

RECLAMATION

Managing Water in the West

Draft FINDING OF NO SIGNIFICANT IMPACT

Santa Clara Valley Water District California Aqueduct Reverse Flow Project

FONSI-14-029



U.S. Department of the Interior
Bureau of Reclamation

October 2014

Mission Statements

The mission of the Department of the Interior is to protect and manage the Nation's natural resources and cultural heritage; provide scientific and other information about those resources; and honor its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

BUREAU OF RECLAMATION
South-Central California Area Office, Fresno, California

FONSI-14-029

Santa Clara Valley Water District
California Aqueduct
Reverse Flow Project

Prepared by: Rain L. Emerson
Supervisory Natural Resources Specialist

Date

Concurred by: Jennifer L. Lewis
Wildlife Biologist

Date

Approved by: Michael Jackson, P.E.
Area Manager

Date

Introduction

In accordance with section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969, as amended, the South-Central California Area Office of the Bureau of Reclamation (Reclamation) has determined that the placement of temporary pumping facilities by Santa Clara Valley Water District (Santa Clara) Along the California Aqueduct (Aqueduct) to reverse flow previously banked Central Valley Project (CVP) water for exchange is not a major federal action that will significantly affect the quality of the human environment and an environmental impact statement is not required. This Finding of No Significant Impact (FONSI) is supported by Reclamation's Environmental Assessment (EA) Number EA-14-029, *Santa Clara Valley Water District California Aqueduct Reverse Flow Project*, and is hereby incorporated by reference.

Background

In 2006, Santa Clara requested approval from Reclamation to bank a portion of its CVP water supplies within Semitropic Water Storage District (Semitropic). Reclamation analyzed the annual banking of up to 100,000 acre-feet (AF) of Santa Clara's CVP water within Semitropic through December 31, 2027 in EA-05-126 (Reclamation 2005). EA-05-126 also analyzed the annual return via exchange of up to 100,000 AF of Santa Clara's banked CVP water for agricultural and municipal and industrial (M&I) use during dry years. Reclamation determined that Santa Clara's groundwater banking and exchange program would not significantly affect the quality of the human environment and a FONSI was executed on April 18, 2006. Both the EA and FONSI are hereby incorporated by reference.

Under Santa Clara's banking program, previously banked water is pumped into the Aqueduct for use by State Water Project (SWP) water users south of Semitropic, and in exchange, Santa Clara is delivered an equal amount of SWP water supply through the South Bay Aqueduct or San Felipe Division (hereafter referred to as "normal operations"). However, due to current drought conditions, there are limited supplies available in the SWP for exchange under normal operations. Consequently, Santa Clara has requested approval from Reclamation to place temporary pumps within Reclamation's rights-of-way (ROW) in order to reverse-flow previously banked CVP water northerly in the Aqueduct for exchange with Reclamation (see Figure 1 in EA-14-029).

Proposed Action

Reclamation proposes to approve the placement of temporary pumping facilities to reverse flow previously banked CVP water for exchange as described in Section 2.2.1 in EA-14-029.

Environmental Commitments

Santa Clara will implement the environmental protection measures included in Table 1 of EA-14-029. Environmental consequences for resource areas assume the measures specified would be fully implemented.

Findings

Reclamation's finding that implementation of the Proposed Action will result in no significant impact to the quality of the human environment is supported by the following findings:

Resources Eliminated from Detailed Analysis

As described in Section 3.1 of EA-14-029, Reclamation analyzed the affected environment and determined that the Proposed Action does not have the potential to cause direct, indirect, or cumulative adverse effects to the following resources: land use, cultural resources, Indian Sacred Sites, Indian Trust Assets, socioeconomic resources, or environmental justice populations.

Water Resources

The only difference between the Proposed Action analyzed in EA-14-029 and the action analyzed for Santa Clara's banking program with Semitropic is the temporary placement of three temporary pump stations within Reclamation's ROW for reverse flow of up to 18,000 AF of CVP water for exchange with Reclamation. No additional groundwater pumping would occur in order to reverse flow Santa Clara's banked CVP water beyond what was previously approved and analyzed in EA-05-126. As groundwater pumping and water quality impacts are within the scope of Santa Clara's previously approved groundwater banking program, no additional impacts would occur.

Reverse flow of Santa Clara's banked CVP water would only occur once Santa Clara is unable to exchange with the California Department of Water Resources (DWR) and if Reclamation has demand for the exchange. All exchanges would be coordinated with Reclamation and DWR prior to introduction of Santa Clara's banked CVP water. Consequently, the Proposed Action would not affect CVP or SWP operations and would not change existing diversion points from the Sacramento-San Joaquin River Delta under Reclamation's or DWR's water rights permits. The Proposed Action would not interfere with Reclamation's obligations to deliver water to other contractors, wetland habitat areas, or for other environmental purposes. The Proposed Action would utilize existing facilities and only temporary non-ground disturbing infrastructure would be utilized for

movement of this water. No native or untilled land (fallow for three years or more) would be cultivated with water involved with these actions.

Biological Resources

As described in Section 3.3 of EA-14-029, the only special-status species that potentially could be present in the Proposed Action area includes the burrowing owl, Swainson's hawk, and San Joaquin kit fox. No critical habitat would be affected as there is none within the Action Area.

Based on the discussion in Section 3.3 and the incorporation of environmental protection measures included in Table 1 of EA-14-029, Reclamation has determined there would be *No Effect* to proposed or listed species or critical habitat under the Endangered Species Act of 1973, as amended (16 U.S.C. §1531 et seq.) from the Proposed Action. Therefore, no consultation with the USFWS or National Marine Fisheries Service is necessary. Reclamation has also determined that the Proposed Action would have *No Take* of birds protected by the Migratory Bird Treaty Act (16 U.S.C. §703 et seq.).

Air Quality

Under normal conditions, the annual extraction of at least 31,500 AF of Santa Clara's previously banked CVP water would occur without the Proposed Action as long as there was water available for exchange with DWR. However, due to current hydrologic conditions, normal operations may not be possible once SWP water is no longer available for exchange and a portion of Santa Clara's previously banked CVP water (up to 18,000 AF) would need to be reverse flowed northerly in the Aqueduct for exchange with Reclamation. Although this could be an increase in the extraction of Santa Clara's previously banked CVP water compared to the No Action Alternative, the total extraction amount would not exceed what was previously analyzed in EA-05-126 and approved by Reclamation as part of the groundwater banking program.

There would be no air quality impacts due to construction activities as all proposed infrastructure for the temporary pump facilities would be placed above ground and no ground disturbing activities such as grading, trenching or excavation would occur. However, air quality emissions would occur from the installation and operation of the temporary pump stations.

Installation and operational emissions were calculated using the California Emissions Estimator Model (CalEEMod), Version 2013.2. Modeling results for installation and operation of the facilities are included in Tables 5 and 6 and output files from CalEEMod are included in Appendix C of EA-14-029.

Criteria pollutant emissions from installation are estimated to be well below the San Joaquin Valley Air Pollution Control District's thresholds of significance (see Table 5 in EA-14-029). However, criteria pollutant emissions from operation of the pumps (due to operation of the diesel engines at the pump stations) are expected to exceed the San Joaquin Valley Air Pollution Control District's

adopted thresholds for nitrogen oxides (see Table 6 in EA-14-029). In order to mitigate emission impacts from the diesel engines, Santa Clara proposes to enter into a Voluntary Emission Reduction Agreement with the San Joaquin Valley Air Pollution Control District prior to installation of the diesel engines. Under the agreement, Santa Clara would pay the San Joaquin Valley Air Pollution Control District mitigation fees and the Air District would enter into funding agreements with owners and/or operators of pollution source equipment to achieve emission reductions which offset the emissions from Santa Clara.

Global Climate

As shown in Tables 5 and 6 of EA-14-029, estimated carbon dioxide emissions from the Proposed Action are well below the Environmental Protection Agency's 25,000 metric tons per year threshold for annually reporting greenhouse gas emissions. Accordingly, the Proposed Action would result in below *de minimis* impacts to global climate change.

Cumulative Impacts

Cumulative impacts result from incremental impacts of the Proposed Action or No Action alternative when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. To determine whether cumulatively significant impacts are anticipated from the Proposed Action or the No Action alternative, the incremental effect of both alternatives were examined together with impacts from past, present, and reasonably foreseeable future actions in the same geographic area.

Water Resources

Reclamation has reviewed existing or foreseeable projects in the same geographic area that could affect or could be affected by the Proposed Action as Reclamation and CVP contractors have been working on various drought-related projects, including this one, in order to manage limited water supplies due to current hydrologic conditions and regulatory requirements. This and similar projects would have a cumulative beneficial effect on water supply during this critically dry year.

As in the past, hydrological conditions and other factors are likely to result in fluctuating water supplies which drive requests for water service actions. Water districts provide water to their customers based on customers' demands and available water supplies and timing, while attempting to minimize costs. Farmers irrigate and grow crops based on these conditions and factors, and myriad water service actions are approved and executed each year to facilitate water needs. It is likely that during the drought, more districts will request exchanges, transfers, and Warren Act contracts (conveyance of non-CVP water in CVP facilities) due to hydrologic conditions. Each water service transaction involving Reclamation undergoes environmental review prior to approval.

As described previously, the only difference between the Proposed Action and Santa Clara's previously approved groundwater banking program is the placement of temporary pumping facilities in order to reverse flow of up to 18,000 AF of Santa Clara's banked CVP water for exchange with Reclamation in the event an exchange under normal operations of the banking program cannot be done. As such, no additional cumulative impacts to water resources would occur beyond what was previously analyzed in EA-05-126. As the reverse flow would be coordinated with Reclamation and DWR prior to introduction into the Aqueduct, the Proposed Action and other would not hinder the normal operations of the CVP nor SWP nor would it interfere with Reclamation's obligation to deliver water to its contractors or to local fish and wildlife habitat.

Biological Resources

As the Proposed Action is not expected to result in any direct or indirect impacts to biological resources, there would be no cumulative impacts.

Air Quality

The majority of the installation and operation emissions for the Proposed Action are well below the *de minimis* thresholds established by the San Joaquin Valley Air Pollution Control District. Although, diesel emissions are estimated to exceed the San Joaquin Valley Air Pollution Control District's thresholds of significance for NO_x, Santa Clara will mitigate these impacts in order to offset emissions as described above. As a result, the Proposed Action is not expected to contribute to cumulative adverse impacts to air quality.

