTS or HTS)
- 21 Light Remote Annunciator
- Remote Relay Panels
- Unit Vibration Isolators
- Oil Make-Up System
- Oil Heater
- 5 Year Warranties
- Export Boxing
- GenLink® Communications Software

■ OPTIONAL ENCLOSURES

- Weather Protective
- Sound Attenuated
- Aluminum and Stainless Steel
- Enclosed Muffler

Distributed by:

Design and specifications subject to change without notice. Dimensions shown are approximate. Contact your Generac dealer for certified drawings. DO NOT USE THESE DIMENSIONS FOR INSTALLATION PURPOSES.



UNITS: INCHES

GENERAC

Generac Power Systems, Inc. • S45 W29290 HWY. 59, Waukesha, WI 53189 • generac.com

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GENERAC[®]

POWER SYSTEMS, INC.

STATEMENT OF EXHAUST EMISSIONS CATALYST-EQUIPPED GASEOUS FUELED GENERATOR

The measured emission values provided here are proprietary to Generac and its' authorized dealers. This information may only be disseminated upon request, to regulatory governmental bodies for emissions permitting purposes or to specifying organizations as submittal data when expressly required by project specifications, and shall remain confidential and not open to public viewing. This information is not intended for compilation or sales purposes and may not be used as such, nor may it be reproduced without the expressed written permission of Generac Power Systems, Inc. The data provided shall not be meant to include information made public by Generac.

Generator Model:	QT150A	kW _e Rating:	150
Engine Size:	6.8L	HP at Rated kW _e :	254
Aspiration:	Naturally Aspirated	Engine Speed:	3600
Fuel Type:	LP Vapor	SCAQMD CEP#:	483767

Unit equipped with Generac 3-way catalyst and air/fuel ratio control system.

Emissions based on Rated kW_e of specific models.

CO	HC	NOx	NOx + HC	
0.80	0.10	0.12	0.22	Grams/kW-hr
0.60	0.08	0.09	0.17	Grams/bhp-hr

- The stated values are actual exhaust emission test measurements obtained from a unit representative of the generator type and engine described above.
- Values are official data of record as submitted to regulatory agencies for certification purposes. Testing was conducted in accordance with prevailing EPA & CARB protocols, which are typically accepted by SCAQMD and other regional authorities.
- Data may be based on testing performed by either the engine supplier or Generac Power Systems.
- No emission values provided above are to be construed as guarantees of emission levels for any given Generac generator unit.
- Generac Power Systems reserves the right to revise this information without prior notice.
- Consult state and local regulatory agencies for specific permitting requirements.
- The emission performance data supplied by the equipment manufacturer is only one element required toward completion of the permitting and installation process. State and local regulations may vary on a case-by-case basis and must be consulted by the permit applicant/equipment owner prior to equipment purchase or installation. The data supplied herein by Generac Power Systems cannot be construed as a guarantee of installability of the generating set.

INDUSTRIAL SALES
P.O. BOX 8 WAUKESHA, WI 53187 262-544-4800 FAX 262-544-4854

0179320SSD 9/08

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APPENDIX C

Speciation Tables for DPM and LPG

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South Coast Air Quality Management District



Supplemental Instructions

Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxics Emissions Inventory

Annual Emissions Reporting Program

January 2010

Reporting Procedures for AB2588 Facilities Reporting their Quadrennial Air Toxic Emission Inventory in the Annual Emission Reporting Program

Table B-2: DEFAULT EF FOR DIESEL / DISTILLATE OIL FUEL COMBUSTION (LB / 1000 GAL)

SOURCE: External Combustion Equipment (Boiler, Oven, Dryer, Furnace, Heater, Afterburner)

TAC			
Code	POLLUTANT	CAS NO.	ALL SIZES
2	Benzene	71432	0.0044
4	1,3-Butadiene	106990	0.0148
5	Cadmium	7440439	0.0015
12	Formaldehyde	50000	0.3506
13	Hexavalent chromium	18540299	0.0001
14	Arsenic	7440382	0.0016
15	Lead	7439921	0.0083
17	Nickel	7440020	0.0039
19	Total PAHs (excluding Naphthalene)	1151	0.0445
19	Naphthalene	91203	0.0053
29	Acetaldehyde	75070	0.3506
30	Acrolein	107028	0.3506
32	Ammonia*	7664417	2.9000
36	Copper	7440508	0.0041
40	Ethyl Benzene	100414	0.0002
44	Hexane	110543	0.0035
46	Hydrogen chloride	7647010	0.1863
49	Manganese	7439965	0.0031
50	Mercury	7439976	0.0020
64	Selenium	7782492	0.0022
68	Toluene	108883	0.0044
70	Xylenes	1330207	0.0016

SOURCE: Stationary and Portable Internal Combustion Engines (ICE)

TAC			
Code	POLLUTANT	CAS NO.	ALL SIZES
2	Benzene	71432	0.1863
4	1,3-Butadiene	106990	0.2174
5	Cadmium	7440439	0.0015
12	Formaldehyde	50000	1.7261
13	Hexavalent chromium	18540299	0.0001
14	Arsenic	7440382	0.0016
15	Lead	7439921	0.0083
17	Nickel	7440020	0.0039
19	Naphthalene	91203	0.0197
19	PAHs (excluding Naphthalene)	1151	0.0362
29	Acetaldehyde	75070	0.7833
30	Acrolein	107028	0.0339
32	Ammonia*	7664417	2.9000
36	Copper	7440508	0.0041
40	Ethyl Benzene	100414	0.0109
44	Hexane	110543	0.0269
46	Hydrogen Chloride	7647010	0.1863
49	Manganese	7439965	0.0031
50	Mercury	7439976	0.0020
64	Selenium	7782492	0.0022
68	Toluene	108883	0.1054
70	Xylenes	1330207	0.0424
72	Diesel exhaust particulates	9901	33.5000

SOURCE: Turbines

TAC			
Code	POLLUTANT	CAS NO.	ALL SIZES
2	Benzene	71432	0.1863
4	1,3-Butadiene	106990	0.2174
5	Cadmium	7440439	0.0015
12	Formaldehyde	50000	1.7261
13	Hexavalent chromium	18540299	0.0001
14	Arsenic	7440382	0.0016
15	Lead	7439921	0.0083
17	Nickel	7440020	0.0039
19	Naphthalene	91203	0.0197
19	PAHs (excluding Naphthalene)	1151	0.0362
29	Acetaldehyde	75070	0.7833
30	Acrolein	107028	0.0339
32	Ammonia*	7664417	2.9000
36	Copper	7440508	0.0041
40	Ethyl Benzene	100414	0.0109
44	Hexane	110543	0.0269
46	Hydrogen Chloride	7647010	0.1863
49	Manganese	7439965	0.0031
50	Mercury	7439976	0.0020
64	Selenium	7782492	0.0022
68	Toluene	108883	0.1054
70	Xylenes	1330207	0.0424

*This value corresponds to equipment with SNCR, for equipment with SCR substitute listed value by 1.4 lbs/1000 gal, and for equipment without SNCR or SCR by 0.8 lbs/1000 gal.

