FERC Order Compliance Project for Anderson Reservoir and Dam

FERC Project 5737-007

Project Description

June 12, 2020

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

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A. INTRODUCTION

1.0 Background

Anderson Reservoir is a critical water supply facility for Santa Clara County and Santa Clara Valley Water District's (Valley Water's) largest owned and operated reservoir (storage capacity of 89,073 acre-feet). Operations involve reservoir water releases for multiple purposes, including water supply, groundwater recharge, incidental flood control, power generation, downstream aquatic habitat, maintenance, and emergency purposes. Anderson Reservoir is located near the junction of Cochrane Road and Coyote Road in Santa Clara County, California, 0.8 mile east of U.S. Highway 101 (Cochrane Road exit), 18 miles southeast of downtown San Jose, and 2.5 miles northeast of downtown Morgan Hill (**Figure 1**). The dam is situated on Coyote Creek, a tributary to San Francisco Bay, and creates Anderson Reservoir.

In 2012, with oversight from the Federal Energy Regulatory Commission (FERC) and the California Department of Water Resources, Division of Safety of Dams (DSOD), the Anderson Dam Seismic Retrofit Project (ADSRP) was initiated to address seismic deficiencies present at Anderson Dam. Further studies and investigations also identified that the spillway at Anderson Dam does not meet modern safety standards because it lacks the capacity to safely pass flood flows associated with the probable maximum flood (PMF). Additionally, the dam outlet does not have the capacity to efficiently draw down the reservoir during an emergency and is vulnerable to seismic events. The proposed ADSRP (a separate project) involves retrofitting and upgrading Anderson Dam and associated facilities to meet FERC and DSOD requirements[1]. Throughout 2019 and into early 2020, project staff and consultants had been preparing the 90% design plans, specifications, and supporting environmental and permitting documents. Construction of the ADSRP was scheduled to start in the fall of 2022.

On February 20, 2020, under Part 12 of the Federal Power Act, FERC ordered Valley Water to implement interim risk reduction measures (IRRMs) associated with the Anderson Dam Seismic Retrofit Project immediately, due to limited existing outlet capacity at Anderson Dam (the existing outlet has a maximum capacity of 500 cfs) and the presence of densely populated areas downstream of the dam, in order to reduce the risk of dam failure from an earthquake as much as possible until the ADSRP can be fully implemented. (FERC Order).

FERC ordered Valley Water to implement IRRMs, namely to maintain the reservoir no higher than elevation 565 feet[2] effective immediately; to start lowering Anderson Reservoir to an elevation of 488 feet beginning no later than October 1, 2020; to take all appropriate measures to maintain and quickly lower the reservoir to deadpool in the event of significant inflow once the 488 feet elevation is reached; to assess and address the issue of potential rim instability during drawdown; and to expedite design, construction, and operations of a new, low-level outlet in advance of the ADSRP. FERC stated in its order that Valley Water should implement the dam safety directives, including design and construction of the proposed low-level outlet, while securing alternative water supplies and working with Commission staff, and federal, state and local resource agencies to minimize environmental effects.

Pursuant to FERC's Order, Valley Water immediately restricted the reservoir to 565 feet elevation, defined the FERC Order Compliance Project (FOCP or Project), and initiated emergency consultation processes with regulatory agencies, as appropriate. The FOCP is proposed to comply with the FERC

[1] https://www.valleywater.org/sites/default/files/SHELL_Anderson%20Dam_102418.pdf

[2] All elevations in this document refer to North American Vertical Datum of 1988.

Order to implement construction and operational activities to address seismic risks to the existing dam in the interim time period prior to construction and operation of the ADSRP. In response to FERC's recognition that Valley Water must take measures to secure alternative water supplies and minimize environmental effects, the FOCP also includes avoidance and minimization measures (AMMs). These AMMs are designed to minimize public health and safety and environmental impacts of complying with FERC's order, including AMMs related to alternative water supply and groundwater recharge, reservoir and dam bank stability, reservoir and downstream aquatic resources, and downstream flood risks.

While the FOCP and the ADSRP are two separate independent projects with independent utility,[3] FOCP infrastructure is being designed to allow later modification and incorporation of appropriate FOCP components into future ADSRP infrastructure and facilities. CEQA compliance and regulatory approval processes for the ADSRP would continue in parallel to the approval, construction and operation of the FOCP.

2.0 FOCP Project Objectives

The underlying purpose of the FOCP is to comply with the FERC Order, requiring immediate implementation of risk reduction measures to protect the public from risk of dam failure due to seismic activity, and development and implementation of necessary AMMs. Primary objectives of the FOCP are to construct improvements and implement operational activities necessary to:

- Allow Valley Water a way to safely, reliably, and expeditiously draw down Anderson Reservoir to deadpool and maintain lower reservoir elevations to comply with the FERC Order
- Minimize risks associated with exceeding the restricted reservoir level and undersized outlet structure by designing and constructing a new, low-level outlet tunnel (Anderson Dam tunnel)
- Prioritize the interim downstream protection of residents and property by decreasing immediate potential risks related to fault rupture from the maximum credible earthquake on the Coyote Creek–Range Front Fault Zone and the number of days that the reservoir elevation exceeds the restricted reservoir level by operating the new Anderson Dam tunnel
- Minimize the public health and safety and environmental impacts of reservoir draw down, Anderson Dam tunnel construction, and operations necessary to maintain the reservoir at the FERC ordered elevation through the implementation of AMMs. This includes lessening potential adverse impacts on reservoir and dam bank stability, the existing outlet, reservoir and downstream aquatic resources, downstream flood risks, and water supply and groundwater recharge, including downstream subsidence that may result from reductions in recharge.

[3] The FOCP would continue to achieve its objectives even if the ADSRP is not constructed.

B. PROJECT DESCRIPTION

1.0 Project Components Overview

The FOCP consists of four broad categories of actions, and of the following eleven main components:

1. Reservoir Drawdown: Safe drawdown of Anderson Reservoir to deadpool, and reservoir operation until the Anderson Dam tunnel is operational.

2. Anderson Dam Tunnel Construction: The FOCP proposes to construct a new outlet system that would include a new low-level outlet tunnel, 8-foot-diameter lake tap, outlet structure, discharge channel, and reopening of the original Coyote Creek channel (northern channel) downstream of the existing dam. The new outlet system, collectively called the Anderson Dam Tunnel Project (ADTP), would be constructed at the base of Anderson Dam, through the right (looking downstream) abutment, along the southern side.

3. Anderson Dam Tunnel Operation and Maintenance*:* Operation of the tunnel and water management procedures anticipated to occur until seismic deficiencies can be fully mitigated at Anderson Dam.

4. Avoidance and Minimization Measures:

a. *Bank and Rim Stability Improvements*. Geotechnical investigations will be carried out and monitoring devices will be installed in the areas of known landslides along Anderson Reservoir rim to address potential impacts of reservoir drawdown. If additional measures are determined necessary, the Project would include the installation of necessary structural improvements to protect against potential landslides and/or make repairs if damage occurs.

b. *Existing Intake Structure Modifications*. Geotechnical investigations will be carried out and monitoring devices will be installed near the intake structure to address potential geotechnical impacts of dewatering on the existing outlet structure. If additional measures are determined necessary, the Project would include the installation of necessary structural improvements to reinforce the existing Anderson Dam intake structure and/or make repairs if damage occurs.

c. *Creek Channel and Bank Erosion Control Modifications.* Modifications required to avoid erosion impacts within Coyote Creek anticipated to result from combined flow releases through the existing Anderson Dam outlet and the new Anderson Dam Tunnel once constructed.

d. *Imported Water Releases and Cross Valley Pipeline Extension.* Provide for imported water releases to Coyote Creek via the Coyote Discharge Line immediately downstream of Anderson Dam at the top of Coyote Creek cold water management zone (CWMZ) and construction of a new spur off Cross Valley Pipeline that would allow imported water discharges downstream of the County of Santa Clara-owned Ogier Ponds. Water releases and pipeline extension infrastructure will facilitate water supply, groundwater recharge, subsidence prevention, and in-stream environmental flows for Coyote Creek when Anderson Reservoir is unavailable to provide water supply, storage, and releases needed (i.e. similar to those currently provided) throughout the year. After construction of the pipeline extension, chillers will be installed and may be used to chill up to 10 cfs of imported water for continued releases via the Coyote Discharge Line to the CWMZ.

e. *Coyote Percolation Dam Replacement*. Replacement of the existing flashboard dam with an inflatable bladder dam that would quickly be deployed when inflows are low to impound water, and deflated (lowered) to allow flows in excess of 800 cfs to pass safely. The inflatable bladder dam will, unlike the existing flashboard dam, be designed to withstand flow levels in the Creek that are likely to occur in wet weather after construction and during operation of from the Anderson Dam tunnel, based on the operational capacity of the tunnel project, and will allow flexibility to better protect aquatic resources, water supply, groundwater recharge, and reduce subsidence from the effects of dewatering and maintaining a lower elevation in the reservoir

f. *Coyote Creek Flood Management Measures*. Acquisition or elevation of up to nine residential properties, and construction of up to six spans of off-stream floodwalls or levee. These measures will reduce flood risks from higher Coyote Creek flows caused by maximum Anderson Dam tunnel flows combined with outflows from the existing outlet and local tributary inflows resulting from storm events.

g. *Steelhead and Fish Avoidance and Minimization Measures.* These measures include spring pulse flow, Coyote Creek fish rescue and relocation, Anderson Reservoir fish rescue and relocation, fyke trap installation and operation, normal operation of Coyote Reservoir, augment streamflow downstream of Anderson Dam, re-open historical Coyote Creek channel, cold water management zone monitoring, and water quality monitoring.

h. *Implementation of Additional Project-specific Avoidance and Minimization Measures.* Implementation of project specific best management practices (BMPs) and other environmental protection measures to protect water quality and biological resources, including Valley Habitat Plan measures to protect listed species.

2.0 Reservoir Drawdown to Deadpool

Pursuant to the FERC Order, initial reservoir drawdown to an elevation of 488 feet (deadpool) will commence no later than October 1, 2020. Reservoir drawdown will begin in advance of the onset of construction and the installation of the FOCP tunnel and low-level outlet works. Reservoir drawdown will occur gradually in order to minimize the potential for landslides or instability around the rim of the reservoir (see Section 5.1) or existing intake structure (see Section 5.2), to minimize sediment transport downstream, and to avoid potential harm to unhoused individuals that may be occupying areas in close proximity to Coyote Creek.

Subject to FERC approval, Valley Water proposes to dewater and maintain the reservoir elevation as close to deadpool as feasible by implementing releases at rates that are approximately net 100 cubic feet per second (cfs) greater than reservoir inflows. If the DSOD restricted reservoir level is reached (elevation 592 feet), then Valley Water would release the maximum rate though the existing outlet structure, which is approximately 500 cfs. Maximum releases would be expected during larger storm events or series of storm events. Assuming no inflow, this will result in the reservoir lowering at a rate of approximately 200 acre-feet (AF) per day, and attainment of deadpool between mid-December 2020 and January 2021. Runoff from storm events will reduce the rate of drawdown, with a high likelihood of the reservoir level increasing during most winters due to the small discharge capacity of the existing outlet works. Depending on winter precipitation levels, attainment of deadpool may not occur until April 2021, which is subject to further review and approval by FERC.

See Section 4.1 for additional details about operation of the reservoir-creek system from the start of reservoir drawdown to deadpool through implementation of Anderson Dam tunnel operations and

Section 5.8 for a description of the Spring Pulse Flows that have been implemented to encourage outmigration of special status fish.