Global Climate

Greenhouse gas emissions are considered cumulatively significant; however, the estimated annual carbon dioxide emissions required to install and operate the temporary pump stations is well below the 25,000 metric tons per year threshold for reporting greenhouse gas emissions. As a result, the Proposed Action is not expected to contribute to cumulative adverse impacts to global climate change.

RECLAMATION

Managing Water in the West

Draft Environmental Assessment

Santa Clara Valley Water District California Aqueduct Reverse Flow Project

EA-14-029



U.S. Department of the Interior
Bureau of Reclamation

October 2014

Mission Statements

The mission of the Department of the Interior is to protect and manage the Nation's natural resources and cultural heritage; provide scientific and other information about those resources; and honor its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Contents

	Page
Section 1 Introduction	1
1.1 Background	1
1.2 Need for the Proposed Action	1
Section 2 Alternatives Including the Proposed Action	3
2.1 No Action Alternative	3
2.2 Proposed Action	3
2.2.1 Temporary Pumping Facilities	3
2.2.2 Environmental Commitments	5
Section 3 Affected Environment and Environmental Consequences	9
3.1 Resources Eliminated from Further Analysis	9
3.2 Water Resources	10
3.2.1 Affected Environment	10
3.2.2 Environmental Consequences	11
3.3 Biological Resources	12
3.3.1 Affected Environment	13
3.3.2 Environmental Consequences	17
3.4 Air Quality	19
3.4.1 Affected Environment	19
3.4.2 Environmental Consequences	20
3.5 Global Climate	22
3.5.1 Affected Environment	22
3.5.2 Environmental Consequences	22
Section 4 Consultation and Coordination	23
4.1 Public Review Period	23
Section 5 Preparers and Reviewers	25
Section 6 References	27
Figure 1 Proposed Action Area	2
Figure 2 Conceptual Design for Temporary Pumping Facilities	7
Table 1 Environmental Protection Measures and Commitments	5
Table 2 Resources Eliminated from Further Analysis	9
Table 3 Ten-Year Average South-of-Delta Allocations	10
Table 4 Special-status species that may occur within the Action Area	13
Table 5 Emission Estimates for Installation of the Proposed Facilities	20
Table 6 Emission Estimates for Operation of the Proposed Facilities	21

Appendix A	Reclamation's Cultural Resources Determination
Appendix B	Reclamation's Indian Trust Assets Determination
Appendix C	Air Quality Modeling Results

Section 1 Introduction

1.1 Background

In 2006, Santa Clara Valley Water District (Santa Clara) requested approval from the Bureau of Reclamation (Reclamation) to bank a portion of its Central Valley Project (CVP) water supplies within Semitropic Water Storage District (Semitropic). Reclamation analyzed the annual banking of up to 100,000 acre-feet (AF) of Santa Clara's CVP water within Semitropic through December 31, 2027 in Environmental Assessment (EA)-05-126 (Reclamation 2005). EA-05-126 also analyzed the annual return via exchange of up to 100,000 AF of Santa Clara's banked CVP water for agricultural and municipal and industrial (M&I) use during dry years. Reclamation determined that Santa Clara's groundwater banking and exchange program would not significantly affect the quality of the human environment and a Findings of No Significant Impact (FONSI) was executed on April 18, 2006. Both the EA and FONSI are hereby incorporated by reference.

Under Santa Clara's banking program, previously banked water is pumped into the California Aqueduct (Aqueduct) for use by State Water Project (SWP) water users south of Semitropic, and in exchange, Santa Clara is delivered an equal amount of SWP water supply through the South Bay Aqueduct or San Felipe Division (hereafter referred to as "normal operations"). However, due to current drought conditions, there are limited supplies available in the SWP for exchange under normal operations. Consequently, Santa Clara has requested approval from Reclamation to place temporary pumps within Reclamation's rights-of-way (ROW) in order to reverse-flow previously banked CVP water northerly in the Aqueduct for exchange with Reclamation (see Figure 1).

1.2 Need for the Proposed Action

The State of California is currently experiencing unprecedented water management challenges due to severe drought and regulatory actions. Both the State and Federal water projects are forecasting very low storage conditions in all major reservoirs. As a result, CVP and SWP contractors need to find alternative sources of water to meet existing demands.

In order to address impacts of the severe drought, the purpose of the Proposed Action is to convey previously banked CVP water northerly in the Aqueduct for exchange with Reclamation in the event normal operations are not possible.

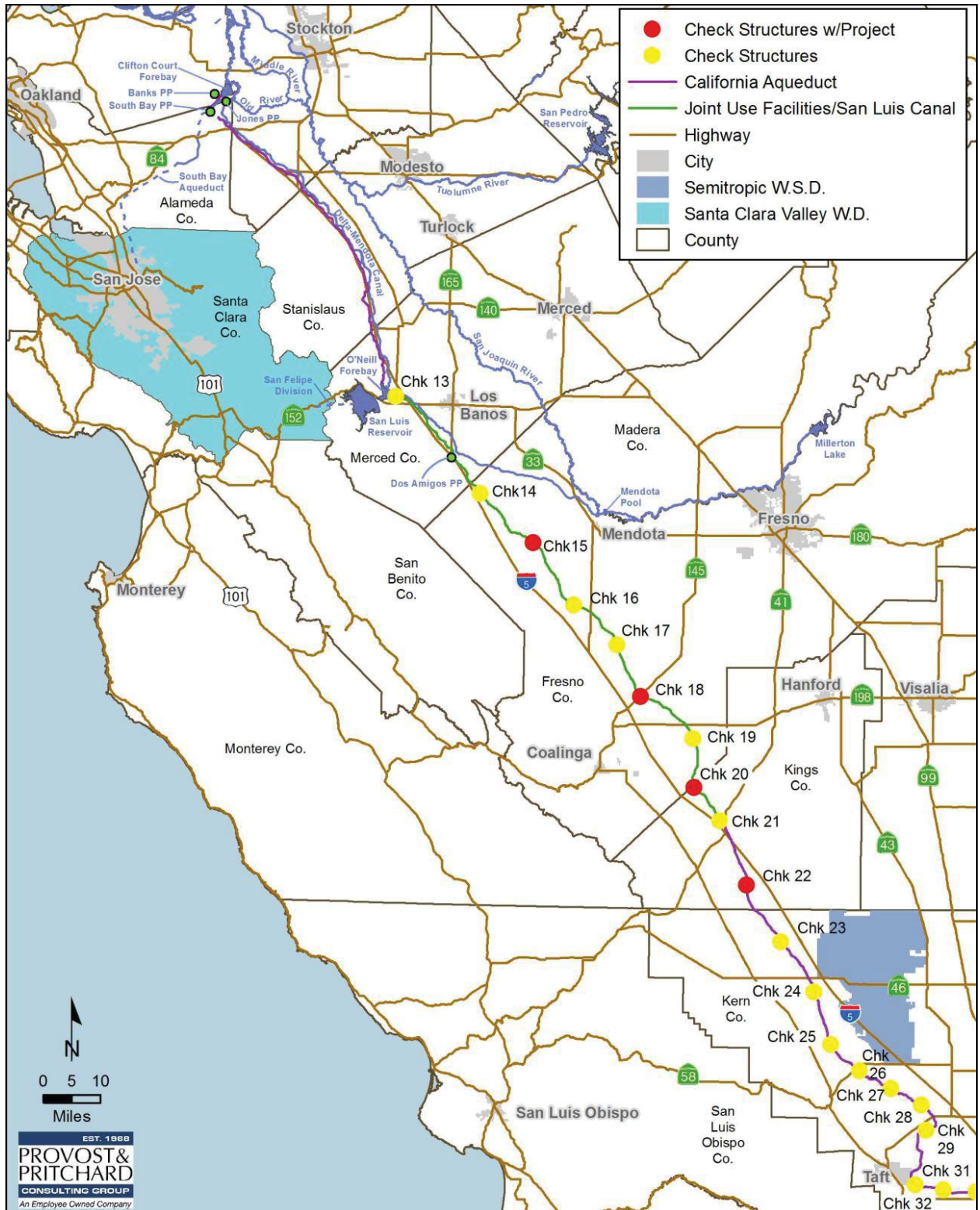


Figure 1 Proposed Action Area

Section 2 Alternatives Including the Proposed Action

This EA considers two possible actions: the No Action Alternative and the Proposed Action. The No Action Alternative reflects future conditions without the Proposed Action and serves as a basis of comparison for determining potential effects to the human environment.

2.1 No Action Alternative

Under the No Action Alternative, Reclamation would not approve the placement of temporary pumps within Reclamation ROW to reverse flow previously banked CVP water northerly in the Aqueduct for exchange with Reclamation. Santa Clara would only be able to exchange previously banked CVP water as long as DWR had supplies available for exchange. Due to current drought conditions and limited SWP supplies, it is possible Santa Clara would not be able to acquire their previously banked water to supplement limited water supplies.

2.2 Proposed Action

Reclamation proposes to approve the placement of temporary pumping facilities to reverse flow previously banked CVP water for exchange as described below.

2.2.1 Temporary Pumping Facilities

Santa Clara proposes to install three temporary pump stations within Reclamation's ROW at check structures 20, 18, and 15 of the joint-use portion of the Aqueduct. A fourth temporary pump station would be placed within DWR's ROW at check structure 22 of the Aqueduct. See Figure 1 for proposed locations.

The general pump station configuration (Figure 2) at each of the check structures would include the following temporary components:

- Up to four 13- to 100-cubic-foot-per-second (cfs) nominal pumps located on the right embankment adjacent to the secondary maintenance road, except at Check 18 where the pumps would be on the left embankment adjacent to the primary maintenance road.
- Up to four 12 inch to 36 inch intake (suction) pipelines.
- Up to four 12 inch to 36 inch discharge pipelines, including instantaneous and totalizing flow meters reading in cfs and AF respectively, placed alongside the secondary access roads, except at Check 18, where they would be placed alongside the primary maintenance road.