Reporting Procedures for AB2588 Facilities Reporting their Quadrennial Air Toxic Emission Inventory in the Annual Emission Reporting Program

Table B-3: DEFAULT EF FOR LPG, BUTANE, OR PROPANE COMBUSTION (LB / 1000 GAL)

SOURCE: External Combustion Equipment (Boiler, Oven, Dryer, Furnace, Heater, Afterburner)

TAC Code	POLLUTANT	CAS NO.	<10 MMBTU/HR	10-100 MMBTU/HR	>100 MMBTU/HR
2	Benzene	71432	0.00071	0.00051	0.00015
12	Formaldehyde	50000	0.00151	0.00109	0.00032
19	PAHs (excluding Naphthalene)	1151	0.00001	0.00001	0.00001
19	Naphthalene	91203	0.00003	0.00003	0.00003
29	Acetaldehyde	75070	0.00038	0.00028	0.00008
30	Acrolein	107028	0.00024	0.00024	0.00007
32	Ammonia	7664417	0.30000	0.30000	0.30000
40	Ethyl benzene	100414	0.00084	0.00061	0.00018
44	Hexane	110543	0.00056	0.00041	0.00012
68	Toluene	108883	0.00325	0.00235	0.00069
70	Xylene	1330207	0.00241	0.00175	0.00051

SOURCE: Turbine

TAC Code	POLLUTANT	CAS NO.	ALL SIZES
2	Benzene	71432	0.00109
4	1,3-Butadiene	106990	0.0000389
12	Formaldehyde	50000	0.0643
19	Naphthalene	91203	0.000118
19	PAHs (excluding Naphthalene)	1151	0.0000815
29	Acetaldehyde	75070	0.00362
30	Acrolein	107028	0.000579
32	Ammonia	7664417	0.30000
40	Ethylbenzene	100414	0.00290
62	Propylene oxide	75569	0.00262
68	Toluene	108883	0.0118
70	Xylene	1330207	0.00579

(Continued)

Reporting Procedures for AB2588 Facilities Reporting their Quadrennial Air Toxic Emission Inventory in
the Annual Emission Reporting Program

Table B-3: DEFAULT EF FOR LPG, BUTANE, OR PROPANE COMBUSTION (LB / 1000 GAL)
(continued)

SOURCE: Stationary and Portable Internal Combustion Engines (ICE)

TAC Code	POLLUTANT	CAS NO.	2 Stroke-Lean Burn	4 Stroke-Lean Burn	4 Stroke-Rich Burn
2	Benzene	71432	0.17757	0.0398	0.143
4	1,3-Butadiene	106990	0.0742	0.0242	0.06
6	Carbon Tetrachloride	56235	0.00549	0.00332	0.0016
9	Ethylene Dibromide	106934	0.00664	0.00401	0.00193
10	1,2-Dichloroethane	107062	0.00382	0.00214	0.00102
12	Formaldehyde	50000	5.00	4.78	1.86
16	Methylene Chloride	75092	0.0133	0.00181	0.00373
19	2-Methylnaphthalene	91576	0.00194	0.003	0
19	Acenaphthene	83329	0.000120	0.000113	0
19	Acenaphthylene	208968	0.000287	0.0005	0
19	Anthracene	120127	0.0000650	0	0
19	Benz(a)anthracene	56553	0.0000304	0	0
19	Benzo(a)pyrene	50328	0.00000514	0	0
19	Benzo(b)fluoranthene	205992	0.00000770	0.000015	0
19	Benzo(e)pyrene	192972	0.00000212	0.0000376	0
19	Benzo(g,h,i)perylene	191242	0.00000224	0.0000375	0
19	Benzo(k)fluoranthene	207089	0.00000386	0	0
19	Chrysene	218019	0.0000608	0.0000627	0
19	Fluoranthene	206440	0.0000327	0.0001	0
19	Fluorene	86737	0.000153	0.000513	0
19	Indeno(1,2,3-c,d)pyrene	193395	0.00000899	0	0
19	Naphthalene	91203	0.00872	0.00673	0.00879
19	Perylene	198550	0.00000045	0	0
19	Phenanthrene	85018	0.000319	0.000941	0
19	Pyrene	129000	0.0000529	0.000123	0
21	Vinyl Chloride	75014	0.00224	0.00135	0.00065
24	1,1,2,2-Tetrachloroethane	79345	0.006	0.00362	0.00229
25	1,1,2-Trichloroethane	79005	0.00477	0.00288	0.00138
26	1,2,4-Trimethylbenzene	95636	0.01	0.00129	0
27	1,2-Dichloropropane	78875	0.00404	0.00243	0.00118
28	1,3-Dichloropropene	542756	0.00396	0.00239	0.00115
29	Acetaldehyde	75070	0.702	0.757	0.252
30	Acrolein	107028	0.704	0.465	0.238
32	Ammonia	7664417	0.30	0.30	0.30
35	Chloroform	67663	0.00426	0.00258	0.00124
40	Ethylbenzene	100414	0.00977	0.00359	0.00224
44	n-Hexane	110543	0.0403	0.10	0
51	Methanol	67561	0.224	0.226	0.277
66	Styrene	100425	0.00496	0.00214	0.00108
68	Toluene	108883	0.0872	0.0369	0.0505
70	Xylene	1330207	0.0243	0.0167	0.0176

APPENDIX D

BAAQMD Diesel Risk and Hazard Distance Adjustment Multiplier Table

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Cancer Risk and Chronic Hazard Index Distance Adjustment Multiplier for Diesel IC Engines

Distance, meters	Distance Adjustment Multiplier
25	0.85
30	0.73
35	0.64
40	0.58
50	0.50
60	0.41
70	0.31
80	0.28
90	0.25
100	0.22
110	0.18
120	0.16
130	0.15
140	0.14
150	0.12
160	0.10
180	0.09
200	0.08
220	0.07
240	0.06
260	0.05
280	0.04

How to Use the Cancer Risk and Chronic Hazard Index Distance Adjustment Multiplier for Diesel Internal Combustion (IC) Engines

1. Get the facility diesel IC engine cancer risk or chronic hazard index from table only for facilities where the HRA source is listed as "diesel engine screening value." If the distance to the nearest receptor is less than 25 meters, the distance adjustment multiplier table cannot be used and an air dispersion modeling analysis using site-specific information is needed to refine the cancer risk or chronic hazard index estimate.
2. Determine the shortest distance from each diesel IC engine to the nearest receptor. Select the shortest distance to receptor found.
3. From the table, locate the shortest distance to the receptor. If the shortest distance to the receptor falls between two distance values, select the multiplier corresponding to the smaller distance. For distances beyond 280 meters use the multiplier 0.04.
4. Multiply the cancer risk or the chronic hazard index (found in step 1) by the multiplier found in step 3. The resulting product is the adjusted cancer risk in a million or adjusted chronic hazard index for the diesel IC engines at the facility.
5. If facility has sources other than diesel IC engines, add the result from step 4 to the facility cancer risk or chronic hazard index, excluding DICE from the health risk table (kml file). The final value is the health risk for the facility.

Notes on creation of the chart:

1. Ground-level concentrations for a unit emission rate were determined using the AERMOD model
2. Meteorological data sets used include Concord, Hunters Point, Oakland, Petaluma, UC Richmond and San Jose.
3. Land use based on Auer Analysis around met station.
4. Assumed no complex terrain and no flagpole receptors.
5. Assumed the exhaust exits vertically and does not have a fixed cap.
6. Stack exhaust parameters used: 6-feet high, 3-inch diameter, 50 m/s exit velocity, 620°K (656 °F).
7. Over two dozen building configurations were modeled to address building downwash.
8. 4104 receptors modeled, located along 72 radials, 5 degrees apart and 57 rings spaced 5 meters apart.
9. Cancer Risk calculation includes the following parameters:
 - Breathing Rate of 302 L/kg-day
 - Inhalation Cancer Potency Factor of 1.1 (mg/kg-day)⁻¹
 - Residential Receptor Adjustment Factor (age sensitivity) of 1.7
10. For each meteorological data set, the highest results for each building dimension and distance to receptor combination was used to calculate the cancer risk.
11. The table results above represent the highest calculated cancer risk from each of the six meteorological data sets.

APPENDIX E

Personal Communications with BAAQMD and CARB Regarding Methodology and Approach

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This form is required when users request stationary source data from BAAQMD. This form is to be used with the BAAQMD's Google Earth stationary source screening tables. For guidance on conducting a risk & hazard screening, including for roadways & freeways, refer to the District's Risk & Hazard Analysis flow chart.