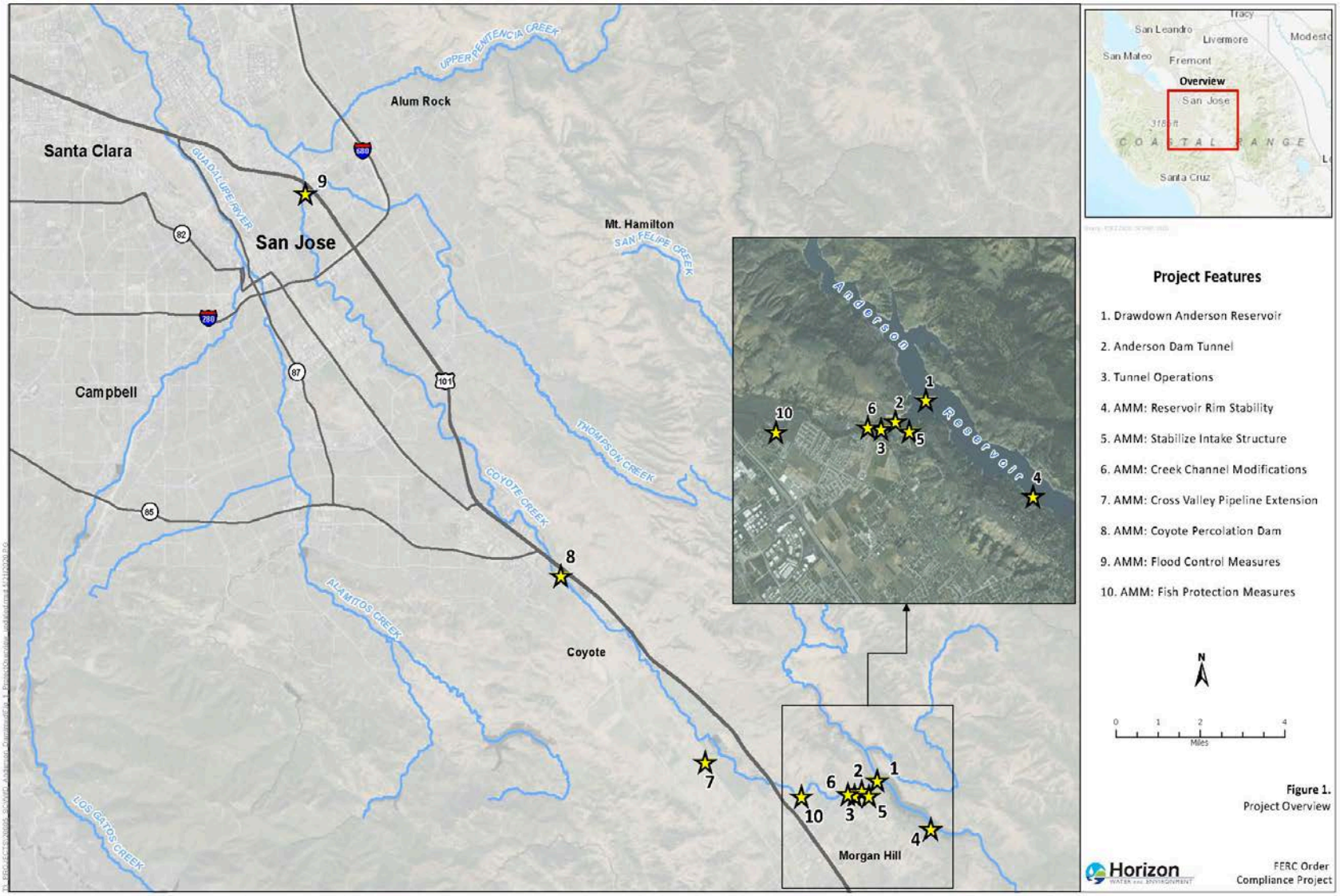

Figure 1. FOCP Project Overview

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3.0 Anderson Dam Tunnel

3.1 Construction Schedule

Anderson Dam Tunnel Project (ADTP) construction is anticipated to start in early 2021 and finish by the end of 2023. Primary construction activities directly related to the Anderson Dam tunnel include: site mobilization, site preparation (i.e., clearing and preparing staging and stockpile areas), Anderson Dam tunnel construction, downstream creek channel and bank erosion control modifications, and other ancillary activities necessary to allow tunnel operation and maintenance (**Figure 2).** Minor site restoration activities may also occur in areas that are not likely to be used as a part of ADSRP; see Section 3.12.

3.2 Safety and Environmental Awareness

The construction contractor for each FOCP component will prepare a Safety and Environmental Awareness Program (SEAP). The SEAP will describe the training for project workers on the following topics:

- General safety procedures
- General environmental procedures
- Fire safety
- Protection of biological, cultural and paleontological resources
- Hazardous materials protocols and Best Management Practices (BMPs)
- Stormwater pollution prevention plan (SWPPP) requirements[4]
- Noise abatement

3.3 Construction Equipment

Table 1 provides a summary of construction equipment required for primary construction activities directly related to the ADTP.

[4] Water quality during construction will be protected through MPs included in a Stormwater Pollution Prevention Plan (SWPPP) pursuant to a Construction General NPDES permit, as well as additional BMPs included in Appendix A.

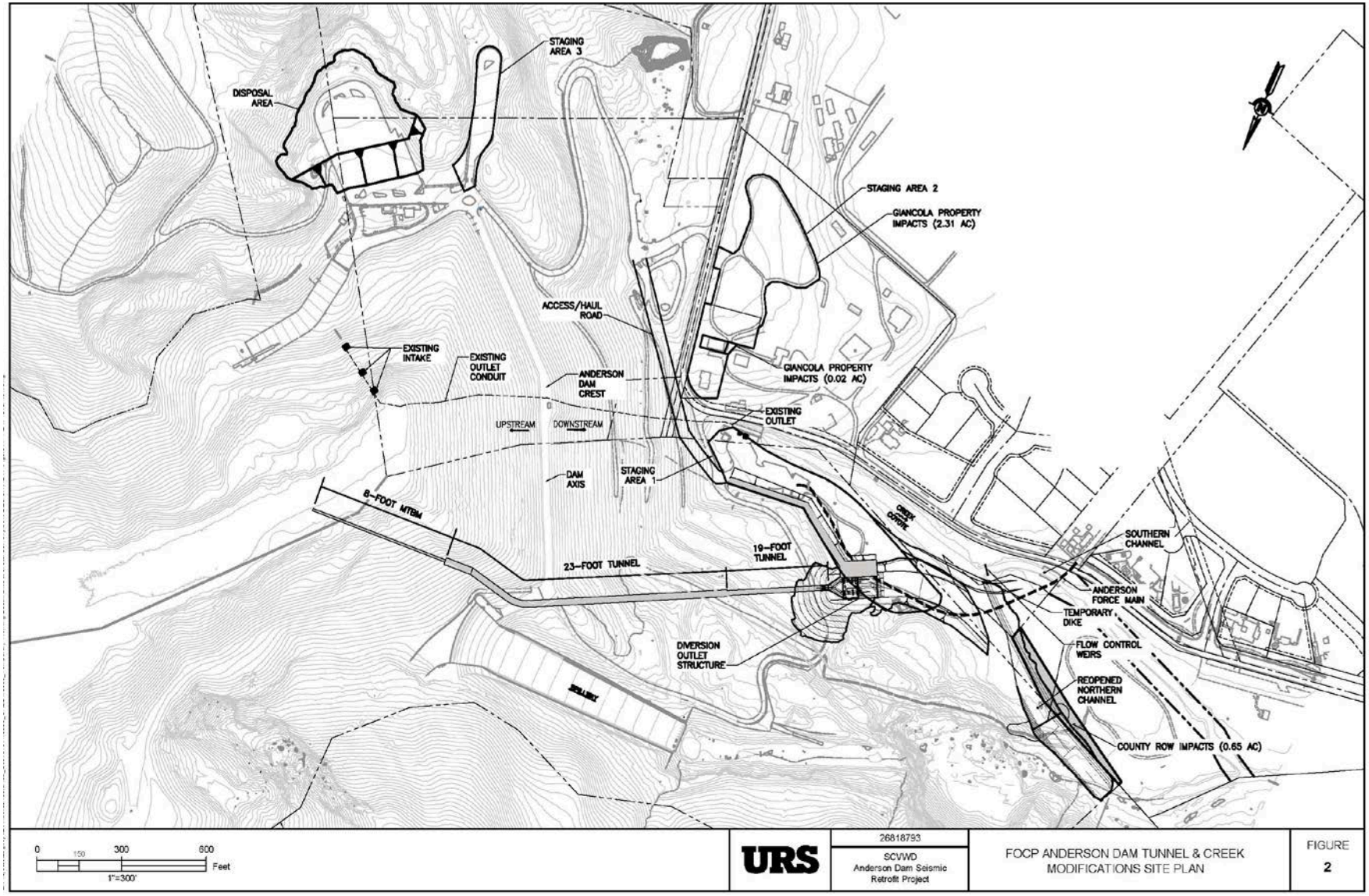

Figure 2. FOCP Anderson Dam Tunnel and Creek Modifications Site Plan

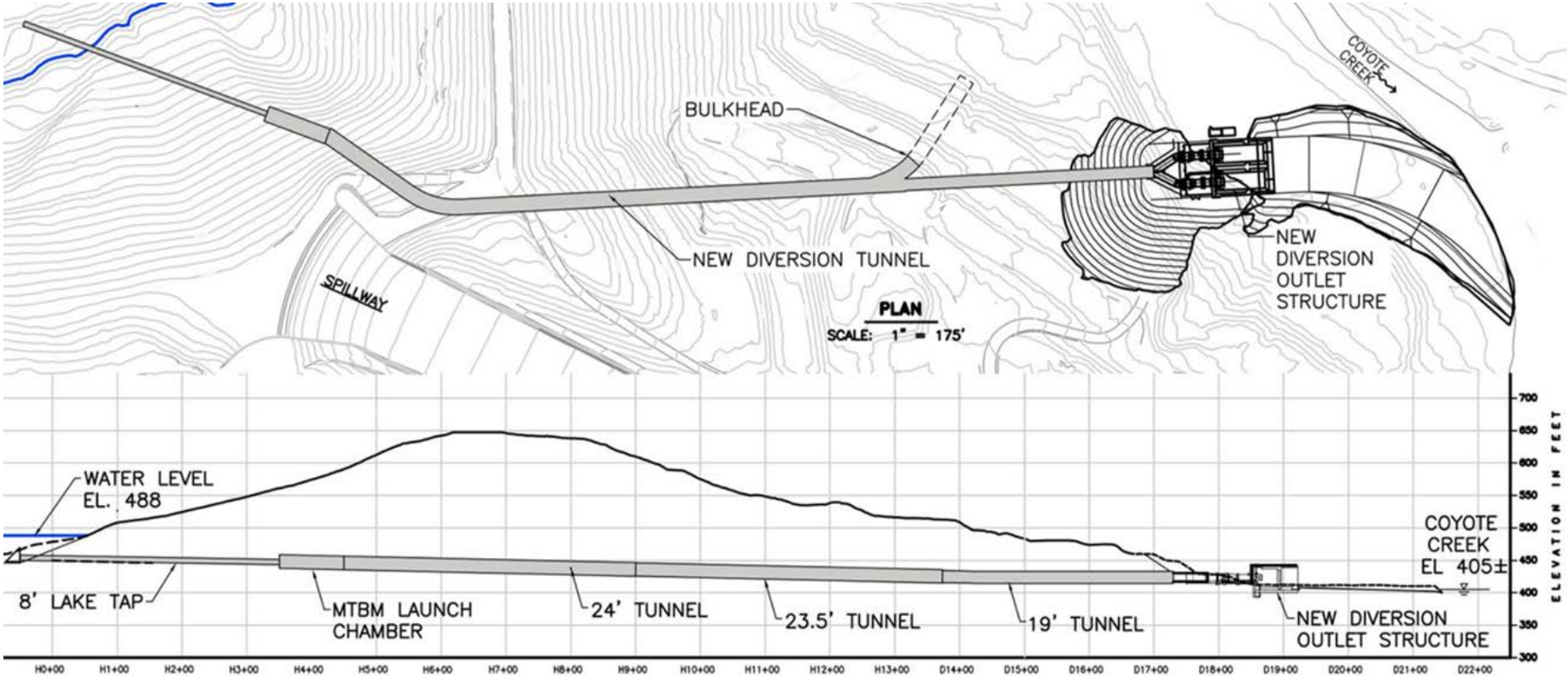

Figure 3: Plan and Profile of ADTP

Table 1 Anderson Dam Tunnel Construction Equipment

EQUIPMENT	NO. OF EQUIPMENT REQUIRED BY CONSTRUCTION ACTIVITY									
	Site Preparation	Portal Excavation	Tunnel Excavation	Micro Tunnel Boring Machine (MTBM) Drive	Shaft Excavation	Tunnel and Shaft Linings	Channel and Streambanks	Anderson Force Main Relocation	Concrete Structures	Access Roads
Large excavator	1	1	--	--	1	--	1	1	1	1
Small excavator	--	--	--	--	1	--	--	--	--	--
Haul trucks	2	5	2	2	2	--	3	2	1	2
Compactor	--	--	--	--	--	--	--	--	--	1
Track Drills	--	2	--	--	1	--	--	--	--	--
Compressors	--	2	2	1	1	1	--	--	1	--
Shotcrete Batch Plant	--	1	1	--	1	--	--	--	--	--
Bobcat	1	1	--	--	--	--	--	--	1	--
Front End Loader	1	1	1	1	1	1	1	1	1	--
Manlift	--	1	--	--	1	1	--	--	1	--
Crane	--	--	--	1	1	1	--	--	1	--
Pumps	--	1	2	2	2	2	2	2	2	--
Ventilation Fan	--	--	2	2	1	1	--	--	--	--
Road-Header	--	--	1	--	--	--	--	--	--	--

Robotic Shotcrete Machine	--	--	1	--	1	--	--	--	--	--
MTBM	--	--	--	1	--	--	--	--	--	--
3 CY Scooptrams	--	--	4	--	--	--	--	--	--	--
Slurry Separation Facility	--	--	--	1	--	--	--	--	--	--
Welding Machine	--	--	--	1	1	1	--	1	1	--
Concrete Pump Truck	--	--	--	--	--	1	--	--	1	--
Concrete Vibrators	--	--	--	--	--	4	--	--	3	--
Site Generator (2,000 kilowatts) [a]	--	--	1	1	1	1	--	--	1	--
Generator (1,000 kilowatts)	--	--	1	2 [b]	1	--	--	--	--	--
Generator (80 kilowatts)	--	--	1	1	1	1	--	1	1	--
Barge-mounted crane	--	--	--	1	--	--	--	--	--	--
Barge mounted drill rig	--	--	--	1	--	--	--	--	--	--
Barge mounted excavator	--	--	--	1	--	--	--	--	--	--

3.4 Site Mobilization and Preparation

3.4.1 Access and Haul Roads

The construction contractor will access the Project area predominantly via U.S. Highway 101, Cochrane Road, and Coyote Road. New temporary access and haul roads will be installed within the Project area to allow for the movement of heavy construction vehicles, construction equipment, and building materials between active work areas, staging areas, and the disposal site. This includes a haul road from Toyon Parking area diagonally up across the dam face to join the Coyote Road near the kiosk location. Access roads will be approximately 40 feet wide and surfaced with aggregate base.