- Up to four 500-gallon fuel tanks (one per pump) with regulated spill containment.
- Up to two 1,200-gallon fuel tanks with regulated spill containment.

Installation of the temporary pumping stations and associated appurtenances is anticipated to last approximately four weeks and would utilize equipment such as cranes, flatbed trucks, and a forklift. Installation work hours would be during daylight hours, Monday through Friday.

The temporary pump stations and power units would be delivered by flatbed delivery trucks to the proposed project sites. The pump stations and power units would be placed on skids (beams which create a frame attached to the bottom of the pumps). The skids would allow for movement of the station from the truck to the ground and serve as the structural support. Placement would occur by a crane or forklift placed at the top of the embankment. Prefabricated piping would be placed on the embankment and connected to the pumps to allow the water to be pumped around the sides of the existing control gates at each check structure. Fuel tanks, with spill containment, would be placed on the Aqueduct roadway at each proposed site.

All project components would be placed above ground; as the installation of the proposed project requires only temporary placement of prefabricated equipment and piping. As a result no ground disturbing activities such as grading, trenching or excavation would occur. The equipment would be placed in an area of less than 0.5 acres at each site.

Operations

Semitropic would pump up to 31,500 AF of Santa Clara's previously banked CVP water into the Aqueduct north of Check Structure 25 (see Figure 1). Up to 13,500 AF would be exchanged with DWR under normal operations of the banking program. The remaining water, up to 18,000 AF, would be reverse flowed through metered discharge piping placed around the sides of the existing control gates at up to four check structures (22, 20, 18, and/or 15), and delivered to CVP contractors north of check structure 20 (and south of Dos Amigos Pumping Plant) to meet scheduled demands¹. In exchange, Reclamation would deliver an equal amount, less conveyance losses if any, of CVP water supply to Santa Clara from San Luis Reservoir or O'Neill Forebay, depending upon conditions at the time of exchange. Santa Clara would coordinate with Reclamation and DWR to avoid unneeded pumping.

Each of the pump stations would be designed for a capacity of up to 100 cfs. However, the actual pumping rate would depend on a number of considerations including how soon the system becomes operational, the amount of CVP water

¹ Santa Clara may not need to install and operate the temporary pumps at all four check structures to complete the exchange.

supply available for exchange, hydrologic conditions, and the actual amount of water needed to complete the exchange.

Semitropic's pump-in capabilities are generally greatest beginning September 1, due to drop off of internal irrigation demands. Santa Clara's plan is to operate the bypass pump stations when the flows at Dos Amigos Pumping Plant (located between Checks 13 and 14 along the Aqueduct) are projected to be less than 100 cfs. If at least 100 cfs is scheduled to flow from Dos Amigos to meet demands south of Semitropic, the pumps would not need to operate since a direct exchange under normal operations would be possible.

It is anticipated that Santa Clara would operate the temporary pumps between the months of August and February (e.g., when flows at Dos Amigos Pumping Plant are expected to be less than 100 cfs, Santa Clara may operate the pump stations between August and December 2014 and possibly in January and February 2015 at 100 cfs or until 18,000 AF is reached). If the pumps are operated at their maximum capacity (100 cfs), it is expected that the operation would occur over a period of 90 days to pump the maximum amount of 18,000 AF around Check Structures 22, 20, 18, and/or 15. If Santa Clara determines that a lower flow rate is needed for the water exchange, it may operate fewer of the temporary facilities or operate them at below their maximum capacities; conversely pumping duration would be longer to achieve the maximum amount of 18,000 AF.

Once the maximum expected pumping (18,000 AF) is completed, the temporary pumping facilities and infrastructure would be removed from each site. Removal is anticipated to last approximately four weeks and would require the use of cranes, forklifts and flatbed delivery trucks. No ground disturbance would occur. All project components will be removed by Santa Clara by June 30, 2016 regardless if all 18,000 AF has been pumped.

2.2.2 Environmental Commitments

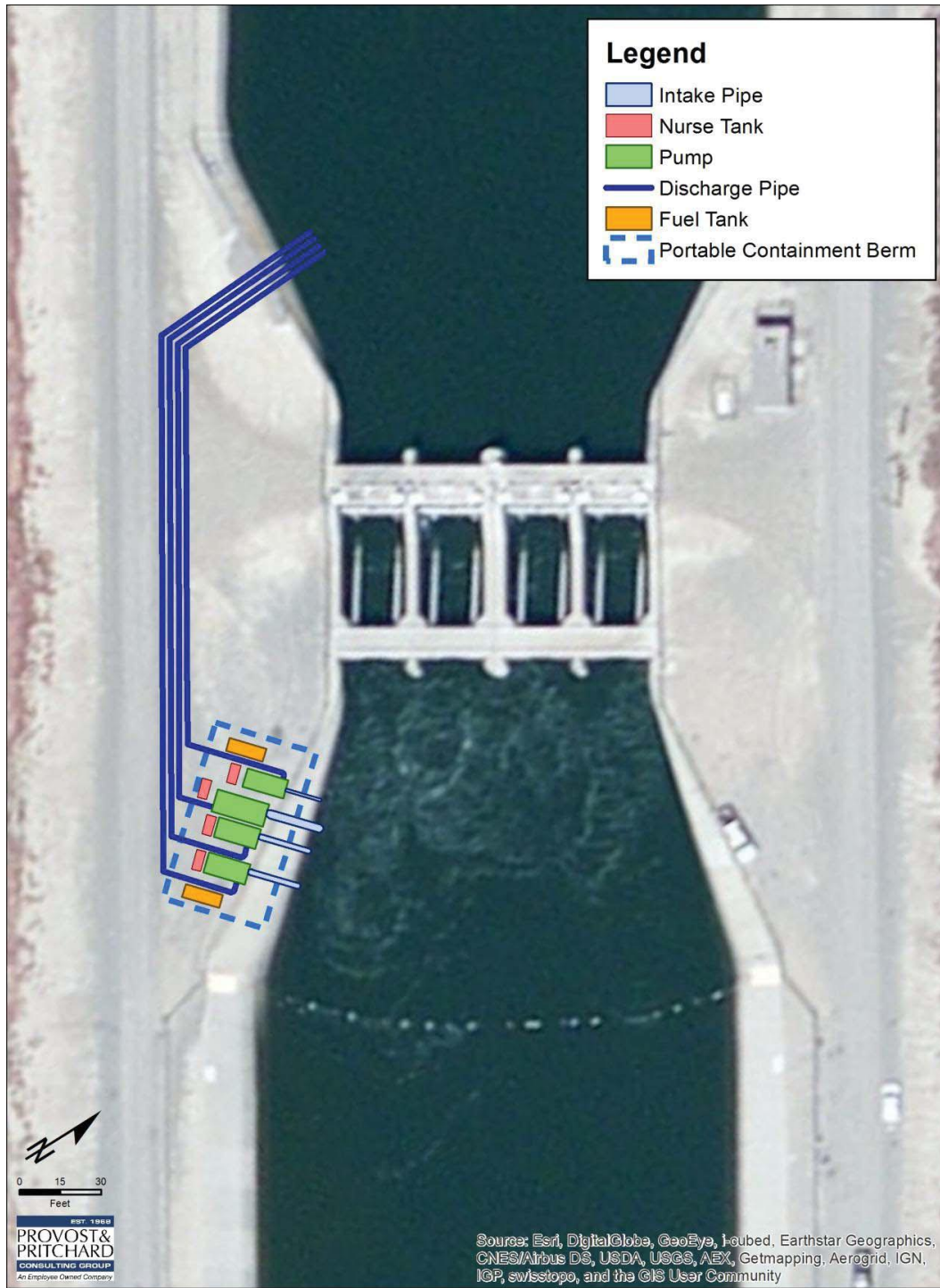
Santa Clara shall implement the following environmental protection measures to reduce environmental consequences associated with the Proposed Action (Table 1). Environmental consequences for resource areas assume the measures specified would be fully implemented.

Table 1 Environmental Protection Measures and Commitments

Resource	Protection Measure
Air Quality	Prior to installation of diesel engines at the pump stations, Santa Clara shall enter into a Voluntary Emission Reduction Agreement with the San Joaquin Valley Air Pollution Control District to mitigate for emission impacts. A copy of the agreement will be provided to Reclamation prior to the start of pumping.
Biological Resources	No native or untilled land (fallow for three consecutive years or more) may be cultivated with this water without additional environmental analysis and approval.
	The Proposed Action shall not change the land use patterns of the cultivated or fallowed fields that do have some value to listed species or birds protected by the Migratory Bird Treaty Act (MBTA).
	A qualified biologist or ornithologist will conduct pre-construction

	surveys for burrowing owls at each of the Check locations (15, 18, 20, and 22) within 30 days prior to the delivery of pumping equipment, according to the revised California Department of Fish and Game Staff Report ² on Burrowing Owl Mitigation (Department 2012), or current guidance. Occupied burrows shall not be disturbed during the breeding season (February 1 through August 31). A minimum 160-foot-wide buffer shall be placed around occupied burrows during the nonbreeding season (September 1 through January 31), and a 250-foot-wide buffer shall be placed around occupied burrows during the breeding season. Ground-disturbing activities shall not occur within the designated buffers.
	If installation/removal activities at Check 15 will occur during the nesting season (February 15 to September 15), preconstruction surveys for active Swainson's hawk nests will be conducted in and around all potential nest trees within 0.5 miles of project-related disturbance (including construction-related traffic). These surveys will be conducted in accordance with the <i>Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley</i> (Swainson's Hawk Technical Advisory Committee 2000), or current guidance. If known or active nests are identified through preconstruction surveys or other means, a ½ mile no-disturbance buffer shall be established around all active nest sites if construction cannot be limited to occur outside the nesting season (February 15 through September 15). Worker awareness training and biological monitoring will be conducted to ensure that avoidance measures are being implemented.
Water Resources	The Proposed Action must meet Reclamation's and DWR's water quality requirements as required for Santa Clara's previously approved banking program.
Various Resources	Use of the water shall comply with all federal, state, local, and tribal law, and requirements imposed for protection of the environment and Indian Trust Assets.
	No land conversions may occur as a result of the Proposed Action.

² California Department of Fish and Game now referred to as the Department of Fish and Wildlife.