For guidance on conducting a risk & hazard screening, including for roadways & freeways, refer to the District's Risk & Hazard Analysis flow chart. Also see the District's Recommended Methods for Screening and Modeling Local Risks and Hazards document.

Contact Name:	Valerie Chevy Geier
Affiliation:	Orion Environmental Associates
Phone:	510.644.2535
Email:	valerie@orionenvironment.com
Project Name: San Antonio Backup Pipeline	
Address:	Extends along Calaveras Road for 2.2
City:	Sunol
County:	Alameda
Type (residential, commercial, mixed use, industrial, etc.):	Infrastructure - Water Pipeline, Pump Station
Project size (# of units, or building square feet):	7,000-foot long pipeline; discharge facility, chemical facility (incl. emergency generator); slurry cut-off wall, pump station, dewatering
Comments:	

1. Complete all the contact and project information requested in Table A. Incomplete forms will not be processed. Please include a project site map.
2. Download and install the free program Google Earth, <http://www.google.com/earth/download/ge/>, and then download the county specific Google Earth stationary source application files (dated 1/27/2013) from the District's website, <http://www.baaamd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx>. The small points on the map represent stationary sources permitted by the District (Map A on right). These permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc. Click on a point to view the source's Information Table, including the name, location, and preliminary estimated cancer risk, hazard index, and PM2.5 concentration.
3. Find the project site in Google Earth by inputting the site's address in the Google Earth search box.
4. Using the Google Earth ruler function, measure the distance in feet between the project's fence line and the stationary source's fence line for all the sources that are within 1,000 feet of the project's fence line. Verify that the location of the source on the map matches with the source's address in the information table, by using the Google Earth address search box to confirm that the source is within 1,000 feet of the project. Please report any mapping errors to the District (District contact information in Step 8).
5. If the stationary source is within 1,000 feet of the project's fence line and the stationary source's information table does not list the cancer risk, hazard index, and PM2.5 concentration, and instead says to "Contact District Staff", list the stationary source information in Table B Section 1 below.
6. Email this completed form to District staff (Step 8). District staff will provide the most recent risk, hazard, and/or PM2.5 data that is available for the source(s). If this information or data is not available, a public records request may be required if the requestor needs source specific emissions data. Staff will notify you if this is necessary. Staff will respond to inquiries within three weeks.
7. Notify staff if you have previously submitted a public information records request for any sources listed in Table B Section 1.
8. **Submit forms, maps, and questions to Alison Kirk at 415-749-5169, or akirk@baaamd.gov**

20248

Alameda_2010_schema:FID	504
Alameda_2010_schema:Plantfio	20248
Alameda_2010_schema:Plant	Call Group Properties
Alameda_2010_schema:Address	1901 HARRISON STREET
Alameda_2010_schema:City	Oakland
Alameda_2010_schema:UTM_East	604059
Alameda_2010_schema:UTM_North	4184833
Alameda_2010_schema:Role	Contact District Staff
Alameda_2010_schema:Hazard	Contact District Staff
Alameda_2010_schema:PM25	Contact District Staff

Directions [To here](#) [From here](#)

1801 Harrison St, Oakland, CA 94612

Table B Section 2: BAAQMD returns form with additional information in these columns as needed

Distance from Receptor (feet)	Plant # or Gas Dispensary #	Facility Name	Street Address	Screening Level Cancer Risk (1)	Screening Level Hazard Index (1)	Screening Level PM2.5 (1)	Permit #s (2)	Source #s (2)	Fuel Code (3)	Type of Source(s) (4)	HRSA Ap # (5)	HRSA Date (6)	HRSA Engineer (7)	HRSA Cancer Risk in a million	Age Sensitivity Factor (8)	HRSA Adjusted Cancer Risk	HRSA Chronic Health (9)	HRSA PM2.5 Risk	Status/Comments
1.94 miles to closest receptor (600 feet from northern project 0.58 mile to receptor (within project site)	15592	City and County of San Francisco-PUC Construction	5555 Calaveras Road	Contact District Staff	Contact District Staff	Contact District Staff		FID: 506		100 kW Standby Generator					1.7	0		0	
	16195	Materials Pacific, LL	6527 Calaveras Road	Contact District Staff	Contact District Staff	Contact District Staff		FID: 447		Non-Retail Gas Dispensing					1.7	0		0	
				Contact District Staff	Contact District Staff	Contact District Staff									1.7	0		0	
				Contact District Staff	Contact District Staff	Contact District Staff									1.7	0		0	
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1. These Cancer Risk, Hazard Index, and PM2.5 columns represent the rows in the Google Earth Plant Information Table that say "Contact District Staff" (Map A and above). BAAQMD will return this form to you with this screening level information entered in these columns.
2. Each plant may have multiple permits and sources.
3. Fuel codes: 98 = diesel, 198 = Natural Gas.
4. Permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, applications, auto spray booths, etc.
5. If a Health Risk Screening Assessment (HRSAs) was completed for the source, the application number will be listed here.
6. The date that the HRSAs was completed.
7. Engineer who completed HRSAs. For District purposes only.
8. All HRSAs completed before 1/5/2010 need to be multiplied by an age sensitivity factor of 1.7.
9. The HRSAs "Chronic Health" number represents the Hazard Index.
10. Further information about common sources:

- a. Sources that only include diesel engines can be adjusted using the BAAQMD's Diesel Multiplier worksheet.
- b. The risk from natural gas boilers used for space heating when <25 MM BTU/hr would have an estimated cancer risk of one in a million or less, and a chronic hazard index of 0.003 or less. To be conservative, requestor should assume the cancer risk is 1 in a million and the hazard index is 0.003 for these sources.
- c. BAAQMD Reg. Title 16 Rule 16 required that all co-residential (sharing a wall, floor, ceiling or is in the same building as a residential unit) dry cleaners cease use of perc on July 1, 2010. Therefore, there is no cancer risk, hazard or PM2.5 concentrations from co-residential dry cleaning businesses in the BAAQMD.
- d. Non co-residential dry cleaners must phase out use of perc by Jan. 1, 2023. Therefore, the risk from these dry cleaners does not need to be factored in over a 70-year period, but instead should reflect the number of years perc use will continue after the project's residents or other sensitive receptors (such as students, patients, etc) take occupancy.
- e. Non-retail gas stations are considered insignificant.
- f. Unless otherwise noted, exempt sources are considered insignificant. See BAAQMD Reg 2 Rule 1 for a list of exempt sources.



SOURCE: ESA+Orion, 2011; Date of aerial photo is 2006.

SFPUC San Antonio Backup Pipeline Project
Figure 1
SABPL Project Area and 1,000-Foot Buffer

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
 DETAIL POLLUTANTS - ABATED
 MOST RECENT P/O APPROVED (2011)

Printed: MAY 31, 2011

City and County of San Francisco-PUC (P# 15592)