Coyote Road Removal

Public access to County parklands, specifically Anderson Lake County Park and Toyon Picnic Area, will be terminated at the start of the FOCP. Construction of the Anderson Dam tunnel will involve removal of Coyote Road, a one-way access loop spurring off Cochrane Road, which traverses the existing dam crest and dam abutments and connects to the park's parking lots and trails. Three turnouts will be added to the one-lane portion of Coyote Road, between the kiosk (located off the intersection with Cochrane Road) up to the left side of the dam crest. The turnouts will be surfaced with compacted aggregate base. An aggregate base surface road will also be constructed within the Toyon Picnic Area that will provide access from the existing grade up to the access pad for the outlet control structure.

Upon completion of construction of the ADSRP, it is anticipated that Coyote Road will be replaced with a two-way roadway, within the existing alignment, crossing the dam where it will narrow to a single lane ending above the ADSRP's new outlet works systems (which will replace Anderson Dam tunnel and existing outlet). The new road will no longer be looped and a portion will become inaccessible to through traffic and private vehicles.

Temporary Barge Access

A temporary access road will be constructed from the end of the boat ramp down to the reservoir to allow for reservoir access by barge. A barge will be used to drill exploratory holes within the reservoir (to retain information pertaining to geotechnical conditions for tunnel construction activities); support dredging and preparation of the receiving area for tunnel construction; and support with equipment removal from the reservoir.

3.4.2 Staging and Disposal Areas

Designated staging areas will be used for office and equipment trailers, equipment and materials storage, equipment maintenance facilities, fuel pumps and fuel storage tanks, concrete batching, construction vehicle parking, and materials laydown. Staging areas are summarized in **Table 2** and shown on **Figure 2**. All park areas located within the Project area boundary will be closed to public use throughout the duration of construction.

To prepare the construction staging areas, the construction contractor will remove vegetative groundcover and debris, grade the sites to create a flat surface for the movement of construction vehicles and equipment, place gravel or a separation fabric over the ground surface depending on usage, install 6-foot security and/or perimeter fencing, and install silt fencing or berms along work areas adjacent to Coyote Creek, as necessary. Visual screening, such as fencing with mesh, may be installed along Cochrane Road at Staging Area 1. Access for Staging Area 2 will require construction of a driveway off of Cochrane Road.

Waste material excavated during construction will be temporarily stockpiled in a designated disposal area located within the main Anderson Lake County Park boat ramp parking area. Preparation of the disposal area will include removal of lighting from the portion of the parking area that will be used for stockpiling. By the time the Anderson Dam tunnel is completed, it is estimated the disposal area will contain up to 130,000 cubic yards of material. Disposed materials will be later hauled to a permanent disposal site in the reservoir during construction of the ADSRP.

Table 2. Anderson Dam Tunnel Staging and Disposal Areas

	Location	Existing Land Use	Proposed Use of During Construction
Staging Area 1	North side of Cochrane Road and Coyote Creek, approximately 500 feet west of the dam in Anderson Lake County Park.	Toyon Group Picnic Area	Staging and laydown area
Staging Area 2	Private residence located on the south side of Cochrane Road and Coyote Creek.	Private Residences (Giancola and Coyle Properties)	Contractor offices and working parking
Staging Area 3	Parking lot located on the south side of Coyote Road and Anderson Reservoir	Anderson County Park main boat ramp parking lot	Equipment and parking
Disposal Area	Parking lot located on the south side of Coyote Road and Anderson Reservoir	Anderson County Park main boat ramp parking lot	Temporary disposal of excavated materials until future placement in reservoir as part of ADSRP.

Source: URS 2018, URS 2017

3.4.3 Tree Removal

With the exception of distinct areas (discussed in AMMs below) where creek channel and streambank modifications are necessary for installation of flood control improvements, and access points for those channel modifications; existing mature trees along the riparian corridor of Coyote Creek will be preserved to the extent possible. Trees located outside of the riparian corridor, however, will likely be removed. This will include the majority of trees located within the Toyon Group Picnic Park Area (Staging Area 1). Barriers will be installed outside the drip line of trees associated with the bed and bank of the reservoir and creek channel to avoid impacts to those resources.

3.5 Outlet Pipe Clearance

Preliminary analysis of initial dewatering has identified potential blockage of the existing outlet pipe due to sediment, organic matter, trees, shrubs, and other debris as a serious concern. Measures will be taken to prevent blockages, including initiating an interim reservoir drawdown to an elevation level that is lower than current 565 feet prior to October 1, 2020, and/or implementation of a dewatering schedule and net rate of flow designed to prevent clogging. A debris boom may be installed to prevent some debris from entering the existing outlet pipes.

3.6 Anderson Dam Tunnel Construction

The ADTP component involves construction of a low-level outlet through the right (northern) abutment of Anderson Dam to release and regulate water flow from the reservoir[5].

The Anderson Dam tunnel will consist of three sections of tunnel and pipeline arrangements:

1. an approximate 400-foot-long, 8-foot-diameter "lake tap" pipe upstream of the dam; connected to
2. an approximate 925-foot-long, 19-foot-diameter reinforced concrete lining within an approximate 24-foot-diameter tunnel; connected to
3. an approximate 375-foot-long, 13-foot-diameter steel pipeline within an 18.5-foot-diameter horseshoe tunnel.

The 13-foot-diameter steel pipeline (arrangement 3 above) will end at a downstream outlet control structure housing two 132-inch diameter fixed cone valves (FCVs) connected to concrete-enclosed dissipation chambers. Tunnel releases from the outlet control structure will discharge into an 86-foot-wide 330-foot long riprap-lined discharge channel leading to a reopened portion of Coyote Creek (See Section 5.3 for more discussion on the Northern Channel). The outlet control structure will also include a 24-inch diameter sleeve valve that will allow releases when flows are too low to effectively use the 132-inch diameter fixed cone valves. Construction of the outlet structure and discharge channel will require relocation (deepening) of approximately 500 feet of the Anderson Force Main, as further described below in Section 5.3). Additionally, a sloping-faced trash rack with bars spaced 6 inches apart will be located at the upstream end of the Anderson Dam tunnel. The trash rack will be designed to prevent damage to the FCVs cause by entry of large debris.

Releases from the existing outlet will continue to flow through the southern channel, as they currently do, throughout construction of the ADTP. As described below in Section 5.3, Creek Channel and Bank Erosion Control Modifications, the downstream Coyote Creek channel will be modified to accommodate diverted water released from the new outlet tunnel and the existing outlet. Modifications will involve re-opening the historic reach of Coyote Creek (northern channel) that was decommissioned during construction of the original dam. Releases made during reservoir lowering will be conveyed by a combination of the southern channel and northern channel, as further described below.

Following completion of the Anderson Dam tunnel, the combined flow from the existing outlet works and the tunnel will have a capacity of up to about 2,500 cfs. See Section 4.0, *Anderson Dam Tunnel Operation and Maintenance,* for a description of outlet works operation following tunnel construction.

3.6.1 Construction Methods

Tunnel Portal

Construction of the 80-foot-high tunnel portal, located on the right abutment approximately 300-feet downstream of the dam, will require installation of eleven rows of soil nails and a protective facing of welded wire mesh and shotcrete. Material excavated from the portal will be hauled to the designated disposal area located in the main boat ramp parking lot (see Section 3.6.2).

[5] The Anderson Dam tunnel can later be used during the ADSRP construction to facilitate full reservoir drawdown, and converted into a larger diversion system to bypass flows during removal and replacement of the existing dam.

Tunnel Excavation

Tunnel excavation will be accomplished using road headers, a micro-tunnel boring machine (MTBM), and controlled detonations. A road header is a boom-mounted cutting head mounted on a crawler that cuts through the rock face. In sections of harder rock, controlled detonations may be needed to fracture the rock in advance of the road header. These methods are described in detail below.

Starting from the tunnel portal, a road header will be used to cut through the rock in the right abutment of the dam to create the 19-foot-diameter and 350-foot-long tunnel segment. The road header will also be used to cut the approximately 24-foot-diameter and 1,050-foot-long tunnel segment in the mountainside between the dam and the spillway. As the road header advances, spoils will be transported in trucks to the appropriate disposal area. The tunnel will be supported as excavation proceeds using steel ribs and shotcrete. Shotcrete will be produced from an on-site batch plant. Blasting may occur within the tunnel if hard rock conditions are encountered.

The MTBM will be used to mine the rock material below the wetted reservoir, creating the 400-foot-long, 8-foot-diameter “lake tap” pipe upstream of the dam. The MTBM requires construction of a launching chamber and bulkhead (a structural safety device) at the upstream end of the tunnel. The bulkhead will be made of reinforced concrete with rock dowels that anchor the bulkhead to the rock mass.

The MBTM will be launched from the upstream tunnel bulkhead, jacked forward until it reaches a receiving area dredged in the lake sediment, referred to as the break-out location. The receiving area will have a nearly vertical dredged cut at the portal face, with sloping wings on either side. Riprap will be placed on the landing pad to support the MTBM as it enters the reservoir. Dredged lake sediment will be placed within the reservoir at a location approximately 200 feet upstream of the break-out location. Riprap may also be used to mitigate potential buoyancy of the 8-foot steel casing once the MTBM is recovered. The shape of the receiving area is intended to provide as much ground cover as practicable to minimize frac out of bentonite and/or contact grout[6]. The bentonite and/or contact grout will be injected through side ports in the MTBM near the break-out location.

The receiving area will be separated from the rest of the reservoir by a system of turbidity curtains. The turbidity curtains will act as a containment measure to mitigate water quality during dredging operations and to support with potential frac-out during MTBM break-out. Cuttings excavated by the MTBM will be pumped down the tunnel to a slurry treatment facility where the slurry will be dewatered at a sludge treatment facility. The dewatered cuttings will be hauled and placed in the designated disposal area.

Once the MTBM reaches the reservoir, it will be detached exposing a bulkhead at the upstream end of the 8-foot steel pipe that isolates the reservoir from the pipe. The MTBM will be removed from the reservoir using a barge and crane. The 8-foot pipe bulkhead will remain in place until the outlet works are complete. At that time, with the valves in the outlet structure closed, a small valve in the pipe bulkhead will be opened to allow the tunnel to fill with water. Once the tunnel is filled, the pipe bulkhead will be removed and pulled from the reservoir using a barge and crane. Finally, a coarse trash rack will be installed over the end of the 8-foot pipe. Following completion of tunnel excavation, tunnel segments will be lined with reinforced concrete. Concrete grouting will be installed following the liners.

[6] A frac-out is an unintentional or inadvertent loss of drilling fluids during a drilling operation from the borehole to the surface from points other than its entry and exit points. In this case, the drilling fluid is bentonite and/or concrete grout.

Outlet Control Structure

The reinforced concrete outlet control structure will be constructed in-place concurrently with the tunnel lining work. Following completion of structure construction, a crane will be used to install the 132-inch FCVs through openings in the structure roof. Installation of the piping and valves between the upstream end of the structure and the tunnel opening will occur concurrently. A temporary access road for the outlet control structure will be constructed along the right abutment of the dam. Fill material used for the access road will be obtained from other excavated areas (e.g., excavated material from Coyote Creek or from the tunnel portal.)

3.6.2 Materials and Spoils Management

Materials excavated from the Anderson Dam tunnel and the reopening of the northern channel will be placed in trucks and hauled directly to the disposal area (see **Figure 2**). Truck loads will be wetted to mitigate generation of dust during hauling.

During tunneling construction, spoils will be removed from the excavated face using muckers and hauled to a temporary spoils storage area located in Staging Area 2. Spoils will later be loaded and hauled from the temporary spoils storage area up to the disposal area during daylight hours. The temporary spoils storage area and the disposal area will be designed using best management practices, including BMPs in the General Construction Permit SWPPP and Appendix A, such as the installation of berms and silt fencing along Coyote Creek to prevent water from draining out of the spoils and entering into Coyote Creek. The temporary spoils area will be maintained in a wetted condition or covered to prevent migration of dust.

Best management practices including berms, silt fencing, wattles on sloping faces, and covering with plastic sheeting, including BMPs in the General Construction Permit SWPPP and Appendix A, will be incorporated into the disposal area to minimize erosion and transport of the disposed materials into the reservoir area.

Naturally Occurring Asbestos

Segments of the Anderson Dam tunnel will be excavated through naturally occurring asbestos (NOA) containing rock. Excavated NOA containing rock will be maintained in a moist condition and covered during hauling to mitigate generation of dust. The NOA-containing material will be placed in a designated portion of the disposal area and covered with a minimum of 3 feet of non-NOA containing material.

3.7 Other Supporting Facilities and Improvements

Completion of the Anderson Dam tunnel will include installation of an electrical building, valve controls, and a 350-kiolowatt diesel generator.

Controls and instruments will be installed within an electrical building to operate the Anderson Dam tunnel, as well as monitoring dam safety and reservoir levels. Additionally, a 350-kilowatt diesel generator will be installed to allow for emergency power generation.

3.8 Electrical Power Requirements

If feasible, electrical power will be supplied by Pacific Gas and Electric Company (PG&E). Alternatively, electrical power will be supplemented and/or rely entirely on the use of generators. Depending on whether PG&E is able to provide supply, it is estimated that the use of one or two generators will be required to supply approximately 1,200 kilowatts during construction of the Anderson Dam tunnel.

3.9 Construction Water Supply and Stormwater Drainage

Depending on water quality following reservoir drawdown, water used for construction, including dust control and wetting of stockpiled materials, will be obtained either from the reservoir or local municipalities using hydrant potable water. For batching shotcrete, water will be obtained from local municipalities using hydrant potable water.