W:\Clients\Central California ID-3510\351014B1-Aqueduct Reverse Flow\GIS\Map\general_site_plan.mxd

Figure 2 Conceptual Design for Temporary Pumping Facilities

THIS PAGE LEFT INTENTIONALLY BLANK

Section 3 Affected Environment and Environmental Consequences

This section identifies the potentially affected environment and the environmental consequences involved with the Proposed Action and the No Action Alternative, in addition to environmental trends and conditions that currently exist.

The only difference between the Proposed Action analyzed in this EA and the action analyzed in the EA for Santa Clara's banking program with Semitropic is the temporary placement of three temporary pump stations within Reclamation's ROW for reverse flow of up to 18,000 AF of CVP water for exchange with Reclamation. Therefore, the affected environment and environmental consequences section in this EA will focus on those changes and will not repeat information included in EA-05-126 as it is incorporated by reference into this EA.

3.1 Resources Eliminated from Further Analysis

Reclamation analyzed the affected environment and determined that the Proposed Action would not have the potential to cause direct, indirect, or cumulative adverse effects to the resources listed in Table 2.

Table 2 Resources Eliminated from Further Analysis

Resource	Reason Eliminated
Land Use	Santa Clara would not change historic land and water management practices under the Proposed Action. Santa Clara's previously banked CVP water would move through existing facilities for use within Santa Clara's CVP Place of Use for ongoing agricultural and M&I purposes. The water would not be used to place untilled or new lands into production, or to convert undeveloped land to other uses.
Cultural Resources	Reclamation has determined that the Proposed Action does not have the potential to cause effects to historic properties pursuant to 36 Code of Federal Regulations Part 800.3(a)(1). See Appendix A for Reclamation's determination.
Indian Sacred Sites	The Proposed Action would not limit access to or ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites.
Indian Trust Assets	The Proposed Action would not impact Indian Trust Assets as there are none in the Proposed Action area. See Appendix B for Reclamation's determination.
Socioeconomics	The Proposed Action would have beneficial impacts on socioeconomic resources with Santa Clara as the previously banked CVP water would be used for ongoing M&I purposes and to help sustain existing crops and maintain farming within the district.
Environmental Justice	The Proposed Action would not cause dislocation, changes in employment, or increase flood, drought, or disease nor would it disproportionately impact economically disadvantaged or minority populations.

3.2 Water Resources

3.2.1 Affected Environment

The affected environment is the same as described in Section 3.1 and 3.2 of EA-05-126 (Reclamation 2005). Rather than repeating the same information that has been incorporated by reference into this document, the affected environment and environmental consequences section in this EA will focus on updates or changes.

Central Valley Project

As shown in Table 3, south-of-Delta CVP agricultural allocations averaged 47 percent from 2005 to 2014. A 100 percent allocation was only received once in the last 10 years. Over the last five years the average agricultural allocation was 37 percent with a range of 0 to 80 percent. M&I allocations averaged 78 percent between 2005 and 2014. Over the last five years, the average M&I allocation was reduced slightly to 74 percent with a range of 50 to 100 percent.

Table 3 Ten-Year Average South-of-Delta CVP Allocations

Contract Year ¹	Agricultural Allocations (%) ²	M&I Allocations ²
2014	0	50
2013	20	70
2012	40	75
2011	80	100
2010	45	75
2009	10	60
2008	40	75
2007	50	75
2006	100	100
2005	85	100
Average	47	78

¹A Contract Year is from March 1 of a given year through February 28/29 of the following year.
²As percentage of Water Service Contract total or as allocated under M&I Historic use
Source: http://www.usbr.gov/mp/cvo/vungvari/water_allocations_historical.pdf and
<http://www.usbr.gov/newsroom/newsrelease/index.cfm>

State Water Project

The SWP is a water storage and delivery system of reservoirs, aqueducts, powerplants and pumping plants. The SWP stores and distributes water to 29 urban and agricultural water suppliers in Northern California, the San Francisco Bay Area, the San Joaquin Valley, the Central Coast, and Southern California (DWR 2014a). Due to current hydrologic conditions, DWR allocated zero percent to its water contractors on January 31, 2014. This was increased to five percent on April 18, 2014, although water supplies would not be available to contractors until September (DWR 2014b).

California Aqueduct The Aqueduct is a feature of the SWP and is operated by DWR. Water is exported from the Sacramento-San Joaquin River Delta at the Clifton Court Forebay through the Harvey O. Banks pumping plant and is pumped into the Aqueduct. The Aqueduct extends to the O'Neill Forebay where water can be pumped into San Luis Reservoir. The segment of the Aqueduct between the O'Neill Forebay and the State Highway 41 bridge is a joint-use

facility between DWR and Reclamation, and is known also as the San Luis Canal (see Figure 1). Water deliveries in this section are made to both federal and state water contractors. The Aqueduct continues south from State Highway 41 bridge to southern California.

3.2.2 Environmental Consequences

No Action

Under the No Action Alternative, Santa Clara would only be able to exchange previously banked CVP water under its previously approved long-term groundwater banking program with Semitropic as long as DWR had supplies available for exchange. Due to current drought conditions and limited SWP supplies, it is possible Santa Clara would not be able to acquire their previously banked water to supplement limited water supplies this year. Santa Clara would have to rely on its CVP and SWP allocations and/or purchase water from willing sellers to meet its service area water demands; however, no sellers have been identified and the action is outside the scope of this EA. If other sources of supplemental water cannot be provided by Santa Clara to meet demands, additional groundwater pumping in-district may become necessary. Through its proactive groundwater management programs and activities, Santa Clara, as the groundwater management agency for the Santa Clara and Llagas Subbasins in Santa Clara County, has helped to maintain groundwater levels, minimized land subsidence, and improved groundwater protection to ensure sufficient water is available for present and future beneficial uses (Santa Clara 2012). There may be slight impacts to groundwater resources as a result of the No Action Alternative if additional groundwater pumping is needed; however, these impacts would likely be stabilized by the on-going efforts described in Santa Clara's groundwater management plan.

Proposed Action

The only difference between the Proposed Action analyzed in this EA and the action analyzed in the EA for Santa Clara's banking program with Semitropic is the temporary placement of three temporary pump stations within Reclamation's ROW for reverse flow of up to 18,000 AF of CVP water for exchange with Reclamation. No additional groundwater pumping would occur in order to reverse flow Santa Clara's banked CVP water beyond what was previously approved and analyzed in EA-05-126. As groundwater pumping and water quality impacts are within the scope of Santa Clara's previously approved groundwater banking program, no additional impacts would occur.

Reverse flow of Santa Clara's banked CVP water would only occur once Santa Clara is unable to exchange with DWR and if Reclamation has demand for the exchange. All exchanges would be coordinated with Reclamation and DWR prior to introduction of Santa Clara's banked CVP water. Consequently, the Proposed Action would not affect CVP or SWP operations and would not change existing diversion points from the Delta under Reclamation's or DWR's water rights permits. The Proposed Action would not interfere with Reclamation's obligations

to deliver water to other contractors, wetland habitat areas, or for other environmental purposes. The Proposed Action would utilize existing facilities and only temporary non-ground disturbing infrastructure would be utilized for movement of this water. No native or untilled land (fallow for three years or more) would be cultivated with water involved with these actions.

Cumulative Impacts

Cumulative impacts result from incremental impacts of the Proposed Action or No Action alternative when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. To determine whether cumulatively significant impacts are anticipated from the Proposed Action or the No Action alternative, the incremental effect of both alternatives were examined together with impacts from past, present, and reasonably foreseeable future actions in the same geographic area.

Reclamation has reviewed existing or foreseeable projects in the same geographic area that could affect or could be affected by the Proposed Action as Reclamation and CVP contractors have been working on various drought-related projects, including this one, in order to manage limited water supplies due to current hydrologic conditions and regulatory requirements. This and similar projects would have a cumulative beneficial effect on water supply during this critically dry year.

As in the past, hydrological conditions and other factors are likely to result in fluctuating water supplies which drive requests for water service actions. Water districts provide water to their customers based on customers' demands and available water supplies and timing, while attempting to minimize costs. Farmers irrigate and grow crops based on these conditions and factors, and myriad water service actions are approved and executed each year to facilitate water needs. It is likely that during the drought, more districts will request exchanges, transfers, and Warren Act contracts (conveyance of non-CVP water in CVP facilities) due to hydrologic conditions. Each water service transaction involving Reclamation undergoes environmental review prior to approval.

As described previously, the only difference between the Proposed Action and Santa Clara's previously approved groundwater banking program is the placement of temporary pumping facilities in order to reverse flow of up to 18,000 AF of Santa Clara's banked CVP water for exchange with Reclamation in the event an exchange under normal operations of the banking program cannot be done. As such, no additional cumulative impacts to water resources would occur beyond what was previously analyzed in EA-05-126. As the reverse flow would be coordinated with Reclamation and DWR prior to introduction into the Aqueduct, the Proposed Action and other would not hinder the normal operations of the CVP

nor SWP nor would it interfere with Reclamation's obligation to deliver water to its contractors or to local fish and wildlife habitat.

3.3 Biological Resources

3.3.1 Affected Environment

Reclamation requested an official species list from the U.S. Fish and Wildlife Service (USFWS) on September 25, 2014 via the Sacramento Field Office's website: http://www.fws.gov/sacramento/ES_Species/Lists/es_species_lists-form.cfm (Document Number: 140925042249). The list is for the following U.S. Geological Survey 7½-minute topographic quadrangles which overlap where the temporary pumping facilities would be placed aboveground on skids: Avenal Gap, La Cima, Harris Ranch, and Chaney Ranch. Reclamation also queried the California Department of Fish and Wildlife (Department), California Natural Diversity Database (CNDDDB), for records of protected species within 10 miles of the project location (Department 2014). The USFWS and Department lists, in addition to other information within Reclamation's files, were combined to create the list within Table 4.