S#	SOURCE NAME	SOURCE CODE			
MATERIAL		DATE	POLLUTANT	CODE	LBS/DAY
THROUGHPUT					
1	Standby Generator 100 kW	C2260160			
			Benzene	41	5.85E-05
			Formaldehyde	124	2.47E-03
			Organics (part not spec el	990	5.07E-02
			Particulates (portion of t	1990	7.92E-03
			Nitrous Oxide (N2O)	2030	1.71E-04
			Nitrogen Oxides (part not	2990	3.99E-01
			Sulfur Dioxide (SO2)	3990	6.10E-02
			Carbon Monoxide (CO) pollu	4990	2.68E-01
			Carbon Dioxide, non-biogen	6960	1.08E+02
			Methane (CH4)	6970	8.14E-04
2	Emergency Standby Generator Set	C22AG098			
			Benzene	41	2.54E-03
			Formaldehyde	124	2.10E-04
			Organics (part not spec el	990	1.22E-01
			Arsenic (all)	1030	2.21E-06
			Beryllium (all) pollutant	1040	1.29E-06
			Cadmium	1070	5.52E-06
			Chromium (hexavalent)	1095	1.14E-07
			Lead (all) pollutant	1140	4.68E-06
			Manganese	1160	7.35E-06
			Nickel pollutant	1180	8.93E-05
			Mercury (all) pollutant	1190	1.56E-06
			Diesel Engine Exhaust Part	1350	1.28E-01
			PAH's (non-speciated)	1840	1.17E-05
			Nitrous Oxide (N2O)	2030	6.79E-04
			Nitrogen Oxides (part not	2990	1.79E+00
			Sulfur Dioxide (SO2)	3990	8.28E-04
			Carbon Monoxide (CO) pollu	4990	3.88E-01
			Carbon Dioxide, non-biogen	6960	8.50E+01
			Methane (CH4)	6970	3.40E-03
3	Emergency Water Pump 1	C24BH098			
			Benzene	41	3.77E-03
			Formaldehyde	124	3.08E-04
			Organics (part not spec el	990	2.06E-01
			Arsenic (all)	1030	3.24E-06
			Beryllium (all) pollutant	1040	1.90E-06
			Cadmium	1070	8.10E-06
			Chromium (hexavalent)	1095	1.68E-07
			Lead (all) pollutant	1140	6.87E-06
			Manganese	1160	1.08E-05
			Nickel pollutant	1180	1.31E-04
			Mercury (all) pollutant	1190	2.29E-06
			Diesel Engine Exhaust Part	1350	1.87E-01
			PAH's (non-speciated)	1840	1.71E-05
			Nitrous Oxide (N2O)	2030	9.97E-04

		Nitrogen Oxides (part not	2990	2.62E+00
		Sulfur Dioxide (SO2)	3990	1.22E-03
		Carbon Monoxide (CO) pollu	4990	5.70E-01
		Carbon Dioxide, non-biogen	6960	1.25E+02
		Methane (CH4)	6970	4.99E-03
4 Emergency Water Pump 2				
C24BH098				
		Benzene	41	4.17E-03
		Formaldehyde	124	3.40E-04
		Organics (part not spec el	990	2.27E-01
		Arsenic (all)	1030	3.58E-06
		Beryllium (all) pollutant	1040	2.10E-06
		Cadmium	1070	8.95E-06
		Chromium (hexavalent)	1095	1.85E-07
		Lead (all) pollutant	1140	7.60E-06
		Manganese	1160	1.19E-05
		Nickel pollutant	1180	1.45E-04
		Mercury (all) pollutant	1190	2.53E-06
		Diesel Engine Exhaust Part	1350	2.07E-01
		PAH's (non-speciated)	1840	1.89E-05
		Nitrous Oxide (N2O)	2030	1.10E-03
		Nitrogen Oxides (part not	2990	2.90E+00
		Sulfur Dioxide (SO2)	3990	1.34E-03
		Carbon Monoxide (CO) pollu	4990	6.30E-01
		Carbon Dioxide, non-biogen	6960	1.38E+02
		Methane (CH4)	6970	5.51E-03
5 Emergency Water Pump 3				
C24BH098				
		Benzene	41	4.33E-03
		Formaldehyde	124	3.53E-04
		Organics (part not spec el	990	2.36E-01
		Arsenic (all)	1030	3.72E-06
		Beryllium (all) pollutant	1040	2.18E-06
		Cadmium	1070	9.30E-06
		Chromium (hexavalent)	1095	1.92E-07
		Lead (all) pollutant	1140	7.89E-06
		Manganese	1160	1.24E-05
		Nickel pollutant	1180	1.50E-04
		Mercury (all) pollutant	1190	2.63E-06
		Diesel Engine Exhaust Part	1350	2.15E-01
		PAH's (non-speciated)	1840	1.96E-05
		Nitrous Oxide (N2O)	2030	1.14E-03
		Nitrogen Oxides (part not	2990	3.01E+00
		Sulfur Dioxide (SO2)	3990	1.39E-03
		Carbon Monoxide (CO) pollu	4990	6.54E-01
		Carbon Dioxide, non-biogen	6960	1.43E+02
		Methane (CH4)	6970	5.72E-03

PLANT TOTAL:

lbs/day	Pollutant

1.28E-05	Arsenic (all) (1030)
1.49E-02	Benzene (41)
7.47E-06	Beryllium (all) pollutant (1040)
3.19E-05	Cadmium (1070)
5.99E+02	Carbon Dioxide, non-biogenic CO2 (6960)
2.51E+00	Carbon Monoxide (CO) pollutant (4990)
6.60E-07	Chromium (hexavalent) (1095)
7.36E-01	Diesel Engine Exhaust Particulate Matter (1350)
3.68E-03	Formaldehyde (124)

2.70E-05 Lead (all) pollutant (1140)
 4.24E-05 Manganese (1160)
 9.01E-06 Mercury (all) pollutant (1190)
 2.04E-02 Methane (CH4) (6970)
 5.16E-04 Nickel pollutant (1180)
 1.07E+01 Nitrogen Oxides (part not spec elsewhere) (2990)
 4.09E-03 Nitrous Oxide (N2O) (2030)
 8.41E-01 Organics (part not spec elsewhere) -- including Methane (990)
 6.73E-05 PAH's (non-speciated) (1840)
 7.92E-03 Particulates (portion of total not spec elsewhere) (1990)
 6.58E-02 Sulfur Dioxide (SO2) (3990)

print this search?: [L]ocal or s[Y]stem printer (6th flr), [N]o, [E]xit:

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
 DETAIL POLLUTANTS - ABATED
 MOST RECENT P/O APPROVED (2010)

Printed: MAY 31, 2011

CEMEX Construction Materials Pacific, LLC (P# 16195)

S#	SOURCE NAME	SOURCE CODE	POLLUTANT	CODE	LBS/DAY
MATERIAL	THROUGHPUT	DATE			
1	CRUSHER SAND & GRAVEL	G4032244	Particulates (portion of t	1990	5.33E-02
3	CRUSHER SECONDARY	G4032244	Particulates (portion of t	1990	8.55E-02
7	SCREEN	G4099244	Particulates (portion of t	1990	4.60E+00
8	SCREEN	G4099244	Particulates (portion of t	1990	4.60E+00
9	SCREEN	G4099244	Particulates (portion of t	1990	2.07E+00
10	CONVEYORS ROCK SAND & GRAVEL	G4030244	Particulates (portion of t	1990	0.00E+00
12	Screen	G4099244	Particulates (portion of t	1990	7.89E-01
17	Feed Hopper	G4061262	Particulates (portion of t	1990	1.18E+01
18	Stockpiles and Haul Roads	G7014262	Particulates (portion of t	1990	7.78E+00
24	Crusher	G4032262	Particulates (portion of t	1990	9.70E-02
27	Screening (3-05-020-02, 03): crushed rock	G4064244	Particulates (portion of t	1990	1.10E-02
28	Aggregate Screening (Controlled) SCC 3-05-020-03	G4064244	Particulates (portion of t	1990	1.08E-01
29	Aggregate Crushing - Secondary	G4064244	Organics (part not spec el	990	0.00E+00
			Particulates (portion of t	1990	2.91E-02
			Nitrogen Oxides (part not	2990	0.00E+00
			Sulfur Dioxide (SO2)	3990	0.00E+00
			Carbon Monoxide (CO) pollu	4990	0.00E+00
100	Non Retail Gasoline Dispensing Facility	TC000000	Benzene	41	2.04E-04
			Toluene	293	6.93E-04
			Xylene	307	8.15E-05
			Ethylbenzene	333	4.76E-05
			Gasoline - unleaded	551	6.69E-02