In staging areas and stockpile areas without access to existing infrastructure, stormwater will be managed using BMPs including BMPs in the General Construction Permit SWPP and in Appendix A, B*est Management Practices and Santa Clara Valley Habitat Conservation Plan Conditions Incorporated in the Proposed Project*.

Nuisance groundwater will be generated during portal and tunnel excavations, dewatering of the backwater area formed following installation of the temporary dike within Coyote Creek, relocation of the Anderson Force Main, and re-opening of the northern channel. Nuisance groundwater will be collected and pumped to an on-site water treatment system and treated before being released back into Coyote Creek. The volume of groundwater that will be produced during tunneling is anticipated to be approximately 100 gallons per minute. Groundwater inflows into the northern channel of Coyote Creek may be greater. The contractor will be required to provide a water treatment system capable of treating up to 400 gallons per minute. For more details pertaining to erosion control, refer to Sections 5.3 *Creek Channel and Bank Erosion Control Modifications* and 5.7 *Erosion and Sediment Management*.

3.10 Light Pollution Measures

Components of the Project (e.g., tunneling excavation for the Anderson Dam tunnel) will require nighttime work and associated construction lighting. For work occurring overnight, outdoor lighting will adhere to local ordinance requirements for light and glare, as feasible[7]. Lighting will be shielded and not projected outside the limits of the staging, work areas, and property lines. Additionally, the following measures will be implemented to minimize potential effects related to light-pollution:

- Application of (at a minimum) the following light standards:
  - Illumination levels attributable to the lighting system will not exceed 0.5 maintained horizontal foot candle nor 2.0 initial vertical foot-candles, measured at the closest property line of any residential use.
  - Illumination levels attributable to the lighting system will not exceed 1.0 maintained horizontal foot candle nor 4.0 initial vertical foot-candles, measured at the closest property line on all other properties except public ways.
  - Vertical foot candles will be the initial foot-candle levels measured at 36 inches above the ground with a meter aimed toward the brightest light bank.
- To the extent feasible, backlight, uplight and glare will be minimized.
- Light fixtures will be properly maintained so as to prevent flickering of any light source.
- To the extent feasible, light fixtures will utilize soft yellow or orange lights instead of harsh white lights.

[7] Pursuant to Government Code Sections 53091(d) and (e), Valley Water is not subject to the building and zoning ordinances of a city or county for projects involving the production, generation, storage, treatment, or transmission of water. Nonetheless, Valley Water strives to consider the regulations and ordinances of local jurisdictions during construction where feasible and not contrary to its public purpose and responsibilities.

- Fixtures will not direct a concentrated beam of light to a point beyond the property line.
- To the extent feasible, light pollution will be controlled using conforming luminaires, shielding, landscaping, berms, and directional modification.
- After placement of lighting, light levels at the property line adjacent to areas sensitive to light pollution including, but not limited to residential properties and public ways, will be monitored. Monitoring data will be obtained as changes to type, number, or position of lighting are made.
- Owners of adjacent properties will be notified at least 2 weeks prior to commencement of lighting activities that might affect them.

3.11 Noise and Vibration Abatement

To reduce noise-related effects to nearby sensitive receptors, Valley Water will implement noise and vibration AMMs, as necessary. Valley Water will also be developing a Noise and Vibration Control Plan that will identify project-specific noise control measures, monitoring protocols, and notification procedures for noise exceedances and complaints. A Valley Water representative will be designated as responsible for responding to noise complaints during construction and signs will be posted at construction areas with representative contact information. Where activities are expected to exceed identified noise thresholds, the following noise control measures will be implemented, as determined necessary:

- Implementation of best available controls techniques, including mufflers, intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds for all construction-noise equipment and trucks.
- Avoidance of impact equipment use, whenever feasible. If impact equipment is required, use of hydraulic- or electric- powered impact equipment (e.g., jack hammers, pavement breakers and rock drills) instead of pneumatically powered tools. Where use of pneumatic tools is unavoidable, mufflers on the compressed-air exhausts will be used (to achieve a reduction of 10 A-weighted decibels [dBA]) along with external jackets on the tools (to achieve a further reduction of 5 dBA).
- Installation of piles using drilling methods, where feasible. Pile driving that uses impact or vibratory methods will be prohibited except for locations and times specifically approved in writing by the City Representative.
- Pile driving activities at approved locations will be prohibited during the evening and nighttime hours (7 p.m. to 7 a.m.).
- Operation of equipment requiring the use of back up beepers will be avoided near sensitive receptors to the extent feasible during nighttime construction work hours between 10 p.m. to 7 a.m. If nighttime work requires backwards movement and the use of backup alarms results in the exceedance of noise level thresholds, alternative methods, such as the use of “smart” alarms, radar activated backup alarms, or administrative controls, such as use of a spotter to direct the backing operation will be implemented.

3.12 Site Clean-up and Restoration

For certain areas where no further disturbance will occur as a result of the ADSRP, restoration will occur upon completion of impacts caused by Anderson Dam tunnel and directly related activities. Restoration work will include installation of biotechnical lining along portions of the north channel banks. Following completion of the ADSRP, areas where vegetation had been removed will be revegetated, and damaged roadways will be repaved.

3.13 Fire Safety and Emergency Access

During construction, Valley Water will adhere to all fire prevention and protection requirements and regulations of the County and Public Resources Code wildland fire safety measures, as applicable.

4.0 Anderson Dam Operation and Maintenance

Prior to operation of the Anderson Dam tunnel, an approved Emergency Response Plan (ERP) will be in place and the public will be notified.

4.1 Operation of the Reservoir-Creek System

Anderson Reservoir and Coyote Creek, which is prone to flooding, are home to a diverse ecosystem, and responsible for recharging the southern part of the Santa Clara Subbasin that is groundwater dependent. Anderson Reservoir operations depend on inflows into the reservoir and storage in the reservoir. In addition, releases from Anderson Reservoir impact Coyote Creek below Anderson Dam, including creek reaches that provide habitat for native sensitive species, including federally threatened Central California Coast steelhead (*Oncorhynchus mykiss*), as well as reaches that have limited flow conveyance capacity and are therefore prone to flooding.

The operation of the Anderson Reservoir is expected to vary with each phase of the FOCP, as discussed below.

4.1.1 Initial Dewatering Operation:

The initial drawdown of Anderson Reservoir will start in compliance with the FERC Order on October 1, 2020 to safely dewater the reservoir as quickly as feasible to a water surface elevation of 488 feet, also called deadpool level (**Figure 4**). Initial drawdown must be accomplished by releases through the existing reservoir outlet, which is undersized and has a maximum flow conveyance capacity of 500 cfs. To implement initial dewatering, the net release rate from Anderson Reservoir will be approximately exceed 100 cfs, which is to say that releases from Anderson Reservoir shall only exceed the inflows by up to 100 cfs, which corresponds to a reduction in reservoir storage of 200 AF per day. This limited net release rate is recommended due to slope instability along the reservoir rim (See Section 5.1 and 5.2). Limiting the net release rate to 100 cfs helps avoid creation of unstable conditions that may result from the soil drying out too abruptly in areas of the dam and reservoir embankments that have already exhibited geotechnical instability. If soils in these areas dry out too quickly, slumping or slides may result in those areas already known to be unstable.

Valley Water plans to maximize beneficial uses of the water stored in Anderson Reservoir leading up to the drawdown. Over the summer of 2020, reservoir levels will be maintained as high as possible to facilitate in-reservoir geotechnical borings and maintaining a cold water pool ahead of the fish rescue and relocation effort tentatively planned for August (See Section 5.8). Once the geotechnical investigations and fish rescue are completed, Valley Water will increase beneficial uses of release water by sending it to the treatment plants and providing groundwater recharge to Coyote Creek and the Coyote Percolation Pond.

Table 3 shows Valley Water's projected Anderson Reservoir storage and approximate water surface elevation for the first day of each remaining month in 2020 and January 2021. Based on analyses by Valley Water, the reservoir level on October 1, 2020 is estimated to be elevation 518 feet and the reservoir will be lowered at a net rate of 100 cfs greater than reservoir inflows (up to a maximum release of 500 cfs), so that the reservoir is lowered by approximately 200 AF per day (in the absence of significant precipitation).The exact duration of the initial drawdown will be influenced by the reservoir elevation on October 1, the size and frequency of storm events during the winter, and what

net release rate is required to minimize remobilization of landslides around the reservoir rim, particularly in the vicinity of Holiday Estates (Section 4.1) and near the intake structure (Section 4.2).

Releases would be made through the existing 49-inch diameter existing outlet pipe to Coyote Creek or to Valley Water's raw water distribution system. The 42-inch outlet valve on the downstream side of Anderson Reservoir is a butterfly valve. Butterfly valves are typically not throttled below 16% open to prevent damage to the valve. When it reaches elevation 488 feet, Anderson Reservoir would cover approximately 150 acres, with storage of 2,820 AF, with a water depth (at the lower intake port of the existing outlet) of 38 feet.

Table 3: Projected Anderson Reservoir Storage and Water Surface Elevations Leading up to the start of ADTP

Month and Year	Projected Storage at Beginning of Month (acre- feet)	Approximate Water Surface Elevation (feet)
July 2020	25,134	554
August 2020	21,565	547
September 2020	15,427	534
October 2020	9,492	518
November 2020	3,354	491
December 2020	2,820	488
January 2021	2,820	488

4.1.2 Wet Weather Operations to Maintain Deadpool Before Anderson Dam Outlet Tunnel Completion (Year 1-Year 3)

After the initial drawdown in the fall of 2020 and prior to the completion of the ADTP, Anderson Reservoir will be operated in the following manner to limit, to the extent feasible, the number of days that precipitation and increased inflows cause the elevation in the reservoir to exceed elevation 488 feet.

During Year 1, wet weather, releases from the reservoir to Coyote Creek downstream of the dam would continue to be made through the existing outlet at a net rate of 100 cfs, up to the maximum outlet capacity. For example, if Anderson is receiving inflows of 10 cfs, then approximately 110 cfs will be released; this maintains a drawdown rate of 200 AF per day (absent precipitation). During Years 2 and 3, once the landslides risks have been mitigated, wet weather releases will no longer be managed for a net rate of 100 cfs and the outlet will be allowed to operate fully open at all times to release its maximum capacity and maintain elevation 488 feet to the maximum extent feasible. The maximum capacity of the outlet is 500 cfs when the reservoir is completely full, and 295 cfs when the

reservoir is near elevation 488 feet, so wet weather releases at full capacity of the existing outlet will range between 300 cfs and 500 cfs. The estimated releases from Anderson Reservoir (based on anticipated inflows by water year type) are described in **Table 4** below.

During this period of the FOCP, no imported water would be stored in Anderson Reservoir and no water would be sent to from Anderson Reservoir to the treatment plants.

Table 4: Proposed Wet Weather Releases from Anderson Reservoir to Maintain FERC-Ordered Elevation (488 feet) through Existing Outlet[8]

Beginning of Month	Dry Year Monthly Average Release (cfs)	Median Year Monthly Average Release (cfs)	Wet Year Monthly Average Release (cfs)
December	6	6	176.8
January	4.9	49.5	300.0
February	4.9	165.9	350.0
March	6.2	58.1	400.0
April	6.8	56.6	300.0
May	3.2	20.7	64.5
June	2.7	18.8	49.0
July	2.6	17.4	20.1
August	3.0	17.1	24.5
September	2.4	17.1	21.1
October	2.7	17.7	30.4
November	2.7	18.3	36.6

4.1.3 Surface Water Augmentation Before Anderson Dam Tunnel Completion:

Currently, Anderson Reservoir typically operates between the elevations of 556 and 582 feet (the latter being 10 feet lower than the existing DSOD seismic restriction). At those elevations, regulated releases from the reservoir passed through the existing outlet range from 30 cfs to 60 cfs to provide groundwater recharge (in Coyote Creek and in the in-stream Coyote Percolation Pond just north of Metcalf Road in South San Jose), and in-stream flows for aquatic habitat and sensitive native species during summer and fall, when the Coyote Creek streambed would otherwise be dry. After the initial dewatering to elevation 488 feet and before completion of the tunnel construction project, because the reservoir storage would be minimal and the surface water elevation of the reservoir will be lower, releases from Anderson Reservoir are expected to be insufficient to meet the groundwater recharge capacity requirements of the Coyote Creek managed recharge system during many months of each year, and, during prolonged drought, it is likely to be impossible to meet groundwater recharge capacity requirements for one or more entire years. Without adequate recharge, groundwater supplies in this basin will lower rapidly, causing several undesirable effects, including the potential for reduced water quality, increased energy costs to pump groundwater, a need to dig deeper wells, and even potential for overdraft and renewed land subsidence in the northern part of the basin. In

[8] Estimated releases based on modeled Anderson Head-Discharge curve (Valley Water unpublished data)

addition, reductions in Anderson Reservoir releases during dry summer and fall months would be expected to adversely affect sensitive species and habitat within Coyote Creek, including *O. mykiss.*

This water shortage will be addressed by augmenting the releases of local water using another source of supply. Utilizing imported water supplies to supplement releases from Anderson Reservoir Coyote Creek is essential to meet the recharge requirements of the Coyote Creek recharge system, to avoid subsidence, and to provide in-stream environmental flows to minimize dryback conditions. With respect to in-stream flows, flows are necessary to support the Cold Water Management Zone below Anderson Dam, and, in addition, Valley Water is required to maintain a flow of 2.5 cfs past Edenvale streamflow station (SF58), which marks the end of the groundwater recharge zone. Such flow is required to keep the creek wet all the way to the San Francisco Bay, per the Lake or Streambed Alteration Agreement that Valley Water has signed with the California Department of Fish and Wildlife (CDFW).