Table 4 Special-status species that may occur within the Action Area

Species	Status ¹	Habitat	Effects ²	Potential to occur and summary basis for ESA determination ³
AMPHIBIANS				
California red-legged frog (<i>Rana draytonii</i>)	E	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	NE	Absent. No CNDDDB-recorded occurrences in the Action area and agricultural lands do not provide suitable habitat.
California tiger salamander, central population (<i>Ambystoma californiense</i>)	T	Found primarily in Riparian woodland, Valley and foothill grasslands. Need underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding.	NE	Absent. No CNDDDB-recorded occurrences in the Action area and agricultural lands do not provide suitable habitat.
BIRDS				
Burrowing owl (<i>Athene cunicularia</i>)	MBTA	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	NE	Possible. There are records of this species in Fresno and Kings County. Grazed grasslands and along the canal banks provide suitable nesting habitat. Any potential burrows with nesting burrowing owl will be avoided.

Species	Status ¹	Habitat	Effects ²	Potential to occur and summary basis for ESA determination ³
Swainson's hawk (<i>Buteo swainsoni</i>)	MBTA	Breeds in grasslands with scattered trees, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	NE	Possible. Documented as extant in the area during the breeding season (March 1 through September 15), and agricultural lands provide foraging habitat. There is a tree that potentially provides suitable nesting habitat near Check 15; however, the nesting season will be avoided at this site. If this is not feasible, a preconstruction survey for Swainson's hawk will be conducted at least 15 days prior to pump installation at Check 15.
FISH				
Delta smelt (<i>Hypomesus transpacificus</i>)	T	Endemic to the Delta. Found in San Joaquin River up to Mossdale in some years and in Sacramento River up to Rio Vista where salinity is 2-7 parts per thousand.	NE	Absent. No natural waterways within the species' range would be affected by the Proposed Action.
INVERTEBRATES				
Valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>)	T	Occurs only in the Central Valley of California, in association with blue elderberry (<i>Sambucus mexicana</i>). Prefers to lay eggs in elderberries 2-8 inches in diameter; some preference shown for "stressed" elderberries.	NE	Absent. No individuals or habitat in area of impact. No elderberry shrubs would be impacted by the Proposed Action.
Vernal pool fairy shrimp (<i>Branchinecta lynchi</i>)	T	Endemic to the grasslands of the Central Valley, Central Coast mountains, and South Coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	NE	Absent. No individuals or suitable habitat in area of effect. Vernal pools absent.
MAMMALS				
Fresno kangaroo rat (<i>Dipodomys nitratoides exilis</i>)	E	Alkali sink-open grassland habitats in western Fresno County. Bare alkaline clay-based soils subject to seasonal inundation, with more friable soil mounds around shrubs and grasses.	NE	Absent. No CNDDDB-recorded occurrences and managed agricultural lands do not provide suitable habitat.

Species	Status ¹	Habitat	Effects ²	Potential to occur and summary basis for ESA determination ³
Giant kangaroo rat (<i>Dipodomys ingens</i>)	E	Annual grasslands on the western side of the San Joaquin Valley, marginal habitat in alkali scrub. Need level terrain and sandy loam soils for burrowing.	NE	Unlikely. There is suitable habitat in Panoche Hills and Kettleman Hills, in western Fresno and Kings Counties, respectively. Only one CNDDDB-occurrence record reported near the Proposed Action area; located 0.5 miles west of Check 22, taken in 1979. Managed agricultural lands are not expected to provide suitable habitat. There would be no land use changes, no conversion of habitat, and no ground disturbance as a result of this action.
San Joaquin kit fox (<i>Vulpes macrotis mutica</i>)	E	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	NE	Possible. Several CNDDDB-occurrence records exist in the vicinity of the Proposed Action area and this species may move through, or forage in, the area. There would be no land use changes, no conversion of habitat, and no ground disturbance as a result of this action.
Tipton kangaroo rat (<i>Dipodomys nitratoideus nitratoideus</i>)	E	Saltbrush scrub and sink scrub communities in the Tulare Lake Basin of the southern San Joaquin Valley. Needs soft friable soils which escape seasonal flooding. Digs burrows in elevated soil mounds at bases of shrubs.	NE	Unlikely. There is suitable habitat in western Kings County, in the Kettleman Hills area. The closest CNDDDB-occurrence record to the Proposed Action area is from Kettleman Hills (>7.5 miles northwest of Check 22) taken in 1951. Managed agricultural lands are not expected to provide suitable habitat. There would be no land use changes, no conversion of habitat, and no ground disturbance as a result of this action.
PLANTS				
San Joaquin woolly-threads (<i>Monolopia congdonii</i>)	E	Chenopod scrub, valley and foothill grasslands. Alkaline or loamy plains; sandy soils, often with grasses and within chenopod scrub. This species is found only in the southern San Joaquin Valley and surrounding hills. It grows on neutral to subalkaline soils. On the San Joaquin Valley floor, it typically is found on sandy or sandy loam soils.	NE	Unlikely. CNDDDB records indicate extant populations occur within western foothills of Fresno and Kings Counties. Agricultural lands do not provide suitable habitat. There would be no land use changes, no conversion of habitat, and no ground disturbance as a result of this action.
REPTILES				

Species	Status ¹	Habitat	Effects ²	Potential to occur and summary basis for ESA determination ³
Blunt-nosed leopard lizard (<i>Gambelia sila</i>)	E	Resident of sparsely vegetated alkali and desert scrub habitats in areas of low topographic relief. They seek cover in mammal burrows, under shrubs or structures such as fence posts; they do not excavate their own burrow.	NE	Unlikely. Suitable habitat present in Panoche-Ciervo Hills and Kettleman Hills, in western Fresno and Kings Counties, respectively. There are two CNDDDB-occurrence records within 5 miles of the Proposed Action area; located 0.5 miles west and 4.4 miles northwest of Check 22. There would be no land use changes, no conversion of habitat, and no ground disturbance as a result of this action.
Giant garter snake (<i>Thamnophis gigas</i>)	T	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches.	NE	Absent. Closest CNDDDB-recorded occurrences taken from Fresno Slough, which is greater than 17 miles east of temporary pumping facilities. There would be no land use changes, no conversion of habitat, and no ground disturbance as a result of this action. Also, no water quality changes to their potential aquatic habitat.
1 Status= Status of federally protected species protected under Endangered Species Act (ESA), unless otherwise indicated. E: Listed as Endangered. T: Listed as Threatened. MBTA: Avian species protected under the Migratory Bird Treaty Act 2 Effects = Effects Determination NE = No Effect determination. 3 Definitions Of Occurrence Indicators in Proposed Action Area. Present: Species recorded in area and suitable habitat present. Possible: Species recorded in area and habitat suboptimal or seasonal. Unlikely: Species recorded in area but habitat marginal or lacking entirely. Absent: Species not recorded in study area and suitable habitat absent.				

Special-Status Species and Critical Habitat

The construction area is surrounded by urban development and agricultural lands. Temporary pumps would be placed on maintenance roads within Reclamation's ROW at check structures 20, 18, and 15 of the joint-use portion of the Aqueduct. A fourth temporary pump station would be placed on the maintenance road within DWR's ROW at check structure 22 of the Aqueduct. These maintenance roads are kept barren and subject to frequent human disturbance during operation and maintenance (O&M) activities, including blading and disking, and the use herbicide applications (USFWS 2005). Few special-status species can use these lands except for the burrowing owl, Swainson's hawk, and San Joaquin kit fox. There is no proposed or designated critical habitat within the Action Area.

Burrowing owl This small, ground-dwelling owl is a yearlong-resident of the San Joaquin Valley and protected under the Migratory Bird Treaty Act (MBTA).

CNDDDB records indicate this species does burrow along the Aqueduct, with the closest reported observation less than a mile from Check 18 (Department 2014). The Burrowing owl exhibits high site fidelity and lives in ground squirrel and other mammal burrows that it appropriates and enlarges for its purposes. This owl is typically found in shortgrass grasslands, open scrub habitats, and a variety of open human-altered environments, such as golf courses, airport runways, canal right-of ways, and agricultural fields (CDFG 1995).

Swainson's hawk Swainson's hawk is a federal species of concern and protected under MBTA. Swainson's hawks will begin to arrive to their breeding grounds in the Central Valley in early March. They often nest peripherally to the valley and use lone trees or groves of trees in agricultural fields (CDFG 1994). There is one tree that could potentially provide nesting habitat for Swainson's hawk located adjacent to Check 15.

San Joaquin kit fox The San Joaquin kit fox is federally listed as an endangered species. They currently inhabit western and southern San Joaquin valley in grassland and scrubland communities. Kit foxes excavate their own dens, or will use other animals, and human-made structures (culverts, abandoned pipelines, and banks in sumps or roadbeds). Their diet varies based on prey availability, and includes small to mid-sized mammals, ground-nesting birds, and insects. Primary reasons for the species decline include loss and degradation of habitat (USFWS 1998).

Kit foxes have been recorded within the vicinity of the project area (Department 2014). Kit fox could potentially use the area for movement or foraging purposes. Yet, agricultural lands, including levee roads, inherently present challenges and are generally not suitable for long-term occupation by kit foxes (Warrick et al. 2007). Ground disturbance is frequent (e.g., tilling, maintenance, harvesting), which can destroy dens. Also, most agricultural lands in the Valley are irrigated, which can flood and collapse dens. Agricultural lands also are subject to intensive chemical applications, including fertilizers, pesticides, and defoliants. Use of rodenticides is common in some agricultural environments and is particularly problematic for kit foxes due to the potential for secondary poisoning. Finally, all of the factors above in addition to the relative sterility of most agricultural fields (e.g., weed suppression) result in a lack of prey availability for kit foxes.

3.3.2 Environmental Consequences

No Action

Under the No Action Alternative, Reclamation would not allow Santa Clara to place temporary pumps within Reclamation's ROW in order to reverse flow previously banked CVP water up the Aqueduct for exchange with Reclamation. Due to current drought conditions and limited SWP supplies, it is possible Santa Clara would not be able to acquire their previously banked water to supplement limited water supplies. Regardless, the conditions of special-status wildlife

species and habitats under the No Action Alternative would remain the same as they would be under existing conditions described in the Affected Environment; therefore, no additional effects to special-status species are associated with this alternative.

Proposed Action

As described above, the only special-status species that potentially could be present in the Proposed Action area includes the burrowing owl, Swainson's hawk, and San Joaquin kit fox. No critical habitat would be affected as there is none within the Action Area.