PLANT TOTAL:lbs/day Pollutant

2.04E-04	Benzene (41)
0.00E+00	Carbon Monoxide (CO) pollutant (4990)
4.76E-05	Ethylbenzene (333)
6.69E-02	Gasoline - unleaded (551)
0.00E+00	Nitrogen Oxides (part not spec elsewhere) (2990)
0.00E+00	Organics (part not spec elsewhere) -- including Methane (990)
3.21E+01	Particulates (portion of total not spec elsewhere) (1990)
0.00E+00	Sulfur Dioxide (SO2) (3990)
6.93E-04	Toluene (293)
8.15E-05	Xylene (307)

print this search?: [L]ocal or s[Y]stem printer (6th flr), [N]o, [E]xit:

From: Hans Giroux <hgiroux@att.net>
Subject: **Fw: Inquiry Form**
Date: June 21, 2011 3:10:39 PM PDT
To: Valerie Geier <valerie@orionenvironment.com>

Giroux & Associates
1820 E. Garry St. #211
Santa Ana, CA 92705
949-387-5477

----- Forwarded Message -----

From: Hans Giroux <hgiroux@att.net>
To: Andrea Gordon <AGordon@baaqmd.gov>
Sent: Thu, May 26, 2011 4:41:03 PM
Subject: RE: Inquiry Form

I did submit the stationary source inquiry form in my initial e-mail. It is difficult to perform our own dilution calculation because we don't know the input parameters for the given source and we don't know the location where the maximum occurs as a basis for calculating further dispersion from that point. I do very much appreciate your incredibly rapid response to my questions, we are in a bit of a time crunch and you have been very helpful in a hurry. Hans Giroux

Giroux & Associates
1820 E. Garry St. #211
Santa Ana, CA 92705
949-387-5477

--- On **Thu, 5/26/11**, **Andrea Gordon** <AGordon@baaqmd.gov> wrote:

From: Andrea Gordon <AGordon@baaqmd.gov>
Subject: RE: Inquiry Form
To: "Hans Giroux" <hgiroux@att.net>
Date: Thursday, May 26, 2011, 3:28 PM

Hans,

A possibility to account for the distance is to dilute the emissions from these sources to the receptor based on the distance by using a multiplier or by doing a similar SCREEN3 run. You can also fill out a Stationary Source Inquiry Form located on the BAAQMD website and submit it to us to possibly receive risk assessment information from these sources.

Andrea

From: Hans Giroux [mailto:hgiroux@att.net]
Sent: Thursday, May 26, 2011 1:47 PM
To: Andrea Gordon
Subject: RE: Inquiry Form

Thanks, what kind of distance decay factor can we use, the emergency generator is a point source, CEMEX is an area or volume source? Hans

Giroux & Associates
1820 E. Garry St. #211
Santa Ana, CA 92705
949-387-5477

--- On **Thu, 5/26/11**, **Andrea Gordon** <AGordon@baaqmd.gov> wrote:

From: Andrea Gordon <AGordon@baaqmd.gov>
Subject: RE: Inquiry Form
To: "Hans Giroux" <hgiroux@att.net>
Date: Thursday, May 26, 2011, 11:58 AM

Hello Hans –

The response to your question below is yes, however these sources are significantly far away from the receptor and you should account for this distance.

Andrea

From: Hans Giroux [mailto:hgiroux@att.net]
Sent: Thursday, May 26, 2011 10:20 AM
To: Andrea Gordon; Kelly White
Subject: Inquiry Form

We are preparing a health risk screening and cumulative impact analysis for an SFPUC construction project along Calaveras Road in Alameda County. We have one residence within our potential impact zone that is almost a mile away from Sources 15592 or 16195, but these sources are within 1000 feet of our construction boundary. Since they are more than 1000 feet from our sole sensitive receptor, do we need to include them in our cumulative analysis? I'm concerned that 16195 has a huge PM-2.5 impact, which I would think is mainly due to fugitive dust. I'll have Kelly White from ESA send you a site plan/map under separate cover. Thank you in advance for any guidance.

Hans Giroux

Geier & Geier
1820 E. Garry St. #211
Santa Ana, CA 92705
949-387-5477

From: Alison Kirk <AKirk@baaqmd.gov>
Subject: **RE: Stationary Source Data Request**
Date: March 24, 2011 9:00:18 AM PDT
To: Valerie Geier <valerie@orionenvironment.com>

We removed the acute hazard index from all sources because we found that virtually none of the sources in our inventory exceeded the thresholds.

Yes, 15592 is chronic

20110324 11:11 AM
20110324 11:11 AM

From: Valerie Geier [mailto:valerie@orionenvironment.com]
Sent: Thursday, March 24, 2011 8:56 AM
To: Alison Kirk
Subject: Re: Stationary Source Data Request

Thanks! Just want to confirm that there is no acute hazard for this site, correct?

The other site in the vicinity, 15592, lists the hazard index at 0.007. Since it is a standby generator, can I assume this hazard index relates to chronic and not to any acute hazard?

Thanks, Valerie

--
Valerie Geier
Senior Associate
Orion Environmental Associates
211 Sutter Street, #803
San Francisco, CA 94108
Direct Phone (510) 644-2535
valerie@orionenvironment.com

On Mar 24, 2011, at 8:30 AM, Alison Kirk wrote:

So sorry! Thought I had included it earlier...

Plant Cancer Risk (in a million)	Plant Chronic Hazard	Plant PM2.5 Concentration (ug/m3)

| 20110324 | 20110324 | 20110324 |

20110324 11:11 AM
20110324 11:11 AM

From: Valerie Geier [mailto:valerie@orionenvironment.com]
Sent: Wednesday, March 23, 2011 7:03 PM
To: Alison Kirk
Subject: Re: Stationary Source Data Request

I don't see the cancer and non-cancer risks. There is no attachment and they are not indicated in your email (below). I highlighted my request in red.

Thanks, Valerie

--

Valerie Geier
Senior Associate
Orion Environmental Associates
211 Sutter Street, #803
San Francisco, CA 94108
Direct Phone (510) 644-2535
valerie@orionenvironment.com

On Mar 23, 2011, at 10:29 AM, Alison Kirk wrote:

Hello,

I confirmed the cancer and non-cancer risk, and PM concentration for this site.

Apparently source 16195 is much more than a gas station, and this explains the PM concentration. Here are the sources associated with this number:

Plant# 16195
 CEMEX Construction Materials Pacific, LLC
 6527 Calaveras Rd
 Sunol, CA 94586

[C]urrent, [A]rchive, or [F]uture? c

CURRENT Sources:

- 1 CRUSHER SAND & GRAVEL
- 3 CRUSHER SECONDARY
- 7 SCREEN
- 8 SCREEN
- 9 SCREEN
- 10 CONVEYORS ROCK SAND & GRAVEL
- 12 Screen
- 17 Feed Hopper
- 18 Stockpiles and Haul Roads
- 25 Fine Screening (3-05-025-23)
- 26 Secondary Crushing [Cone]: crushed stone
- 27 Screening (3-05-020-02, 03): crushed rock
- 28 Aggregate Screening (Controlled) SCC 3-05-020-03
- 29 Aggregate Crushing - Secondary
- 100 Non Retail Gasoline Dispensing Facility

CURRENT Abatement Devices:

- 1 WATER SPRAY SYSTEM
- 17 Water Spray Nozzles
- 18 Water Spray Bars

Please let me know if you have any additional questions.

Alison Kirk
415-749-5169

From: Valerie Geier [mailto:valerie@orionenvironment.com]
Sent: Tuesday, March 22, 2011 4:59 PM
To: Alison Kirk
Subject: Re: Stationary Source Data Request

Thank you for your quick response regarding these two emission sources. However, I spoke with Jessica Range at San Francisco MEA and she has requested that we present and consider Source 16195, the CEMEX non-retail gas station, which is 0.58 mile from the closest sensitive receptor. According to BAAQMD records (provided to SF MEA by the BAAQMD), this source emits 119 µg/m³ of PM_{2.5}, which she felt was high enough to be a consideration in our cumulative risks and hazards analysis. I am also perplexed why a gas station would have such high PM_{2.5} emissions when such particulate emissions are more typically associated with diesel exhaust.