During the initial drawdown beginning and continuing through fall of 2020, reservoir releases will provide flow augmentation for purposes of meeting recharge requirements and providing in-stream environmental flows. After initial dewatering and prior to construction of the Anderson Dam tunnel, releases from Anderson reservoir will be made to maintain elevation 488 to the extent feasible and to pass through releases from Coyote Reservoir and watershed inflows, but they will not be sufficient to effectively recharge groundwater. Therefore, imported water from the Cross Valley Pipeline will be released into Coyote Creek just below the dam via the Coyote Discharge Line. The amount of flow released from the Coyote Creek Discharge Line will depend on the time of year, the temperature of the flow, the amount of native water available for release from the reservoir to mix with the imported water, the availability of imported water supplies, and actual hydrology at the time of the release. These releases of imported water to augment surface water flows in Coyote Creek are expected to range from 0 cfs up to 60 cfs. In the event that surface flow augmentation is needed during the summer and fall for in-stream environmental flows, but the temperature of the imported water (even after mixing with any native water available for release from the reservoir) is too high to be tolerated by *O. mykiss,* then up to 10 cfs of imported water flow may be treated with electric chillers to reduce the flow temperature, and then the cooler temperature flows will be released into the Creek at the same location just below the dam (see Section 5.4 below for more discussion of use of chillers).

In addition, to further minimize impacts on groundwater recharge, better ensure sufficient in-stream flows to, and downstream of Ogier ponds, and to improve flows for connectivity with the Bay while preserving reservoir releases for the upstream Cold Water Management Zone, Valley Water proposes to construct an extension of the Central Valley Pipeline to allow for discharges of imported water into Coyote Creek just downstream of Ogier Ponds (see Section 5.4). Depending on availability, it is anticipated that 20 to 50 cfs of imported water could be discharged from this pipeline extension when it is constructed and becomes operational in approximately the summer of 2021.

Imported water releases into Coyote Creek are necessary to mitigate adverse effects of the FERC-ordered drawdown on water supply, groundwater recharge, potential subsidence in the Santa Clara Plain from reductions in recharge, and sensitive aquatic species and habitats in the Cold Water Management Zone of Coyote Creek downstream of Anderson Dam, as well as the habitat and wildlife in Coyote Creek from Ogier Ponds to the San Francisco Bay.

4.1.4 Operations After Anderson Dam Tunnel Completion

When construction of the ADTP is complete, the ADTP outlet and existing outlet works would be operated so that combined releases of up to 2,500 cfs or less could occur to maintain an elevation that provides sufficient dam safety, while avoiding or minimizing downstream flooding that might otherwise result from high flow releases from the reservoir. Proposed release rates to maintain FERC's ordered of elevation of 488 feet (based on anticipated inflows by water year type) are described in **Table 4**. Valley Water has assumed a combined maximum of 2,500 cfs because these

flows may occur for relatively high frequency storm events, unless FERC approves maintenance of an elevation higher than 488 feet or allows the temporary exceedance of 488 feet while the reservoir is drawn back down after a storm event.

Flows from the ADTP outlet structure would be split, with most of the flow passing to the north of the Anderson County Park Live Oak Picnic Area through the reopened, original Coyote Creek channel, and the remainder passing through an approximately 1,200-foot-long section of Coyote Creek (southern channel) that passes through the Anderson County Park Live Oak Picnic Area, to where it rejoins Coyote Creek. The distribution of flow between the two channels would be achieved by construction of a 72-foot-wide sharp-crested weir at the head of the northern channel and a 5-foot-wide u-shaped channel invert at the head of the southern channel. The weirs would be designed to split releases up to 2,500 cfs that could occur during construction and operation of the ADTP so that the southern channel would operate with flow rates at or less than historical release rates, with the remainder of releases passing through the northern channel (see Section 5.3).

With the new tunnel in place, larger releases can be made from Anderson Reservoir to more quickly bring its level back to elevation 488 feet during rains, but these larger releases present a risk of flooding properties adjacent to Coyote Creek. The flood protection improvements and measures set forth in Section 5.6 are proposed to minimize downstream flooding that would result from maximum wet weather releases to Coyote Creek of 2,000 to 2,500 cfs combined with inflows from tributaries to Coyote Creek that should be expected in large precipitation events.[9]

Once the Anderson Dam tunnel is operation, FERC may permit a higher interim reservoir level. If that were to occur, Valley Water could close the outlet valves to minimize releases and potentially reduce flooding downstream, and then resume slower reservoir releases through one or both outlets to draw the reservoir back down to a lower elevation at a slower pace, and after downstream flooding subsides. If more storage in the reservoir is approved by FERC to better control downstream flooding, and/or to increase operational releases to enhance surface water augmentation for groundwater recharge, in-stream environmental flows, or supply to the Santa Teresa Water Treatment Plan (as discussed in the next subsection), then new wet weather operational rules will be developed for opening and closing the Anderson Dam tunnel and existing outlet. These new operational rules would not result in wet weather releases that exceed 2,500 cfs, which is the maximum design capacity of the Anderson Dam tunnel and existing outlet. Accordingly, in case FERC does not approve storage in the reservoir above elevation 488 feet, the flood protection improvements and measures discussed in Section 5.6 below are designed to address wet weather releases of up to 2,500 cfs, combined with the volume of inflows that would be tributary to Coyote Creek in two of the wettest years of record for Santa Clara County.

4.1.5 Surface Water Augmentation After Anderson Dam Tunnel Completion

As discussed earlier, when Anderson Reservoir is maintained at or near elevation 488 feet, imported water releases into Coyote Creek are needed to augment Anderson Reservoir releases and maintain a full groundwater recharge program, which is necessary for healthy groundwater storage and appropriate groundwater quality in the Coyote Valley and South San Jose, as well as the prevention of the recurrence of overdraft land subsidence in the northern Santa Clara Subbasin. Also, augmentation of reservoir releases with imported water is important for a healthy ecosystem in the Coyote Creek Cold Water Management Zone, and to maintain flows of 2.5 cfs past Edenvale streamflow station (SF 58) downstream to San Francisco Bay. In addition, surface water augmentation allows more delivery of water to the Santa Teresa treatment plant for water supply

[9] For modeling purpose, the maximum design outlet releases were combined with anticipated Creek inflows for the above-average precipitation years of 1983 and 2017 to assess and determine the needed flood control improvements.

purposes. The same program for surface water augmentation releases discussed prior to operation of the Anderson Dam Tunnel will continue after the tunnel is built.

In the event that FERC approves more storage within Anderson Reservoir after the Anderson Dam tunnel becomes operational, maintaining a higher elevation and deeper reservoir will provide both more water and colder temperature water for releases to Coyote Creek designed to recharge groundwater and provide in-stream flows for habitat and sensitive species, including *O mykiss.* Maintaining the reservoir at a higher elevation than elevation 488 feet allows more native water to be made available for release at colder temperatures into Coyote Creek, reducing demand for imported water to augment recharge and in-stream flows, and potentially reducing or eliminating the need for the chillers, which can only chill up to 10 cfs of flow (see Section 5.4). In addition, more storage within Anderson Reservoir after construction of the Anderson Dam tunnel would provide water to delivery to the Santa Teresa treatment plant, and better emergency supply and supply redundancy in the event of an outage in the raw water system (e.g., loss of power at the Pacheco Pumping Plant or a leak in one of the imported water transmission lines).

4.2 Facility Maintenance

As previously described, debris that could damage the fixed cone valve (FCV) will be prevented from entering the Anderson Dam tunnel by a trash rack located at the upstream end. Log booms will be placed upstream of the trash rack to keep debris away and prevent clogging of the trash rack and lower intake to the existing outlet pipe. The trash rack and log booms will need to be cleaned and maintained periodically.

FOCP post-construction maintenance will occur as needed and may require periodic, routine activities at Anderson Dam such as vegetation management, control of burrowing rodents, access road work, and erosion repair.

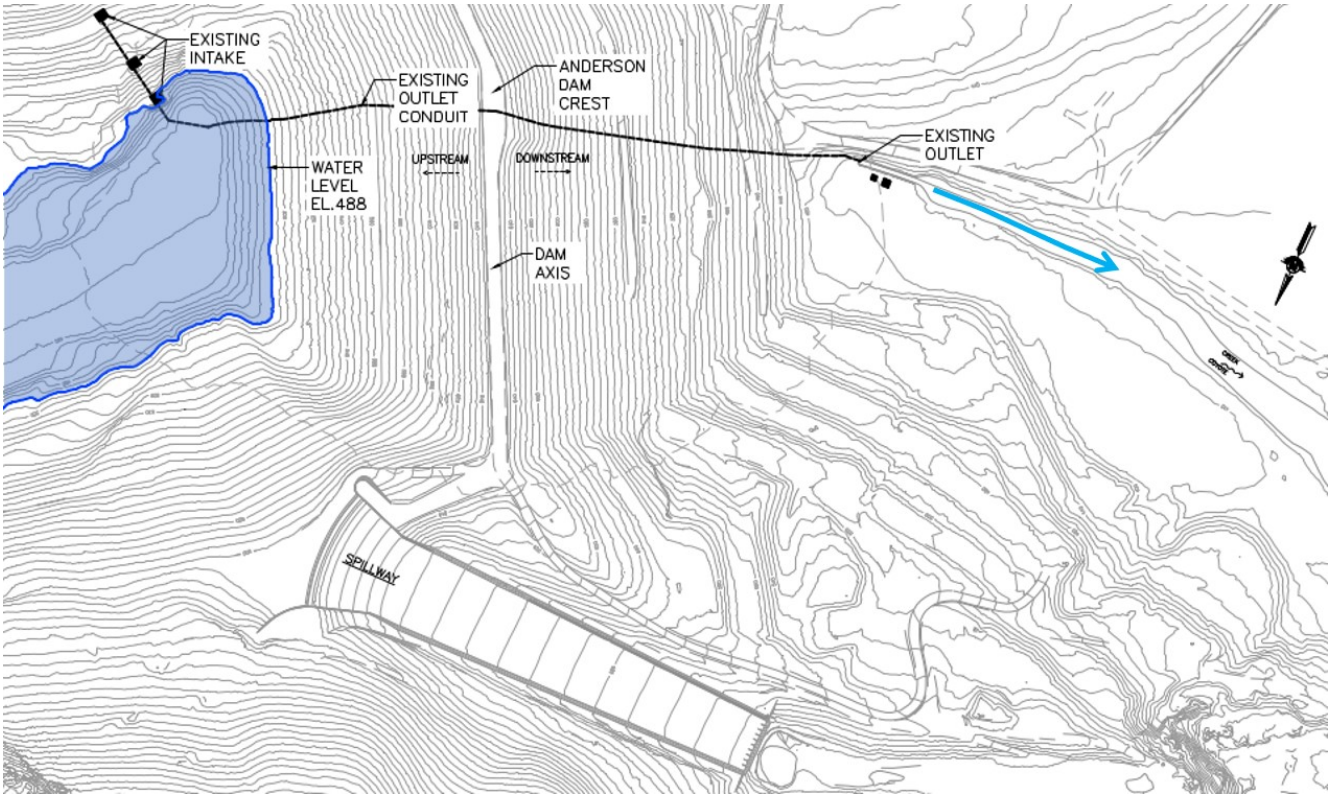

Figure 4: Reservoir Water Surface Elevations and Flow Paths for Drawdown and ADTP Years 1 through Years 3