Burrowing Owl The potential presence of small mammal burrows at any of the Check locations, although unlikely due to frequent disturbances from the maintenance roads and O&M activities along the Aqueduct (USFWS 2005), could be used by burrowing owls. Placement of temporary pumps above the small mammal burrows, if occupied by burrowing owl, could adversely affect this species. However, Reclamation has included environmental protection measures (see Table 1) into the Proposed Action in order to prevent impacts to burrowing owls.

Swainson's Hawk The Proposed Action has the potential to impact nesting birds if installation/removal of the pump at Check 15 is initiated during the Swainson's hawk nesting season (February 15 to September 15). Noise from equipment such as trucks, cranes, and a forklift could cause the failure of a Swainson's hawk nest, if a pair was nesting in the vicinity. The loss of an active Swainson's hawk nest could contribute to continuing local and statewide declines. As such, Reclamation has included environmental protection measures (see Table 1) into the Proposed Action in order to prevent impacts to nesting Swainson's hawks.

San Joaquin Kit Fox It is possible, although unlikely based on their habitat requirements, that San Joaquin kit fox may migrate through the Proposed Action area. However, Reclamation does not anticipate impacts to kit fox because all work is proposed during daylight hours in highly disturbed habitat, i.e. maintenance roads, and San Joaquin kit fox are highly mobile species capable of avoiding any potential effects.

Based on the discussion above and the incorporation of environmental protection measures included in Table 1, Reclamation has determined there would be *No Effect* to proposed or listed species or critical habitat under the Endangered Species Act of 1973, as amended (16 U.S.C. §1531 et seq.) from the Proposed Action. Therefore, no consultation with the USFWS or National Marine Fisheries Service is necessary. Reclamation has also determined that the Proposed Action would have *No Take* of birds protected by the Migratory Bird Treaty Act (16 U.S.C. §703 et seq.).

Cumulative Impacts

As the Proposed Action is not expected to result in any direct or indirect impacts to biological resources, there would be no cumulative impacts.

3.4 Air Quality

Section 176 (C) of the Clean Air Act (42 U.S.C. 7506 (C)) requires any entity of the federal government that engages in, supports, or in any way provides financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable State Implementation Plan (SIP) required under Section 110 (a) of the Federal Clean Air Act (42 U.S.C. 7401 [a]) before the action is otherwise approved. In this context, conformity means that such federal actions must be consistent with SIP's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards and achieving expeditious attainment of those standards. Each federal agency must determine that any action that is proposed by the agency and that is subject to the regulations implementing the conformity requirements would, in fact conform to the applicable SIP before the action is taken.

On November 30, 1993, the Environmental Protection Agency (EPA) promulgated final general conformity regulations at 40 CFR 93 Subpart B for all federal activities except those covered under transportation conformity. The general conformity regulations apply to a proposed federal action in a non-attainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutant caused by the Proposed Action equal or exceed certain *de minimis* amounts thus requiring the federal agency to make a determination of general conformity.

3.4.1 Affected Environment

The Proposed Action area lies within the San Joaquin Valley Air Basin under the jurisdiction of the San Joaquin Valley Air Pollution Control District. The pollutants of greatest concern in the San Joaquin Valley are carbon monoxide, ozone, ozone precursors such as reactive organic gases, inhalable particulate matter between 2.5 and 10 microns in diameter (PM₁₀) and particulate matter less than 2.5 microns in diameter (PM_{2.5}). The San Joaquin Valley Air Basin has reached Federal and State attainment status for carbon monoxide, nitrogen dioxide, and sulfur dioxide. Although Federal attainment status has been reached for PM₁₀ the State standard has not been met and both are in non-attainment for ozone and PM_{2.5} (San Joaquin Valley Air Pollution Control District 2014). There are no established standards for nitrogen oxides (NO_x); however, they do contribute to nitrogen dioxide standards and ozone precursors such as volatile organic compounds/reactive organic gases (VOC/ROG).

3.4.2 Environmental Consequences

No Action

There would be no impact to air quality as conditions would remain the same as existing conditions.

Proposed Action

Under normal conditions, the annual extraction of at least 31,500 AF of Santa Clara's previously banked CVP water would occur without the Proposed Action as long as there was water available for exchange with DWR. However, due to current hydrologic conditions, normal operations may not be possible once SWP water is no longer available for exchange and a portion of Santa Clara's previously banked CVP water (up to 18,000 AF) would need to be reverse flowed northerly in the Aqueduct for exchange with Reclamation. Although this could be an increase in the extraction of Santa Clara's previously banked CVP water compared to the No Action Alternative, the total extraction amount would not exceed what was previously analyzed in EA-05-126 and approved by Reclamation as part of the groundwater banking program.

There would be no air quality impacts due to construction activities as all proposed infrastructure for the temporary pump facilities would be placed above ground and no ground disturbing activities such as grading, trenching or excavation would occur. However, air quality emissions would occur from the installation and operation of the temporary pump stations.

The Proposed Action includes the installation and operation of three temporary pump stations within Reclamation's ROW for reverse flow of previously banked CVP water; Santa Clara's proposed project also includes the installation and operation of a fourth temporary pump station within DWR ROW. Although outside Reclamation's jurisdiction, air quality emissions from installation and operation of all four stations has been used for this analysis.

The California Emissions Estimator Model (CalEEMod), Version 2013.2, was used to estimate air pollutant emissions resulting from installation and operation of the four pump stations. Modeling results for installation and operation of the facilities are included in Tables 5 and 6. The output files from CalEEMod are included in Appendix C.

Table 5 Emission Estimates for Installation of the Proposed Facilities

	VOC/ROG (tons/year)	NOx (tons/year)	PM₁₀ (tons/year)	CO₂ (tons/year)
Total Installation Emissions	0.2084	1.1370	0.0882	108.4287
Thresholds of Significance ¹	10	10	15	--
¹ Based on the San Joaquin Valley Air Pollution Control District's adopted thresholds of significance for construction emissions of criteria pollutants adopted July 2014.				

Installation emissions were calculated based on equipment needed to install the temporary pump stations and associated infrastructure as well as the number of

days and trips required for installation activities over a four week period. As shown in Table 5, the criteria pollutant emissions from installation would be well below the San Joaquin Valley Air Pollution Control District's thresholds of significance.

In order to quantify the maximum emissions, Table 6 provides the total operational emissions assuming that the pumps would run at maximum capacities (100 cfs) for 24 hours a day over a 90 day period. In addition to the engine emissions, Table 6 also includes emissions associated with operational trips related to the maintenance, security and fueling of the temporary pump stations. Estimated operational emissions are expected to be similar if the pumps are operated at a lower cfs since the slight increase in the number of operator and security trips would be offset by a decrease in the pump emissions.

Table 6 Emission Estimates for Operation of the Proposed Facilities

	VOC/ROG (tons/year)	NO _x (tons/year)	PM ₁₀ (tons/year)	Carbon dioxide (tons/year)
Trip Emissions	0.3549	0.2228	0.0701	97.6072
Pump engine emissions	0.917	11.722	0.399	2.1775
Total operational emissions	0.9719	11.9448	0.4691	99.7847
Thresholds of Significance ¹	10	10	15	--
Number of tons needed to mitigate	0	1.9448	0	0
¹ Based on the San Joaquin Valley Air Pollution Control District's adopted thresholds of significance for construction emissions of criteria pollutants adopted July 2014.				

As shown in Table 6, the criteria pollutant emissions (due to operation of the diesel engines at the pump stations) are expected to exceed the San Joaquin Valley Air Pollution Control District's adopted thresholds for NO_x. In order to mitigate emission impacts from the diesel engines, Santa Clara proposes to enter into a Voluntary Emission Reduction Agreement with the San Joaquin Valley Air Pollution Control District prior to installation of the diesel engines. Under the agreement, Santa Clara would pay the San Joaquin Valley Air Pollution Control District mitigation fees and the Air District would enter into funding agreements with owners and/or operators of pollution source equipment to achieve emission reductions which offset the emissions from Santa Clara.

Cumulative Impacts

The majority of the installation and operation emissions for the Proposed Action are well below the *de minimis* thresholds established by the San Joaquin Valley Air Pollution Control District. Although, diesel emissions are estimated to exceed the San Joaquin Valley Air Pollution Control District's thresholds of significance for NO_x, Santa Clara will mitigate these impacts in order to offset emissions as described above. As a result, the Proposed Action is not expected to contribute to cumulative adverse impacts to air quality.

3.5 Global Climate

3.5.1 Affected Environment

Climate change refers to significant change in measures of climate (e.g., temperature, precipitation, or wind) lasting for decades or longer. Many environmental changes can contribute to climate change: changes in sun's intensity, changes in ocean circulation, deforestation, urbanization, burning fossil fuels, etc. (EPA 2014).

Gases that trap heat in the atmosphere are often called greenhouse gases. Some greenhouse gases, such as carbon dioxide, occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are: carbon dioxide, methane, nitrous oxide, and fluorinated gasses (EPA 2014).

During the past century humans have substantially added to the amount of greenhouse gases in the atmosphere by burning fossil fuels such as coal, natural gas, oil and gasoline to power our cars, factories, utilities and appliances. The added gases, primarily carbon dioxide and methane, are enhancing the natural greenhouse effect, and likely contributing to an increase in global average temperature and related climate changes.

3.5.2 Environmental Consequences

No Action

There would be no impact to global climate change as conditions would remain the same as existing conditions.

Proposed Action

As shown in Tables 5 and 6, estimated carbon dioxide emissions from the Proposed Action are well below the EPA's 25,000 metric tons per year threshold for annually reporting greenhouse gas emissions. Accordingly, the Proposed Action would result in below *de minimis* impacts to global climate change.

Cumulative Impacts

Greenhouse gas emissions are considered cumulatively significant; however, the estimated annual carbon dioxide emissions required to install and operate the temporary pump stations is well below the 25,000 metric tons per year threshold for reporting greenhouse gas emissions. As a result, the Proposed Action is not expected to contribute to cumulative adverse impacts to global climate change.

Section 4 Consultation and Coordination

4.1 Public Review Period

Reclamation intends to provide the public with an opportunity to comment on the Draft FONSI and Draft EA during a 15-day public review period.