Could you please verify this PM_{2.5} emissions rate from Source 16195 and also provide the cancer risk and non-cancer hazard index for this site?

Thanks, Valerie

--

Valerie Geier
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On Mar 18, 2011, at 9:26 AM, Alison Kirk wrote:

Hello,

I agree that in this case, because it is more than 1,000 feet to the closest sensitive receptor, you don't need to consider these sources in your cumulative risk and hazards analysis.

I base this on Page 5-2 and 5-3 of the 2010 BAAQMD CEQA Guidelines, section 5.1.3. It says that "A lead agency should enlarge the 1,000 foot radius on a case-by-case basis if an unusually large source or sources of risk or hazard emissions that may affect a proposed project is beyond the recommended radius."

In this case, according to the info you provided, the sources are a backup generator (15592) and a non-retail gas station (16195). Neither of these would qualify as an unusually large source.

Regarding the speciation table, I have been told that OEHA developed the table and you should contact them.

Alison Kirk
415-749-5169

From: Valerie Geier [mailto:valerie@orionenvironment.com]
Sent: Thursday, March 17, 2011 5:36 PM
To: Alison Kirk
Subject: Stationary Source Data Request

Alison - I am working on an air quality analysis for a pipeline project being prepared for the San Francisco PUC, located in Sunol Valley. Attached is the table with two stationary sources identified in your records as being located within 1,000 feet of our project site. However, it is more than 1,000 feet from the closest sensitive receptor. So I'm not sure we need to consider these two sources in our cumulative risks and hazards analysis. Please advise.

Also, San Francisco MEA has asked us to contact the BAAQMD to obtain a speciation table of cancer and non-cancer health risks for DPM. They want us to include this in the appendix of our report. Can you provide this or refer me to the BAAQMD staff member who has such a table?

Thanks, Valerie

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telephone notes

project	SFPUC San Antonio Backup Pipeline Project	project no.	MEA Case No. 2007.0039E
date	April 1, 2011	time	~10 AM
present	Hans Giroux		
route to	Kelly White		
contact	Todd Sax		
title			
agency	California Air Resources Board		
phone	916.322.5474		
subject	OFFROAD 2007 Model		
action required	FYI – to be included in admin record		

Todd indicated that because of the serious over-prediction problem with OFFROAD2007, the CARB is no longer supporting the use of the model for off-road diesel equipment. They have a new model that is MS Access-based and strongly recommend not using OFFROAD.

APPENDIX L

Waste Discharge Requirements for the SFPUC Drinking Water Transmission System

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Waste Discharge Requirements for the SFPUC Drinking Water Transmission System

RWQCB Order No. R2-2008-0102 (the Order) regulates discharges of altered water from the SFPUC Drinking Water Transmission System (SF Bay RWQCB, 2008). It regulates planned discharges resulting from routine operations and maintenance that can be scheduled in advance, as well as unplanned and emergency discharges resulting from system failures or natural disasters. Planned discharges includes draining pipelines and tunnels to allow for inspection, repair, and/or replacement; and flushing of disinfection water from the pipelines and tunnels when bringing them back online. The Order has been issued by the RWQCB – pursuant to Section 402 of the Clean Water Act, and Chapter 5.5, Division 7 of the California Water Code (commencing with section 13370) – to serve as an NPDES permit for point source discharges from the SFPUC water transmission system to surface waters. The Order also serves as Waste Discharge Requirements (WDRs) pursuant to Article 4, Chapter 4, Division 7 of the Water Code (commencing with section 13260).

For planned discharges, the Order mandates effluent and receiving water discharge limitations. Specific effluent limitations, shown in **Table 1**, require removal of all chlorine¹ and establish specific limitations for pH, nickel, and trihalomethanes. Receiving water limitations set forth in the Order require that the discharges do not cause any of the following conditions in the receiving water:

- Floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses
- Bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses
- Alteration of temperature from ambient levels unless it can be demonstrated to the satisfaction of the RWQCB that such alteration of temperature does not affect adversely beneficial uses
- Oils, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, that cause nuisance, or that otherwise adversely affect beneficial uses
- Toxic or other deleterious substances in concentrations or quantities that will cause deleterious effects on aquatic biota, wildlife, or waterfowl; or that render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration
- Changes in turbidity that cause nuisance or adversely affect beneficial uses. In non-tidal receiving waters, where background turbidity is greater than 50 NTU, the discharges shall also not cause an increase in more than 10 percent above upstream background turbidity

¹ The State Water Resources Control Board is considering a statewide policy on chlorine residual, and the NPDES permit limitations on residual chlorine may be changed to reflect the statewide policy, when established.

TABLE 1
EFFLUENT LIMITATIONS FOR PLANNED DISCHARGES

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Total Residual Chlorine	mg/L ^a	--	--	--	0.0 ^b
pH ^c	Standard Units	--	--	6.5	8.5
Nickel	ug/L ^d	4.2	7.2	--	--
Total Trihalomethanes	mg/L	0.10	--	--	--

^a mg/L = milligrams per liter

^b This limit is defined as the analytical detection limit of 0.05 mg/L.

^c Exceedance of the effluent limitation for pH would not constitute a violation of the permit if it does not cause the pH of the receiving water to be depressed below 6.5 or raised above 8.5, or if it does not cause more than a 0.5 standard unit change in the receiving water pH if the receiving water pH is outside of this range.

^d ug/L = micrograms per liter

SOURCE: RWQCB, 2008.

In accordance with the Monitoring and Reporting Program of the Order, the SFPUC is required to conduct sampling to demonstrate compliance with permit requirements during all planned discharges. For discharges to creeks, monitoring is required at a minimum of the following four locations:

1. a point in the discharge line immediately following treatment and before it joins or is diluted by any other waste stream, body of water, or substance
2. a location in the receiving water located upstream of the discharge point where conditions are not expected to be influenced by the discharge,
3. a location within 50 feet downstream from the point of discharge into the receiving water, or if access is limited, at the first accessible point downstream
4. a location at least 10 times the channel width downstream from the point of discharge (referred to as the erosion monitoring location)

Effluent monitoring requirements are summarized in **Table 3**, and receiving water requirements are summarized in **Table 4**. In addition to demonstrating permit compliance, the monitoring information is used to facilitate self-policing by the waste discharger to prevent and abate pollution resulting from the discharge; develop or assist in the development of effluent or other limitations, discharge prohibitions, and water quality standards; and prepare water and wastewater quality inventories.

Compliance with the shear stress, soil texture, and channel geomorphology monitoring requirements for the receiving waters includes determination of shear stress and soil texture of the stream banks at the erosion monitoring location as well as cross-sectional surveys and a longitudinal profile starting at the point of discharge and ending at the erosion control monitoring

**TABLE 3
EFFLUENT MONITORING REQUIREMENTS**

Parameter	Units	Sample Type ^a	Minimum Sampling Frequency
Flow rate	MGD ^b	Continuous	Hourly on each occurrence
Volume	MG ^c	Continuous	Daily on each occurrence
pH	standard units	Grab	Hourly on each occurrence
Total residual chlorine	mg/L ^d	Grab	Hourly on each occurrence
Copper	ug/L ^e	Grab	One discharge per quarter
Nickel	ug/L	Grab	One discharge per quarter
Total trihalomethanes	mg/L	Grab	One discharge per quarter
All other priority pollutants not listed above	ug/L	Grab	Any one discharge per 5 years

^a A continuous sample is one that is measured continuously and recorded and reported in accordance with the minimum sampling frequency. A grab sample is a discrete sample of effluent collected during periods of peak flow.