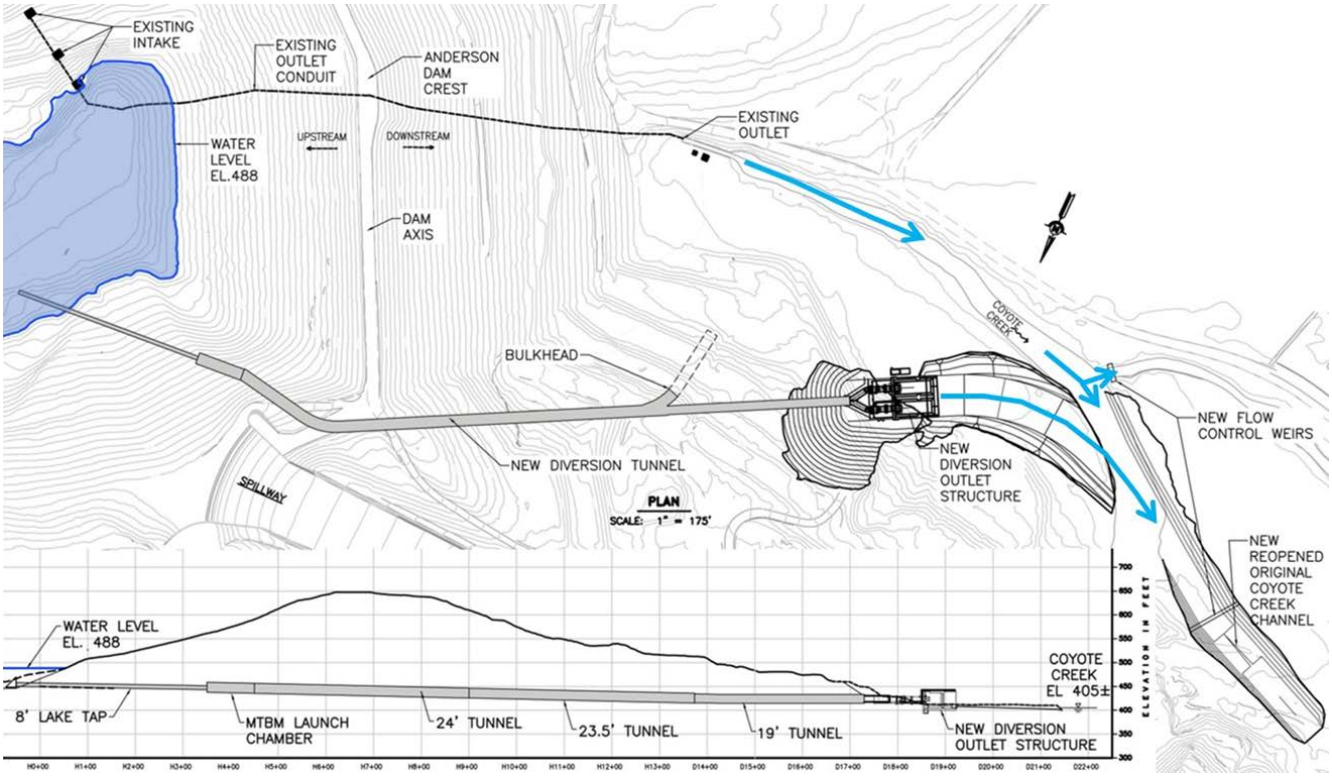

Figure 5. Proposed Reservoir Release Flow Paths once ADTP is Constructed

5.0 Avoidance and Minimization Measures

5.1 Reservoir Bank and Rim Stability Improvements

Initial dewatering of the reservoir, and keeping the reservoir drained for a prolonged period of time, may reactivate areas of inactive landslides. Five major landslides exist along the southern portion of Anderson reservoir. These landslides have a history of movement during previous drawdowns of the reservoir. A program to further investigate and monitor the movement of the slides will be implemented; the program will include satellite-based surveys, drone-based surveys, land-based surveys, piezometers, inclinometers, and on-site inspections. Over 50 survey monuments and 17 satellite reflectors will be installed in and around the landslide areas, within the reservoir and immediately upslope of the reservoir. Geotechnical borings on the dry slopes of the reservoir will also be completed prior to dewatering. Installation and maintenance of the satellite reflectors and access to the geotechnical borings will require construction of road on the southeastern reservoir slope, originating from the Holiday Estates boat ramp. The access road within the reservoir will consist of a balanced cut and fill path that will be graded from the Holiday Estates boat ramp to the areas of work using bulldozers or excavators along the reservoir slope.

Monitoring will commence prior to October 1 and will continue throughout the Project. If impacts to private property are observed, dewatering rates may be tapered down or ceased, allowing time for additional evaluations. The need for stabilization measures or improvements will be evaluated as the drawdown occurs and for the duration of the Project. Once stabilization measures have been completed, reservoir releases will no longer be limited to, and if necessary, may exceed a net rate of 100 cfs.

Stabilization improvements will depend on the results of the ongoing monitoring. The range of potential actions during drawdown, and afterwards to maintain deadpool, includes the following:

- *Monitor and make repairs.* In cases where damage does not result in structural damage that will make residences and/or roadways unsafe, repairs will occur. Repairs could include a wide range of actions, such as filling of cracks in driveways, concrete slabs, and roadways, replacing concrete slabs, replacing aesthetic walls or fences, regrading yards or roadways importing of fill to bring the roadway back to grade, repaving damaged portions of road, repairing or replacing swimming pools, etc. The size and scope of the repairs will depend on the amount of movement and damage that occurs during drawdown.
- *Buttressing of the slides.* Buttressing will involve placement of material at the toe of the slide to keep the slides from moving. Prior to drawdown, material will be placed through the water using barges. Design of the buttresses will require geotechnical borings to determine the depth of slide to be supported. Buttressing following drawdown may be able to be accomplished by regrading landslide materials below the road, potentially reducing the volume of imported materials. Buttressing following drawdown will require the use of heavy equipment including bulldozers, excavators, and compactors.
- *Retaining walls.* An engineered wall will be placed at or near the top of the region exposed to prevent progressive failures from impacting properties above them as the slide lower on the slope moves further into the reservoir. Wall types may include soldier pile, mechanically stabilized earth, gravity, and cantilever, all of which are likely to require tiebacks. Design of the walls will require geotechnical borings to determine the depth of slide to be supported. Installation, depending on the type of wall, will require use of heavy equipment including large drilling rigs, track drills, bulldozers, excavators, and compactors.
- *Anchors to retain slide mass.* Rock/soil nails will be installed throughout most or all of the slope to retain the upper portion of slide mass. Horizontal drains will also be installed to allow water drain from the slide mass as quickly as possible. Design of the walls will require geotechnical borings to determine the depth of slide to be supported. Installation will require a series of haul roads at different elevations on the banks of the reservoir. Equipment that will be required will include a bulldozer, an excavator, and track drills.
- *Regrading of the slides*. Regrading will involve re-sloping of the landslides to reduce the driving force at the top of the slide. To be most effective, regrading will include buttressing following drawdown as described above. Regrading will require the use of heavy equipment including bulldozers, excavators, and compactors.

Monitoring will require access to 13 private properties along Holiday Drive and three private properties along Hoot Owl Way in order to conduct visual inspections. Additional coordination will be needed with Santa Clara County Parks for use of the Holiday Estates boat ramp, for accessing satellite reflectors downslope of Dunne Avenue, and for staging areas in the Woodchopper picnic area and the Holiday Estates boat parking lot. If stabilization measures become necessary, additional construction and access easements may be needed. However, it is anticipated that major actions that require working on the reservoir slopes below private properties will be staged from the Holiday Estates boat ramp parking area.

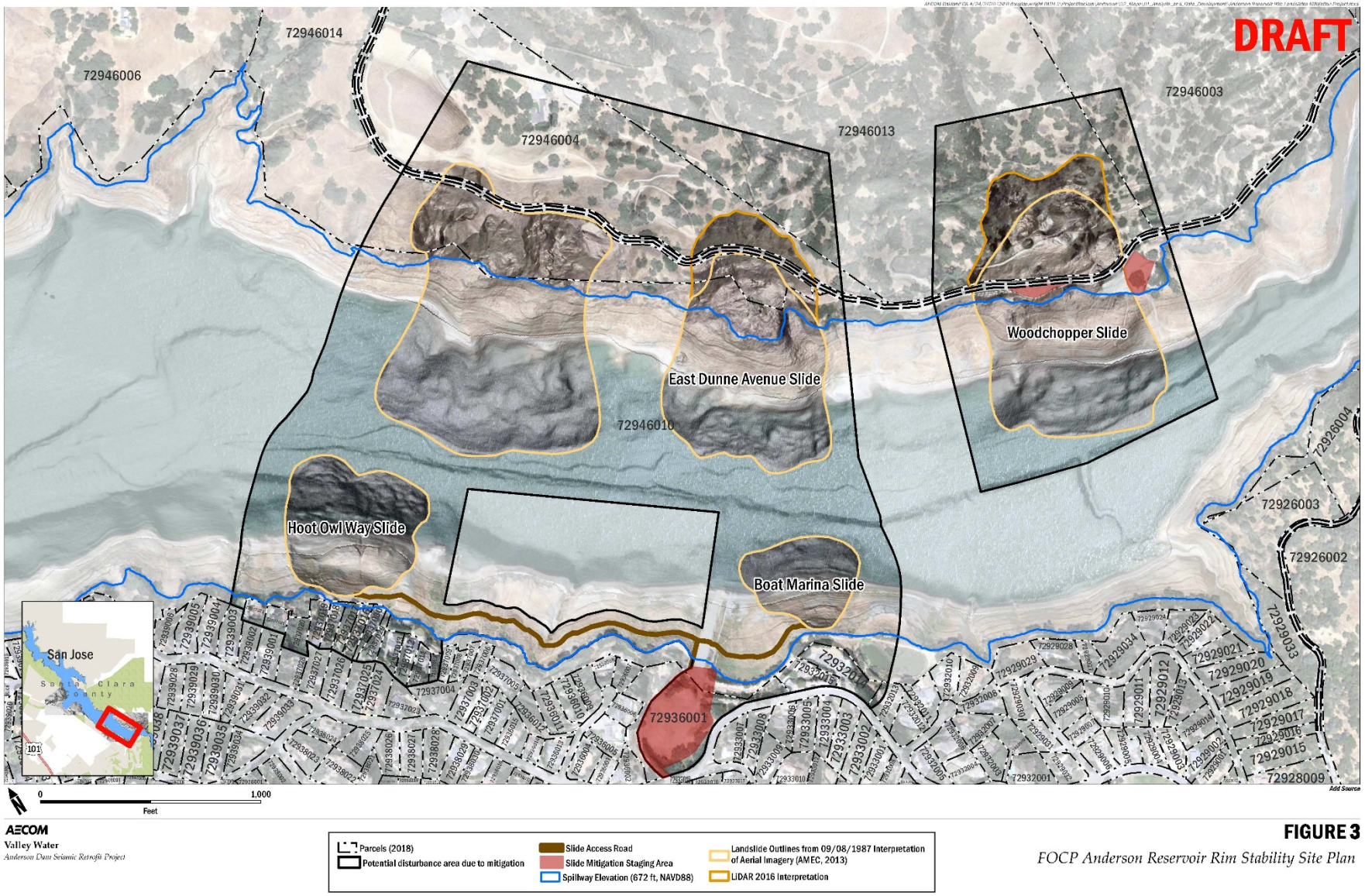

Figure 6. Reservoir Rim Stability Site Plan

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5.2 Existing Intake Structure Modifications

Slopes in the vicinity of the existing intake structure are vulnerable to slope movements when the reservoir is being drawn down and operated at a restricted elevation level, such as elevation restrictions required by the FOCP because operating at lower elevations results in drying of embankment materials. Potential for landslides and slope instability during drawdown and after drawdown to maintain deadpool were studied in October 2019. Analysis revealed that sliding of fills above the boat ramp could potentially affect the utility trench and hydraulic piping that operates the existing intake gates. A monitoring program will be implemented that would include one or more of the following: satellite-based surveys, drone-based surveys, land-based surveys, piezometers, inclinometers, and on-site inspections that will be used to monitor the intake structure prior-to and during reservoir drawdown, and during releases to maintain deadpool. Following drawdown, two to three geotechnical borings will be drilled to evaluate the need for strengthening or stabilizing the existing intake for the current outlet structure.

Structure modifications will depend on the results of the monitoring during drawdown and the foundation conditions determined from the geotechnical borings. The range of potential actions includes:

- *Damage assessment.* Assessment will be performed immediately following an earthquake event and implementation of repairs will be performed, as needed.
- *Installation of anchors to stabilize slope.* Rock anchors will be installed throughout most, or all, of the slope on both sides of the existing sloping intake structure (above the lowest port) to provide greater resistance to deformation due to seismic shaking. Anchor installation typically requires an excavator and track drills.
- *Drilled piers to stabilize slope*. Drilled piers will be installed around the foundations of the two upper ports of the intake structure to reduce movement of the foundation under the structure. Equipment that will be required will include an excavator, a large drill rig, and a crane.
- *Reinforce intake structure*. Reinforcement of the intake ports may be required to accommodate increased loads due to foundation movement. Reinforcement could include thickening of structural sections.
- *Regrading of the slides above boat ramp*. Regrading will involve re-sloping of the landslides that might occur above the boat ramp. Regrading will require the use of heavy equipment including excavators and compactors.

Access to the existing intake ports will be along existing access roads from the boat ramp and below the boat ramp. Existing access roads may require maintenance, such as minor grading and shaping, prior to use. Staging and disposal for any potential stabilization actions will occur within Staging Area 3 and the designated disposal area.

5.3 Creek Channel and Bank Erosion Control Modifications

Flows in the portion of Coyote Creek from the downstream toe of the dam through County Park's Live Oak Picnic Area (referred to herein as the southern channel) could be significantly greater following construction of the ADTP than under existing conditions, in part because of the limited capacity of the existing outlet works (URS 2019b). An emergency drawdown of the reservoir following construction of the ADTP through both the existing and ADTP outlets, if needed, would also result in flows significantly greater than can be currently released through a single channel. The southern channel

was built during construction of the dam and is not the original stream channel. Releases from the spillway currently flow through the northern channel, a section of the original Coyote Creek channel that is currently separated from Coyote Creek at its upstream end by a dike that was constructed during construction of the dam. The two channels converge approximately 2,200 feet below the current outlet works discharge point. The maximum flow that is released into the southern channel is about 500 cfs but flows through this approximately 1,200-foot-long southern channel after the ADTP is constructed, could be up to 2,000 cfs greater than historical releases.

To accommodate the increased flow rates through the southern channel, the channel would need to be hardened, or lined with riprap or concrete, resulting in a loss of valuable stream habitat and removal of riparian vegetation. To avoid hardening the 1,200-foot southern channel, Valley Water proposes an alternative that involves reopening and restoring the historical, northern channel (**Figure 2**).

Reopening of the northern channel would increase the total stream habitat available downstream of Anderson Dam and avoid hardening the southern channel. The reopened portion of Coyote Creek is being designed to provide environmental benefits, where possible, while meeting the need to convey the increased flows from the new outlet works. The reopened channel bed would be lined with an engineered fill suitable for fish migration, and the channel banks would be lined with a biotechnical lining that will allow the growth of vegetation. A revegetation plan will be prepared that will include details on planting in the channel banks and riparian zone, as well as the installation of habitat improvement features, where possible. This approach has been incorporated into the ADTP design to benefit biological resources.