THIS PAGE LEFT INTENTIONALLY BLANK

Section 5 Preparers and Reviewers

Rain L. Emerson, M.S., Supervisory Natural Resources Specialist, SCCAO
Jennifer Lewis, Wildlife Biologist, SCCAO
Scott Williams, Archaeologist, MP-153
Patricia Rivera, Native American Affairs Specialist, MP-400
Eileen Jones, Repayment Specialist, SCCAO – reviewer
Jason Kirby, Resource Management Specialist, SCCAO – reviewer
David E. Hyatt, Supervisory Wildlife Biologist, SCCAO – reviewer
Rena Ballew, Acting Resources Management Division Chief – reviewer

THIS PAGE LEFT INTENTIONALLY BLANK

Section 6 References

Bureau of Reclamation (Reclamation). 2005. *Santa Clara Valley Water District Long-Term Groundwater Banking Project Storage and Exchange of Central Valley Project Water with Semitropic Water Storage District* (Final FONSI/EA-05-126). South-Central California Area Office. Fresno, CA.

California Department of Water Resources (DWR). 2014a. California State Water Project Overview. Website: <http://www.water.ca.gov/swp/>.

California Department of Water Resources (DWR). 2014b. SWPAO – Water Deliveries. Website: <http://www.water.ca.gov/swpao/deliveries.cfm>.

Environmental Protection Agency (EPA). 2014. Climate Change – Basic Information. Website: <http://www.epa.gov/climatechange/basicinfo.html>.

Santa Clara Valley Water District (Santa Clara). 2012. 2012 Groundwater Management Plan. Retrieved 03/12/2014, from: <http://www.valleywater.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=8467>.

San Joaquin Valley Air Pollution Control District. 2014. Ambient Air Quality Standards and Valley Attainment Status. Website: <http://www.valleyair.org/aqinfo/attainment.htm>. Accessed: September 2014.

Appendix A

Reclamation's Cultural Resources Determination

CULTURAL RESOURCE COMPLIANCE
Mid-Pacific Region
Division of Environmental Affairs
Cultural Resources Branch

MP-153 Tracking Number: 14-SCAO-291

Project Name: Santa Clara Valley Water District Reverse Flow Project

NEPA Document: EA-14-029

MP 153 Cultural Resources Reviewer: Scott Williams



Date: September 22, 2014

The proposed undertaking by Reclamation to approve Santa Clara Valley Water District to place temporary pumps within Reclamation's rights-of-way (ROW) in order to reverse-flow previously banked CVP water up the Aqueduct for exchange with Reclamation. This is the type of undertaking that does not have the potential to cause effects to historic properties, should such properties be present, pursuant to the NHPA Section 106 regulations codified at 36 CFR § 800.3(a)(1). Reclamation has no further obligations under NHPA Section 106, pursuant to 36 CFR § 800.3(a)(1).

Santa Clara proposes to install three temporary pump stations within Reclamation's ROW at check structures 20, 18, and 15 of the joint-use portion of the Aqueduct. A fourth pump station would be placed within DWR's ROW at check structure 22 of the Aqueduct. The temporary pump stations and power units would be delivered by flatbed delivery trucks to the proposed project sites. The pump stations and power units would be placed on skids (beams which create a frame attached to the bottom of the pumps). The skids would allow for movement of the station from the truck to the ground and serve as the structural support. Placement would occur by a crane or forklift placed at the top of the embankment. Prefabricated piping would be placed on the embankment and connected to the pumps to allow the water to be pumped around the sides of the existing control gates at each check structure. Fuel tanks, with spill containment, would be placed on the Aqueduct roadway at each proposed site. All project components would be placed above ground; as the installation of the proposed project requires only placement of prefabricated equipment and piping. As a result no ground disturbing activities such as grading, trenching or excavation would occur. The equipment would be placed in an area of less than 0.5 acres at each site.

This document is intended to convey the completion of the NHPA Section 106 process for this undertaking. Please retain a copy in the administrative record for this action. Should changes be made to this project, additional NHPA Section 106 review, possibly including consultation with the State Historic Preservation Officer, may be necessary. Thank you for providing the opportunity to comment.

Appendix B

Reclamation's Indian Trust Assets Determination



Emerson, Rain <remerson@usbr.gov>

Re: Project Description for Review (EA-14-029)

RIVERA, PATRICIA <privera@usbr.gov>

Mon, Sep 22, 2014 at 8:40 AM

To: "Emerson, Rain" <remerson@usbr.gov>

Cc: Kristi Seabrook <kseabrook@usbr.gov>, "Williams, Mary D (Diane)" <marywilliams@usbr.gov>

Rain,

I reviewed the proposed cation to approve the placement of temporary pumping facilities to reverse flow previously banked Central Valley Project (CVP) water for exchange as described below.

Temporary Pumping Facilities

Santa Clara Valley Water District (Santa Clara) proposes to install three temporary pump stations within Reclamation's rights-of-way (ROW) at check structures 20, 18, and 15 of the joint-use portion of the California Aqueduct (Aqueduct). A fourth pump station would be placed within the California Department of Water Resource's (DWR) ROW at check structure 22 of the Aqueduct.

The general pump station configuration at each of the check structures would include the following temporary components:

- Up to four 13- to 100-cubic-foot-per-second (cfs) nominal pumps located on the right embankment adjacent to the secondary maintenance road, except at Check 18 where the pumps would be on the left embankment adjacent to the primary maintenance road.
- Up to four 12 inch to 36 inch intake (suction) pipelines.
- Up to four 12 inch to 36 inch discharge pipelines, including instantaneous and totalizing flow meters reading in cfs and acre-feet (AF) respectively, placed alongside the secondary access roads, except at Check 18, where they would be placed alongside the primary maintenance road.
- Up to four 500-gallon fuel tanks (one per pump) with regulated spill containment.
- Up to two 1,200-gallon fuel tanks with regulated spill containment.

Installation of the temporary pumping stations and associated appurtenances is anticipated to last approximately four weeks and would utilize equipment such as cranes, flatbed delivery trucks, and a forklift. Installation work hours would be during daylight hours, Monday through Friday.

The temporary pump stations and power units would be delivered by flatbed delivery trucks to the proposed project sites. The pump stations and power units would be placed on skids (beams which create

a frame attached to the bottom of the pumps). The skids would allow for movement of the station from the truck to the ground and serve as the structural support. Placement would occur by a crane or forklift placed at the top of the embankment. Prefabricated piping would be placed on the embankment and connected to the pumps to allow the water to be pumped around the sides of the existing control gates at each check structure. Fuel tanks, with spill containment, would be placed on the Aqueduct roadway at each proposed site.

All project components would be placed above ground; as the installation of the proposed project requires only placement of prefabricated equipment and piping. As a result no ground disturbing activities such as grading, trenching or excavation would occur. The equipment would be placed in an area of less than 0.5 acres at each site.

Operations

Semitropic Water Storage District would pump up to 31,500 AF of Santa Clara's previously banked CVP water into the Aqueduct north of Check Structure 25. Up to 13,500 AF would be exchanged with DWR under normal operations of the banking program. The remaining water, up to 18,000 AF, would be reverse flowed through metered discharge piping placed around the sides of the existing control gates at up to four check structures (22, 20, 18, and/or 15), and delivered to CVP contractors north of check structure 20 (and south of Dos Amigos Pumping Plant) to meet scheduled demands. In exchange, Reclamation would deliver an equal amount, less conveyance losses if any, of CVP water supply to Santa Clara from San Luis Reservoir or O'Neill Forebay, depending upon conditions at the time of exchange. Santa Clara would coordinate with Reclamation and DWR to avoid unneeded pumping.

Each of the pump stations would be designed for a capacity of up to 100 cfs. However, the actual pumping rate would depend on a number of considerations including how soon the system becomes operational, the amount of CVP water supply available for exchange, hydrologic conditions, and the actual amount of water needed to complete the exchange.

Semitropic's pump-in capabilities are generally greatest beginning September 1, due to drop off of internal irrigation demands. Santa Clara's plan is to operate the bypass pump stations when the flows at Dos Amigos Pumping Plant (located between Checks 13 and 14 along the Aqueduct) are projected to be less than 100 cfs. If at least 100 cfs is scheduled to flow from Dos Amigos to meet demands south of Semitropic, the pumps would not need to operate since a direct exchange under normal operations would be possible.

It is anticipated that Santa Clara would operate the pumps between the months of August and February (e.g., when flows at Dos Amigos Pumping Plant are expected to be less than 100 cfs, Santa Clara may operate the pump stations between August and December 2014 and possibly in January and February 2015 at 100 cfs or until 18,000 AF is reached). If the pumps are operated at their maximum capacity (100 cfs), it is expected that the operation would occur over a period of 90 days to

pump the maximum amount of 18,000 AF around Check Structures 22, 20, 18, and/or 15. If Santa Clara determines that a lower flow rate is needed for the water exchange, it may operate fewer of the installed facilities or operate them at below their maximum capacities; conversely pumping duration would be longer to achieve the maximum amount of 18,000 AF.

Once the maximum expected pumping (18,000 AF) is completed, the temporary pumping facilities and infrastructure would be removed from each site. Removal is anticipated to last approximately four weeks and would require the use of cranes, forklifts and flatbed delivery trucks. No ground disturbance would occur. All project components will be removed by Santa Clara by June 30, 2016 regardless if all 18,000 AF has been pumped.

The proposed action does not have a potential to impact Indian Trust Assets.

Patricia Rivera
Native American Affairs Program Manager
US Bureau of Reclamation
Mid-Pacific Region
2800 Sacramento, California 95825
(916) 978-5194

Kristi please log in. No further action required. Thanks

Appendix C

Air Quality Modeling Results

California Aqueduct 2014 Reverse Flow
San Joaquin Valley Unified APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	1.00	Acre	1.00	43,560.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.7	Precipitation Freq (Days)	45
Climate Zone	3			Operational Year	2015
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - City Park setting was used as it was the most similar to our project.

Construction Phase - Project construction will take approximately four weeks total.

Vehicle Trips - Approximately 1,924 round trips over the life of the 90 day project, or 22 trips per day. Trips would average 30 miles each.