^b MGD = million gallons per day

^c MG = million gallons

^d mg/L = milligrams per liter

^e ug/L = micrograms per liter

SOURCE: RWQCB, 2008

**TABLE 4
RECEIVING WATER MONITORING REQUIREMENTS**

Parameter	Units	Sample Type	Minimum Sampling Frequency
Turbidity	NTU ^a	Grab	One discharge per quarter
pH	Standard units	Grab	Hourly on one discharge per quarter
Hardness	mg/L ^b as CaCO ₃ ^c	Grab	One discharge per quarter
Nickel	ug/L ^d	Grab	One discharge per quarter
Standard Observation ^e	--	--	Once per occurrence
All other priority pollutants not listed above	ug/L	Grab	Any one discharge per 5 years
Shear stress	lb/ft ² ^f	NA	One discharge per quarter
Soil texture	--	Grab	One discharge per quarter
Channel geomorphology	Ft ^g	NA	One discharge per quarter

^a NTU = nephelometric turbidity units

^b mg/L = milligrams per liter

^c CaCO₃ = calcium carbonate

^d ug/L = micrograms per liter

^e Standard observations for receiving waters include discoloration and turbidity, including a description of the color, source, and size of affected area; depth of water column and sampling depth; and weather conditions, including air temperatures, total precipitation during the last five days and on the day of observation; and location of meteorological station accessed to collect weather conditions and distance of this station from the discharge location

^f lb/ft² = pounds per square foot

^g ft = foot

SOURCE: RWQCB, 2008

location. In addition, the SFPUC would be required to photographically document conditions at the erosion monitoring location by collecting photographs of the stream alignment, channel banks, and any vegetation present on the banks both upstream and downstream of the erosion monitoring location before and after the discharge. In accordance with the Order, the SFPUC is required to monitor and report all discharges greater than 25 gallons per minute, and shall also report all discharges to creeks providing habitat for salmonids, regardless of flow rate.

In addition, the Order requires the SFPUC to develop and implement standard operating procedures (SOPs) for dechlorination of discharges and erosion control plan. These SOPs have been prepared for the SFPUC and are discussed below.

SFPUC Dechlorination Procedures

The SFPUC requires dechlorination of all pipeline discharges as addressed in the *Manual of Procedures – Disinfection/Dechlorination and Related Tasks* (SFPUC, 2005). In accordance with these procedures, the SFPUC would generally be responsible for performing the original gravity drain of the pipeline, and prior to discharge, would prepare a dewater and discharge plan including the date, volume, and location of the discharge as well as a dechlorination plan including a piping diagram for the dechlorination system. A construction contractor would be responsible for conducting the discharge following the initial gravity drain by the SFPUC. The *Draining, Dechlorination, and Monitoring Plan* would include an estimate of the water volume and time period for the discharge, and would describe how the discharge would comply with regulatory requirements. Information on personnel, equipment, instrumentation and calibration requirements, chemicals, sampling locations, monitoring, regulatory notifications, and record keeping would also be included. Methods for dechlorination of the discharge could include using a drip feed or metering pump to inject a 25 percent sodium bisulfite solution or other suitable method approved by the SFPUC.

SFPUC Erosion Control Standard Operating Procedure

In accordance with the requirements of RWQCB Order No. R2-2008-0102, described above, the SFPUC has prepared a standard operating procedure (SOP) that specifies erosion control practices for discharges to streams as well as SFPUC organizational responsibilities for implementing the SOP and coordination with the RWQCB, local agencies, and other users of the affected surface water (RMC, 2008). In accordance with this SOP, most discharges would occur using gravity flow and the discharge rate would be controlled with valves and/or by restricting the size of the discharge pipe. Typical discharge rates would be 800 to 1,000 gpm (1.8 to 2.2 cubic feet per second (cfs)), but in accordance with the requirements of the Order, could be as high as 3,500 gpm (7.9 cfs).

Discharge would be accomplished through piping connected to the transmission system piping or to the tail end of the dechlorination piping, and extending to the riparian zone at the point of discharge. To reduce flow rates at the discharge point to 2 to 3 feet per second and diffuse the discharge, the piping would be connected by a tee to a larger diameter perforated pipe, and discharge would occur along the stream bed through the perforations. To facilitate discharge and

protect riparian resources, the discharge pipeline could be placed on planks above the stream bed. The erosion control SOP specifies that where possible, the discharge pipe should also be located above hardened sections of the stream to further reduce the potential for erosional effects.

Initially, the discharge rate would be restricted to 40-200 gpm (0.1-0.4 cfs) to soak unhardened sections of the channel and reduce the potential for scouring. Over the first 30 minutes of the discharge, the flow rate would be gradually increased until the permitted discharge flow rate is achieved and the discharge would be monitored as described below. Within the last 30 to 60 minutes of discharge, the flow rates would be gradually reduced. When pumping is needed to complete the discharge, there is likely to be a short interval (generally less than one hour) between the gravity flow discharge and the pumped discharge, and the two events would be treated as two separate discharge events. For the pumped discharge, the pumping rate would be gradually increased within the first 30 to 60 minutes of pumping and gradually decreased during the final 30 to 60 minutes of pumping, as practicable.

Monitoring for erosional effects during discharge include visual observation of the receiving water, and turbidity monitoring in the receiving water. If visible signs of erosion are observed downstream of the discharge, the flow rate would be decreased until such effects are no longer visible. Allowable changes in turbidity depend on the ambient turbidity of the receiving water and are summarized in **Table 4**. The SOP requires collection of turbidity measurements twice during the first hour of the discharge event, and two additional times during the daylight hours. If turbidity measurements indicate that turbidity limitations specified in Table 4 are exceeded, then the flow rate of the discharge would be adjusted to maintain appropriate turbidity levels.

TABLE 4
TURBIDITY COMPLIANCE STANDARDS FOR CONSTRUCTION DISCHARGES

Ambient Stream Turbidity	Compliance Standard
≤50 NTU ^a	≤ ambient turbidity + 5 NTU
50 – 100 NTU	≤ ambient turbidity + 10 NTU
> 100 NTU	≤ 1.1 x ambient turbidity
No upstream flow	1,000 NTU

^a NTU = nephelometric turbidity units

SOURCE: RMC, 2008

APPENDIX M

Soil Sampling Results

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North Spoils Site and the Former Valley Crest Tree Company Nursery Site

In 2010, the SFPUC conducted surface soil sampling within the North Spoils Site and the former Valley Crest Tree Company nursery site located between Pit F6 and Calaveras Road to evaluate residual concentrations of pesticides and metals in the soils from historical agricultural activities (Baseline, 2010). Sampling within the former nursery site included the collection and analysis of soil samples along the proposed SABPL alignment between pipeline stations 12+00 and 32+00. A total of five composite soil samples¹ from the North Spoils Site and two composite soil samples from the former nursery site were analyzed for organochloride pesticides. Five discrete soil samples from the North Spoils Site and two discrete soil samples from the former nursery site were analyzed for Title 22 metals.² **Table M-1** compares the maximum concentration of each constituent identified in the soil samples from each site to the federal, state, and regional hazardous waste criteria, including the (a) federal Toxicity Characteristic Leaching Procedure (TCLP) regulatory level, (b) the state total threshold limit concentration (TTLC) and soluble threshold limit concentration (STLC), and (c) the San Francisco Bay RWQCB Environmental Screening Levels (ESLs) for residential land uses and for construction workers (RWQCB, 2008). These waste classification criteria and ESLs are in EIR Section 5.17.2.

The TTLC, STLC, and federal TCLP regulatory level are used to evaluate whether the soil, if excavated, would require disposal as a hazardous or regulated waste. The RWQCB ESLs are used to evaluate potential health risks to construction workers and the need for health and safety measures during construction, as well as the suitability of any excavated materials for offsite reuse. In general, if chemical concentrations are below residential screening levels, the soil is considered suitable for unrestricted offsite reuse. If chemical concentrations exceed residential ESLs but are below hazardous waste criteria, then some restrictions could be imposed for offsite reuse to ensure that the soil does not cause adverse health or environmental effects.