Distribution of flow between the southern and northern channels would be achieved by construction of a sharp-crested weir at the head of each channel. The weirs would be designed so that low flows would be split between the channels in a manner that would provide environmental benefits to each channel and would not increase the existing potential for fish stranding. High flows would be split in a manner that minimizes the potential for erosion of the southern channel. Releases to Coyote Creek during future normal operation of the reservoir are expected to be in the range of 20 to 90 cfs. The weirs are designed in such a way that the lowest flows would be split evenly between the two channels, then as flows approach 90 cfs, flow would be gradually split so that about 30 cfs enters the southern channel and about 60 cfs enters the northern channel. The weirs were also designed to split high flows so that during maximum reservoir releases the southern channel would operate with flow rates at or less than historical releases rates (500 cfs), with the remainder of releases passing through the northern channel. This would minimize the potential for erosion of the southern channel, given that no new erosion protection will be provided in the southern channel.

5.4 Imported Water Releases and Cross Valley Pipeline Extension

After the initial drawdown to elevation 488 feet and before completion of Anderson Dam tunnel, reservoir storage will be diminished and surface water elevation will be lower. Releases from Anderson Reservoir are, therefore, expected to be insufficient to meet the groundwater recharge capacity requirements during many months of each year. Further, during prolonged drought periods, groundwater recharge capacity requirements may not be achieved for one or more entire years. Without adequate recharge, groundwater supplies in this basin will lower rapidly, causing several undesirable effects, including the potential for reduced water quality, increased energy costs to pump groundwater, a need to dig deeper wells, potential for overdraft, and renewed land subsidence in the northern part of the basin. In addition, reductions in Anderson Reservoir releases during dry summer and fall months would be expected to adversely affect sensitive species and habitat within Coyote Creek, including *O. mykiss.* This water shortage will be addressed by augmenting the releases of local water using another source of supply.

Imported water supplies will not only support with Coyote Creek recharge system requirements and will also support with in-stream environmental flows to minimize dryback conditions. Valley Water is required to maintain a flow of 2.5 cfs past Edenvale streamflow station (SF58), which marks the end of the groundwater recharge zone. Such flow is required to keep the creek wet all the way to the San Francisco Bay, per the Lake or Streambed Alteration Agreement that Valley Water has signed with the California Department of Fish and Wildlife (CDFW). Additionally, with respect to in-stream flows, releases are necessary to support maintain the Cold Water Management Zone (CWMZ) below Anderson Dam. Imported water supplies released will support with maintaining consistent environmental conditions within CWMZ.

5.4.1 Initial Coyote Discharge Line Releases

During the initial drawdown (beginning and continuing through fall of 2020), existing reservoir releases will provide flow augmentation for purposes of meeting both recharge requirements and providing in-stream environmental flows. After initial dewatering and prior to construction of the Anderson Dam tunnel, imported water from the Cross Valley Pipeline will be released into Coyote Creek just below the dam via the Coyote Discharge Line (**Figure 7**). The amount of flow released from the Coyote Creek Discharge Line will depend on the time of year, the temperature of the flow, the amount of native water available for release from the reservoir to mix with the imported water, and actual hydrology at the time of the release, and the availability of imported water.

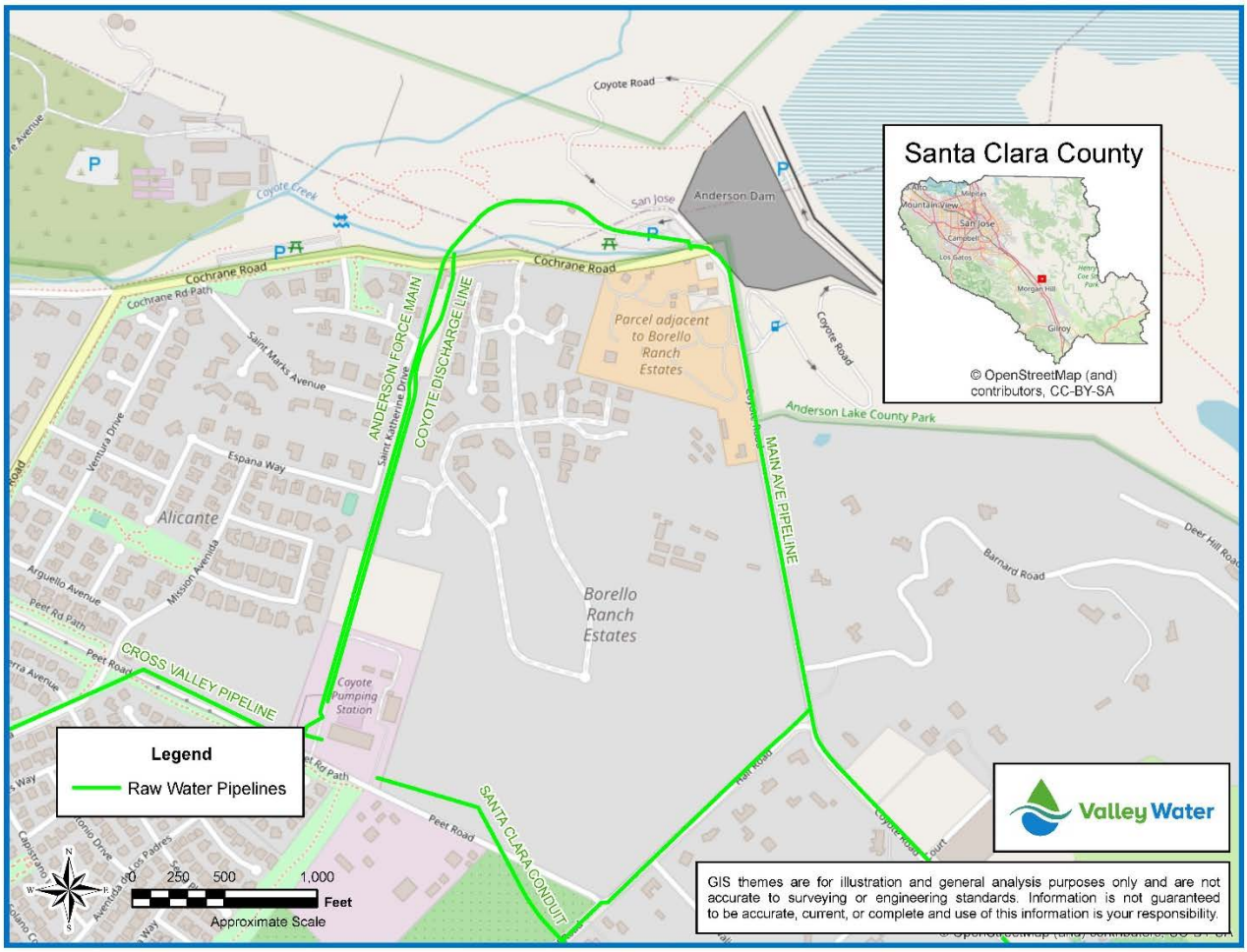

Figure 7. Overview of Existing Raw Water Distribution Lines

5.4.2 Cross Valley Pipeline Extension

Valley Water will also extend the Cross Valley Pipeline to discharge downstream of the County of Santa Clara-owned Ogier Ponds (**Figure 8**). By discharging imported water below Ogier Pond more reaches of the creek would stay wetted, which would enable recharge of the Coyote Valley and South San Jose (Santa Teresa area) throughout the construction period and support the maintenance of aquatic habitat for wildlife and riparian vegetation. The Coyote Valley and South San Jose areas recharged by Coyote Creek are part of the larger Santa Clara Subbasin. Groundwater provides nearly all water supply in these areas, which are dependent upon in-channel percolation to maintain sustainable groundwater supplies. Augmented releases of imported water would also reduce potential subsidence in downstream lands.

The pipeline will be designed to have a capacity to carry 50 cfs of imported water. However, on average, it is expected to deliver about 30 cfs during the dry season and 20 cfs during the wet season to ensure managed recharge in Coyote Creek and the Coyote Percolation Pond. Expedited planning, design, and construction processes to implement the proposed pipeline extension would be expected to take approximately 15 months to complete.

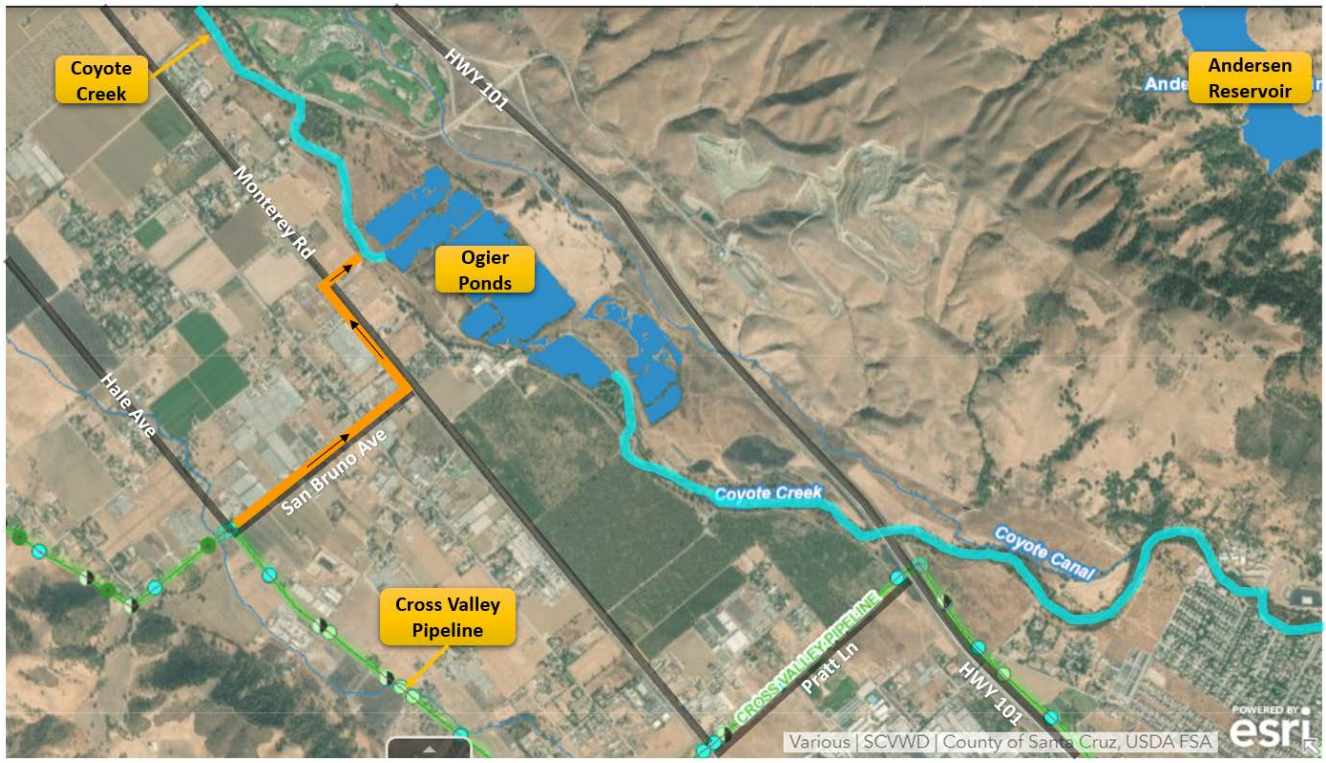

Figure 8. Cross Valley Pipeline Extension Site Plan

5.4.3 Chillers

Streamflow in Coyote Creek through construction and operation of the FOCP would result in elevated water temperatures relative to the existing condition, for two reasons. Currently, summer releases from Anderson Reservoir are typically made through one of the submerged inlets to the existing outlet, which draw cooler water from deeper in the reservoir. Once the reservoir is drawn down to elevation 488 feet, all releases during construction and operation of the ADTP will be from the surface of the reservoir because 488 feet is the elevation of the lowest inlet to the dam's outlet works. Even if cooler water were available deeper in the reservoir during construction and operation of the ADTP, dry-season releases would be from the warmer water surface. Additionally, summer flow during construction and operation of the ADTP would rely more on releases of imported water, relative to the existing condition.

Based on estimates generated from temperature records from 1999 to 2019, the average temperature of imported water that would be discharged to Coyote Creek downstream of Anderson Dam, via the Coyote Discharge Line, reaches nearly 18°C before the end of June and exceeds 20°C from July through October (Valley Water, unpublished data). Prior to implementation of Cross Valley Pipeline extension, downstream of Ogier Ponds, the large volume of imported water that would need to be released into the CWMZ would make it impractical to reduce water temperatures to near existing conditions. However, once the new pipeline extension is operational and imported water can be released downstream of the Ogier Ponds, the volume of imported water released into the CWMZ could be reduced. At that time, in coordination with NMFS and CDFW, Valley would release up to 10 cfs of imported water, when available, to the CWMZ and after it is chilled to as cool as 16°C. Imported water would be routed from the Coyote Creek Discharge Line to the Anderson Hydroelectric Facility, where it would pass through electric chillers before being discharged to Coyote Creek. Multiple chillers would be used, with some redundancy to provide a factor of safety. Based on conceptual vendor design and estimates obtained by Valley Water, four chillers with approximate dimensions of 12 feet wide by 32 feet long by 13 feet high would be needed, where one chiller would be redundant in case any of the others malfunctioned. They would have an operating weight of 55,000 pounds each and would require a substantial concrete pad.