Table Name	Column Name	Default Value	New Value
tblProjectCharacteristics	OperationalYear	2014	2015
tblVehicleTrips	CC_TL	7.30	30.00
tblVehicleTrips	CNW_TL	7.30	30.00
tblVehicleTrips	CW_TL	9.50	30.00
tblVehicleTrips	ST_TR	1.59	22.00
tblVehicleTrips	SU_TR	1.59	22.00
tblVehicleTrips	WD_TR	1.59	22.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.2084	1.1370	0.8684	1.2800e-003	0.0124	0.0758	0.0882	4.0500e-003	0.0731	0.0772	0.0000	108.4287	108.4287	0.0222	0.0000	108.8951
Total	0.2084	1.1370	0.8684	1.2800e-003	0.0124	0.0758	0.0882	4.0500e-003	0.0731	0.0772	0.0000	108.4287	108.4287	0.0222	0.0000	108.8951

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.2082	1.1357	0.8675	1.2800e-003	0.0124	0.0757	0.0881	4.0500e-003	0.0730	0.0771	0.0000	108.3168	108.3168	0.0222	0.0000	108.7827
Total	0.2082	1.1357	0.8675	1.2800e-003	0.0124	0.0757	0.0881	4.0500e-003	0.0730	0.0771	0.0000	108.3168	108.3168	0.0222	0.0000	108.7827

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.1056	0.1143	0.1048	0.0000	0.0000	0.1188	0.1021	0.0000	0.1231	0.1166	0.0000	0.1032	0.1032	0.0900	0.0000	0.1032

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.2004	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.1545	0.2228	0.5236	1.1500e-003	0.0667	3.3800e-003	0.0701	0.0179	3.1100e-003	0.0210	0.0000	96.3757	96.3757	3.3700e-003	0.0000	96.4465
Waste						0.0000	0.0000		0.0000	0.0000	0.0183	0.0000	0.0183	1.0800e-003	0.0000	0.0409
Water						0.0000	0.0000		0.0000	0.0000	0.0000	1.2132	1.2132	5.0000e-005	1.0000e-005	1.2178
Total	0.3549	0.2228	0.5236	1.1500e-003	0.0667	3.3800e-003	0.0701	0.0179	3.1100e-003	0.0210	0.0183	97.5889	97.6072	4.5000e-003	1.0000e-005	97.7053

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.2004	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.1545	0.2228	0.5236	1.1500e-003	0.0667	3.3800e-003	0.0701	0.0179	3.1100e-003	0.0210	0.0000	96.3757	96.3757	3.3700e-003	0.0000	96.4465
Waste						0.0000	0.0000		0.0000	0.0000	0.0183	0.0000	0.0183	1.0800e-003	0.0000	0.0409
Water						0.0000	0.0000		0.0000	0.0000	0.0000	1.2132	1.2132	5.0000e-005	1.0000e-005	1.2178
Total	0.3549	0.2228	0.5236	1.1500e-003	0.0667	3.3800e-003	0.0701	0.0179	3.1100e-003	0.0210	0.0183	97.5889	97.6072	4.5000e-003	1.0000e-005	97.7053

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2015	1/1/2015	5	1	
2	Building Construction	Building Construction	1/2/2015	5/21/2015	5	100	

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	6.00	226	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	18.00	7.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2015**Unmitigated Construction On-Site****Acres of Grading: 0.5**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.9000e-003	0.0000	2.9000e-003	1.4800e-003	0.0000	1.4800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2700e-003	0.0134	8.5100e-003	1.0000e-005		7.3000e-004	7.3000e-004		6.7000e-004	6.7000e-004	0.0000	0.8173	0.8173	2.4000e-004	0.0000	0.8224
Total	1.2700e-003	0.0134	8.5100e-003	1.0000e-005	2.9000e-003	7.3000e-004	3.6300e-003	1.4800e-003	6.7000e-004	2.1500e-003	0.0000	0.8173	0.8173	2.4000e-004	0.0000	0.8224

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	2.0000e-005	2.2000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0298	0.0298	0.0000	0.0000	0.0298
Total	7.0000e-005	2.0000e-005	2.2000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0298	0.0298	0.0000	0.0000	0.0298

3.2 Site Preparation - 2015**Mitigated Construction On-Site****Acres of Grading: 0.5**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.9000e-003	0.0000	2.9000e-003	1.4800e-003	0.0000	1.4800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2700e-003	0.0134	8.5000e-003	1.0000e-005		7.3000e-004	7.3000e-004		6.7000e-004	6.7000e-004	0.0000	0.8163	0.8163	2.4000e-004	0.0000	0.8214
Total	1.2700e-003	0.0134	8.5000e-003	1.0000e-005	2.9000e-003	7.3000e-004	3.6300e-003	1.4800e-003	6.7000e-004	2.1500e-003	0.0000	0.8163	0.8163	2.4000e-004	0.0000	0.8214

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	2.0000e-005	2.2000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0298	0.0298	0.0000	0.0000	0.0298
Total	7.0000e-005	2.0000e-005	2.2000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0298	0.0298	0.0000	0.0000	0.0298

3.3 Building Construction - 2015**Unmitigated Construction On-Site****Acres of Grading: 0**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1800	1.0782	0.7502	1.1000e-003		0.0743	0.0743		0.0717	0.0717	0.0000	93.2416	93.2416	0.0215	0.0000	93.6932
Total	0.1800	1.0782	0.7502	1.1000e-003		0.0743	0.0743		0.0717	0.0717	0.0000	93.2416	93.2416	0.0215	0.0000	93.6932

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0108	0.0404	0.0610	8.0000e-005	2.2800e-003	7.3000e-004	3.0100e-003	6.5000e-004	6.7000e-004	1.3200e-003	0.0000	7.6417	7.6417	7.0000e-005	0.0000	7.6432
Worker	0.0163	4.8900e-003	0.0485	9.0000e-005	7.2000e-003	6.0000e-005	7.2600e-003	1.9100e-003	5.0000e-005	1.9700e-003	0.0000	6.6984	6.6984	3.9000e-004	0.0000	6.7066
Total	0.0271	0.0453	0.1095	1.7000e-004	9.4800e-003	7.9000e-004	0.0103	2.5600e-003	7.2000e-004	3.2900e-003	0.0000	14.3401	14.3401	4.6000e-004	0.0000	14.3498

3.3 Building Construction - 2015

Mitigated Construction On-Site

Acres of Grading: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1798	1.0769	0.7493	1.1000e-003		0.0742	0.0742		0.0716	0.0716	0.0000	93.1307	93.1307	0.0215	0.0000	93.5817
Total	0.1798	1.0769	0.7493	1.1000e-003		0.0742	0.0742		0.0716	0.0716	0.0000	93.1307	93.1307	0.0215	0.0000	93.5817

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0108	0.0404	0.0610	8.0000e-005	2.2800e-003	7.3000e-004	3.0100e-003	6.5000e-004	6.7000e-004	1.3200e-003	0.0000	7.6417	7.6417	7.0000e-005	0.0000	7.6432
Worker	0.0163	4.8900e-003	0.0485	9.0000e-005	7.2000e-003	6.0000e-005	7.2600e-003	1.9100e-003	5.0000e-005	1.9700e-003	0.0000	6.6984	6.6984	3.9000e-004	0.0000	6.7066
Total	0.0271	0.0453	0.1095	1.7000e-004	9.4800e-003	7.9000e-004	0.0103	2.5600e-003	7.2000e-004	3.2900e-003	0.0000	14.3401	14.3401	4.6000e-004	0.0000	14.3498

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1545	0.2228	0.5236	1.1500e-003	0.0667	3.3800e-003	0.0701	0.0179	3.1100e-003	0.0210	0.0000	96.3757	96.3757	3.3700e-003	0.0000	96.4465
Unmitigated	0.1545	0.2228	0.5236	1.1500e-003	0.0667	3.3800e-003	0.0701	0.0179	3.1100e-003	0.0210	0.0000	96.3757	96.3757	3.3700e-003	0.0000	96.4465

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	22.00	22.00	22.00	175,423	175,423
Total	22.00	22.00	22.00	175,423	175,423

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	30.00	30.00	30.00	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.413934	0.062658	0.156245	0.177779	0.051620	0.007958	0.018367	0.098272	0.001808	0.001614	0.006467	0.000958	0.002320

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2004	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	0.2004	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0303					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1701					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	0.2004	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0303					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1701					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	0.2004	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	1.2132	5.0000e-005	1.0000e-005	1.2178
Unmitigated	1.2132	5.0000e-005	1.0000e-005	1.2178

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 1.19148	1.2132	5.0000e-005	1.0000e-005	1.2178
Total		1.2132	5.0000e-005	1.0000e-005	1.2178

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 1.19148	1.2132	5.0000e-005	1.0000e-005	1.2178
Total		1.2132	5.0000e-005	1.0000e-005	1.2178

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0183	1.0800e-003	0.0000	0.0409
Unmitigated	0.0183	1.0800e-003	0.0000	0.0409

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.09	0.0183	1.0800e-003	0.0000	0.0409
Total		0.0183	1.0800e-003	0.0000	0.0409

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.09	0.0183	1.0800e-003	0.0000	0.0409
Total		0.0183	1.0800e-003	0.0000	0.0409

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

10.0 Vegetation

Unit Emissions

Date: 8/20/2014

Equipment Description:

Operating Schedule 24 hr/day
 7 day/week
 4.0 weeks/month
 3.0 months/yr
 2,016 hrs/year
 84 days/year

Emission Factors (EF)			
CARB E.O. U-R-004-0416			
Pollutant	g/bhp-hr	g/kW-hr	Source
NMHC+NOx	2.54	3.4	CARB E. O.
NOx	2.41	3.23	95% of NMHC+NOx
SOx	0.0051	---	Mass Balance
PM ₁₀	0.08	0.11	CARB E. O.
CO	0.45	0.6	CARB E. O.
VOC	0.13	0.17	5% NMHC+NOx

Power Rating: 2,190 bhp

Rating 50-260 bhp
 # Engines 13

Potential Emissions (PE)			
Assuming 2,190 bhp			
Pollutant	lb/hr	lb/day	lb/yr
NOx	11.63	279.1	23,444
SOx	0.02	0.6	50
PM ₁₀	0.40	9.5	798
CO	2.16	51.8	4,355
VOC	0.61	14.7	1,234

tons/yr
 11.722
 0.025
 0.399
 2.1775
 0.617