North Spoils Site

As shown in Table M-1, 11 pesticides were detected in composite soil samples and 13 metals were detected in discrete soil samples from the North Spoils Site. However, with the exception of chromium, none of the detected concentrations were greater than the TTLC, 10 times the STLC,³ or 20 times the federal TCLP regulatory level.⁴ The maximum detected concentration of chromium in soil samples from the North Spoils Site was 57 milligrams per kilogram (mg/kg),

¹ A composite soil sample is a sample comprised of equal portions of individual soil samples collected from different locations combined into one soil sample for laboratory analysis. Analysis of composite soil samples is useful for evaluating average concentrations of the constituents of concern over the area covered by the discrete soil samples.

² Title 22 metals are 18 metals for which the State of California has established regulatory levels for waste classification.

³ The California Waste Extraction Test, used to determine the soluble concentration of a substance under state regulations, involves a 10-to-1 dilution of the sample. Therefore, the total concentration of a substance would need to exceed 10 times the STLC for the soluble concentration to possibly exceed the STLC in the extract.

⁴ Because the TCLP involves a 20-to-1 dilution of the sample, the total concentration of a substance in the soil would need to exceed 20 times the regulatory level for the soluble concentration to possibly be greater than the regulatory level in the extract.

which is 10 times greater than the STLC of 5.0 milligrams per liter (mg/L). A waste extraction test (WET) was conducted to evaluate the soluble levels of hexavalent chromium in the soil sample with the highest total chromium concentration. Hexavalent chromium was not detected in this sample. Based on these analytical results, any soils excavated at the North Spoils Site would not be classified as a hazardous waste.

None of the detected concentrations of metals or pesticides in the soil samples from the North Spoils Site were greater than the RWQCB ESL for construction workers, indicating that the constituents detected would not present an unacceptable risk to construction workers during preparation of the North Spoils Site. However, the maximum concentration of dieldrin was 0.093 mg/kg, in excess of the 0.0023 mg/kg RWQCB ESL for residential land uses; the maximum concentration of endrin was 0.0036 mg/kg, in excess of the 0.00065 mg/kg RWQCB ESL for residential land uses; the maximum concentration of arsenic was 7.7 mg/kg, in excess of the 0.39 mg/kg RWQCB ESL for residential land uses; and the maximum concentration of vanadium was 36 mg/kg, in excess of the 16 mg/kg RWQCB ESL for residential land uses. However, while these analytical results indicate that while any excavated soil would not be classified as a hazardous waste, it would not necessarily be suitable for unrestricted land uses, and further analysis would be required to identify the appropriate disposal of any excavated soil from the North Spoils Site.

Former Valley Crest Tree Company Nursery Site Between Pit F6 and Calaveras Road

As shown in **Table M-1**, pesticides were not detected in composite soil samples from the former nursery site, and 12 metals were detected in the discrete soil samples from this site. However, with the exception of chromium, none of the detected concentrations were greater than the TTLC, 10 times the STLC, or 20 times the federal TCLP regulatory level. The maximum detected concentration of chromium in soil samples from the former nursery site was 92 mg/kg, which is 10 times greater than the STLC of 5.0 mg/L. A WET analysis was conducted to evaluate the soluble levels of hexavalent chromium in the soil sample with the highest total chromium concentration. Hexavalent chromium was not detected in this sample. Based on these analytical results, any soil excavated from the former nursery site would not be classified as a hazardous waste.

None of the detected concentrations of metals in soil samples from the former nursery site were greater than the RWQCB ESL for construction workers, indicating that the constituents detected would not present an unacceptable risk to construction workers during excavation and construction of the SABPL and ancillary features. However, the maximum concentration of arsenic was 6.2 mg/kg, in excess of the 0.39 mg/kg RWQCB ESL for residential land uses; and the maximum concentration of vanadium was 36 mg/kg, in excess of the 16 mg/kg RWQCB ESL for residential land uses. These analytical results indicate that while any excavated soil would not be classified as a hazardous waste, it would not necessarily be suitable for unrestricted land uses, and further analysis would be required to identify the appropriate disposal of any soil excavated from the former nursery site.

References

Baseline Environmental Consulting, *Soil Quality Investigation Report, New Irvington Tunnel Project, Alameda County, California*. August 2010.

San Francisco Bay Regional Water Quality Control Board (RWQCB), *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater. Interim Final – November 2007*. Revised May 2008.

TABLE M-1
SOIL ANALYTICAL RESULTS, SCREENING LEVELS, AND HAZARDOUS WASTE CRITERIA

Parameter	Maximum Concentration Detected, Former Nursery Site (mg/kg)	Maximum Concentration Detected, North Spoils Site (mg/kg)	Residential Environmental Screening Level (mg/kg)	Construction Environmental Screening Level (mg/kg)	Regulatory Level for Waste Classification		
					TCLP (mg/L)	TTLC (mg/kg)	STLC (mg/L)
Pesticides							
Beta-BHC	<0.0021	0.002	–	–	–	–	–
Alpha Chlordane	<0.0021	0.0023	0.44	21	0.03	2.5	0.25
Dieldrin	<0.00050	0.093*	0.0023	1.6	–	8.0	0.8
Dichlorodiphenyldichloroethane (4,4-DDD)	<0.0041	0.026	2.4	120	–	1.0	0.1
Dichlorodiphenyldichloroethylene (4,4'-DDE)	<0.0041	0.099	1.7	87	–	1.0	0.1
Dichlorodiphenyltrichloroethane (4,4'-DDT)	<0.0041	0.15	1.7	87	–	1.0	0.1
Endosulfan I	<0.0021	0.0028	0.0046	3,100	–	–	–
Endosulfan II	<0.0041	0.0058	0.0046	3,100	–	–	–
Endosulfan sulfate	<0.0041	0.0067	–	–	–	–	–
Endrin	<0.0007	0.0036*	0.00065	160	0.02	0.2	0.02
Endrin aldehyde	<0.0041	0.0037	–	–	–	–	–
Metals							
Antimony	0.52	1.3	6.3	310	–	500	15
Arsenic	6.2*	7.7*	0.39	15	5.0	500	5.0
Barium	150	260	750	2,600	100.0	10,000	100
Beryllium	0.51	0.41	4.0	98	–	75	0.75
Chromium (trivalent)	92	57	750	1,200,000	5.0	2,500	5
Soluble Chromium (hexavalent), mg/L	<0.45	<0.43	–	–	–	–	5
Cobalt	15	10	40	94	–	8,000	80
Copper	14	14	230	310,000	–	2,500	25
Lead	13	15	200	750	5.0	1,000	5
Mercury	0.037	0.049	1.3	58	0.2	20	0.2
Molybdenum	<0.30	0.74	40	3,900	–	3,500	350
Nickel	120	50	150	260	–	2,000	20
Vanadium	36*	36*	16	770	–	2,400	24
Zinc	72	64	600	230,000	–	5,000	250

NOTES: TCLP = Toxicity Characteristic Leaching Procedure. Because the TCLP involves a 20-to-1 dilution of the sample, the total concentration of a substance in the soil would need to exceed 20 times the regulatory level for the soluble concentration to possibly be greater than the regulatory level in the extract.
STLC = Soluble Threshold Limit Concentration. The California Waste Extraction Test, used to determine the soluble concentration of a substance under state regulations, involves a 10-to-1 dilution of the sample. Therefore, the total concentration of a substance would need to exceed 10 times the STLC for the soluble concentration to possibly exceed the STLC in the extract.

TTLC = Total Threshold Limit Concentration
mg/kg = milligram per kilogram
mg/L = milligram per liter
– = Criterion has not been established for this parameter.
<0.43 = Constituent was not detected in sample at the detection limit provided.
* = Concentration in excess of residential environmental screening level.

SOURCE: Baseline, 2010. \