5.5 Coyote Percolation Dam Replacement

The current Coyote Percolation Dam is a flashboard dam used to impound water in the Coyote Percolation Pond, an in-stream pond in Coyote Creek just north of Metcalf Road. Operation of the proposed Anderson Dam tunnel would result in flows well beyond the safe operating capabilities of Coyote Percolation Dam, which is not rated to handle flows higher than 800 cfs. The maximum release capacity of 2,500 cfs (ADTP and existing outlet capacity combined) would overwhelm the Coyote Percolation Dam and removing the dam altogether to accommodate higher flows would further compromise Valley Water's ability to recharge the groundwater basins. To protect against potential risks to groundwater recharge and water supply reliability for the Coyote Valley and South San Jose residents in the Santa Teresa area, Valley Water proposes to replace the existing flashboard dam with an inflatable bladder dam that could quickly be deployed when inflows are low (to facilitate percolation) and then released to allow higher flows to pass safely.

The increased operational flexibility of a bladder dam would also reduce the impacts from sediment settling within the percolation zone, which would improve affected groundwater recharge capacities. Incidentally this also lessens sedimentation impacts to critical spawning and rearing habitats for *O. mykiss*.

Also, deflating the dam more frequently could benefit native aquatic species by reducing competition pressures and predation from non-native fish species. By occasionally draining the warm water pond behind the percolation dam, the stronghold of the non-native warm water adapted species will be disrupted and opportunities for native fish to utilize this habitat may arise.

Completion of the bladder dam facilities would be required by 2023, when the Anderson Dam outlet tunnel would be finished, to minimize the impacts to water supply, groundwater recharge, land subsidence, and aquatic species and habitats.

5.6 Coyote Creek Flood Management Measures

Valley Water has identified areas within Coyote Creek where flooding would occur as a result of implementing the FOCP, namely from the operation of the Anderson Dam tunnel. As a result, completion of some elements of flood management measures are needed along Coyote Creek as avoidance and minimization measures to prevent flooding within urbanized areas of Coyote Creek once the Anderson Dam tunnel is operational. Three flood protection measures will be constructed by the end of 2023, the same time the Anderson Dam tunnel construction is completed. The measures will be implemented along Mid-Coyote Creek in San Jose, between Highway 280 and Oakland Road, and will include: floodwalls, a levee, and acquiring or elevating low-lying residences (Figures 9a-9c). Measures would be implemented as indicated in the following reaches of Coyote Creek:

Reach 5

- Area 5A - Design and construct approximately 350 linear feet (LF) of 4-foot tall levee on the south end of the South Bay Mobile Home Park, east of the Union Pacific Railroad (UPRR) tracks
- Area 5B.1 - Design and construct approximately 350 LF of 2-foot tall floodwall to protect homes located on Notting Hill Drive, on east bank of Coyote Creek
- Area 5B.2 - Design and construct approximately 2,000 LF of 9-foot tall floodwall between Berryessa Road and UPRR tracks, on west bank of Coyote Creek
- Area 5C - Design and construct approximately 2,500 LF of 9-foot tall floodwall between Berryessa Road and Mabury Road, on west bank of Coyote Creek

Reach 6

- Area 6A – Design and construct approximately 1,200 LF of 6-foot tall floodwall on west bank from Mabury Road to Highway 101

Reach 7

- Area 7A.1 - Elevate three structures or acquire two parcels located on South 17th Street between Santa Clara Street and San Fernando Street
- Area 7A.2 - Design and construct approximately 550 LF of 5.5-foot tall floodwall behind the backyards of two properties located on South 17th Street just north of Arroyo Way
- Area 7B - Acquire or elevate four properties located east of Arroyo Way
- Area 7C - Acquire or elevate two properties located on South 17th Street between San Carlos Street and San Salvador Street
- Area 7D.1 - Design and construct approximately 700 LF of 9-foot tall floodwall along the western edge of Coyote Outdoor Classroom
- Area 7D.2 - Acquire or elevate one property located on East William Street, east of South 16th Street

- Area 7D.3 – Design and construct approximately 400 LF of 4-foot tall floodwall along the backyard perimeter of two properties located at the southern end of William Street Park

In summary, Table 5 shows existing creek capacities and the proposed flood management measures that would be implemented in order to safely pass higher Coyote Creek flows caused by maximum Anderson Dam tunnel flows combined with outflows from the existing outlet and local tributary inflows resulting from storm events.

Table 5. FOCP Flood Management Measures

Reach	General Location Along Coyote Creek	Facility/Area Subject to Flooding	Approximate Creek Capacity (cfs)	Flood Management Measure	Combined Coyote Creek Flow during ADTP Emergency Operation (cfs)
5	Berryessa Road	5A	2,000	• 350’ long, 4’ tall new levee on west bank south of South Bay Mobile Home Park	6,500
		5B.1	1,300	• 350’ long, 2’ tall floodwall on east bank by Notting Hill Drive	
		5B.2		• 2,000’ long, 9’ tall floodwall on west bank, D/S of Berryessa Road	
	U/S Upper Penitencia Creek	5C	4,100	• 2,500’ long, 9’ tall floodwall on west bank, U/S of Berryessa Road	5,600
6	D/S Lower Silver Creek	6A	4,500	• 1,200’ long, 6’ tall floodwall on west bank from Mabury Road to Highway 101	5,600
7	U/S Lower Silver Creek	7A.1	1,600	• Elevate three structures or acquire two parcels located on South 17th Street between Santa Clara St. and San Fernando St.	4,000
		7A.2		• 550’ long, 5.5’ tall floodwall behind the backyards of two properties located on South 17th Street, just north of Arroyo Way	
		7B	3,200	• Acquire/Elevate four properties located east of Arroyo Way	
		7C	2,600	• Acquire/Elevate two properties located on South 17th Street between San	

				Carlos St. and San Salvador St.	
	East William Street	7D.1	4,000	• 700’ long, 9’ floodwall along the western edge of Coyote Outdoor Classroom	
		7D.2		• Acquire/Elevate one property located on East William Street, east of S. 16th Street	
		7D.3		• 400’ long, 4’ tall floodwall along the backyard perimeter of two properties located at the southern end of William Street Park	

5.6.1 Floodwalls

Approximately 7,700 linear feet of floodwalls are proposed, in several sections. The sections will vary in height from 2 to 9 feet tall and will most likely be constructed with steel sheet piles. Sheet piles will be installed using silent piling technology that press in the sheets without hammering or vibrations. Such machines ride on top of the sheet piles and are supported by a mobile silent generator unit that travels next to the machine. A crane will be used to lift the machine into place and to move steel sheet piles. Some earthwork activities may be necessary for final grading and can be completed using a compact loader.

5.6.2 Levee

A single levee is also being considered to protect from flooding along Coyote Creek. The levee will be approximately 350-foot long and will begin at the upstream end of an existing levee and continue further upstream along Coyote Creek. The levee will be trapezoidal shaped, 12-foot wide at the top, with sides sloping down at 2:1, and will be 4 feet tall. Below the 20-foot wide base of the levee, the existing grade will be excavated to a depth of 5 feet below grade and backfilled with fill material similar to the levee material.

The design of the floodwalls and levee will require geotechnical borings to determine design parameters. These borings will include a combination of Hollow Stem Augur (HSA), Mud Rotary (MR), and Cone Penetration Test (CPT) borings in each reach. Generally, the HSA borings will be to a depth of approximately 45 feet with select borings to a depth of 60 feet for seismic analysis. The CPT borings will be drilled to an approximate depth of 30 feet.

Table 6 Geotechnical Borings for Coyote Creek Flood Management Measures Design

REACH	# OF HSA/MR BORINGS	# OF CPT BORINGS
5	11	11
6	3	3
7	5	6

5.6.3 Elevate or Acquire Low-Lying Homes

For low-lying properties, and where other measures are not feasible, Valley Water will acquire affected properties or elevate homes located within the Anderson Dam tunnel operational floodplain. The option to elevate or acquire the properties will vary depending on the feasibility to raise the structure, costs associated with buying or elevating the homes, and input from the homeowners.

Home elevation would involve specialized construction methods to raise the house above the specified flood water surface elevation. This involves trenching around a structure's foundation and lowering I-beams into the trenches and inserting the I-beams below the floor framing. Lifting jacks will be installed between a temporary footing on the ground and the I-beams. The number of jacks needed will depend on the size, shape, and type of house being lifted. The jacks will be used to raise the house to the desired elevation. The foundation, including the slab and walls, will be extended or raised to the new floor framing elevation. The house will then be lowered onto the extended foundation walls, the I-beams will be removed, and the holes where the beams passed through will be filled.

Acquiring properties would remove residents from the threat of inundation from operation of the Anderson Dam tunnel. Homes on some or all of these properties may be demolished after acquisition.

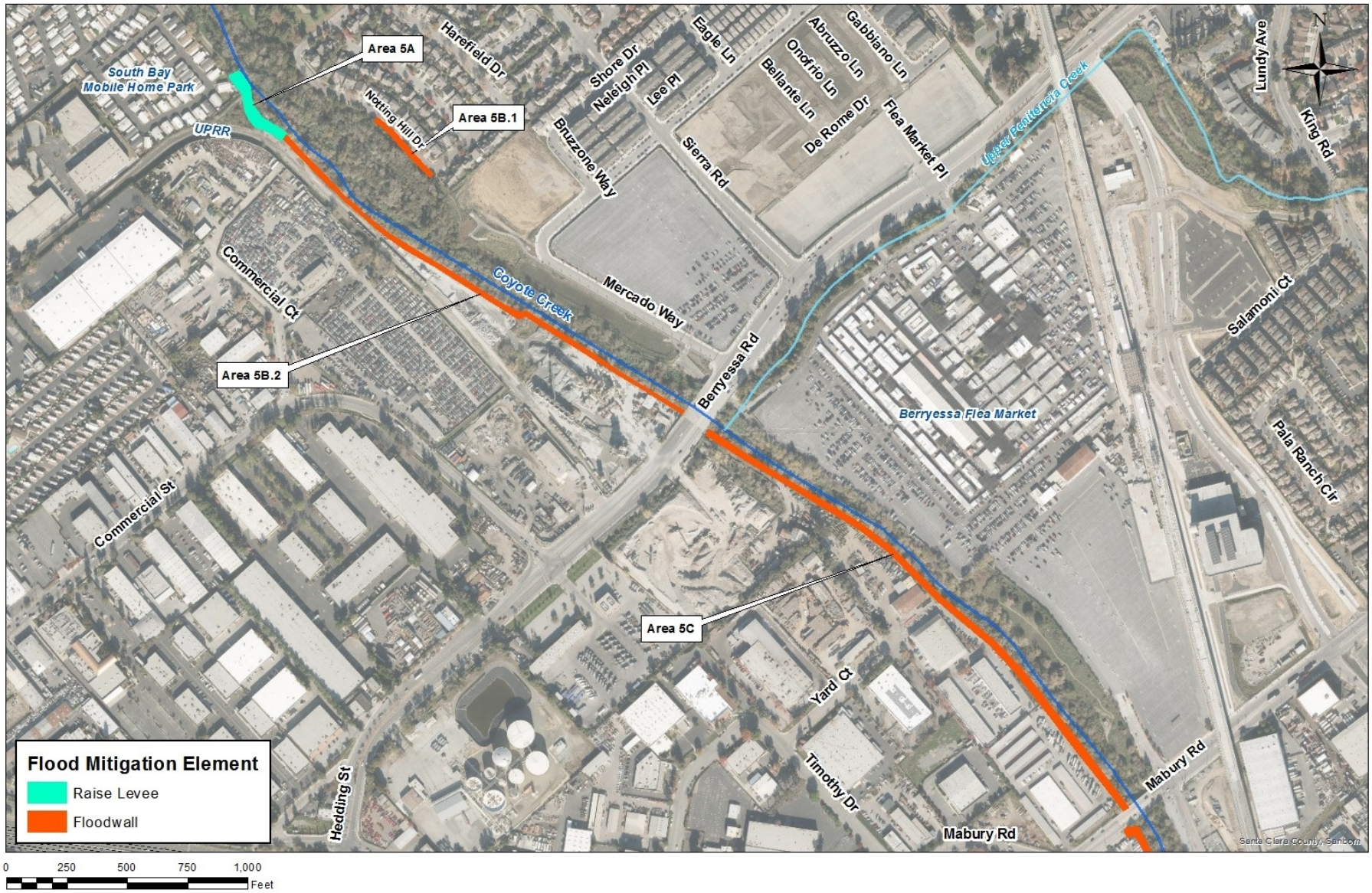

Figure 9a. FOCP Coyote Creek Flood Management Measures Site Plan (Reach 5)

Figure 9b. FOCP Coyote Creek Flood Management Measures Site Plan (Reach 6)

Figure 9c. FOCP Coyote Creek Flood Management Measures Site Plan (Reach 7)

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5.7 Erosion and Sediment Management

Sediment movement associated with the FOCP is primarily a function of erosion of exposed sediment by inflows to the reservoir as the reservoir is lowered, or during high flow events while the reservoir is lowered. After initial dewatering to deadpool, with the reservoir operating at a restricted level of elevation 488 feet, substantial volumes of sediment will be exposed to erosion. The estimated volume of sediment in the Los Animas Creek and Coyote Creek channels above elevation 488 is 1.0 million cubic yards (mcy) and 0.5 mcy, respectively. After dewatering and during construction of the Anderson Dam tunnel, some portion of this sediment above elevation 488 feet will be transported by erosion toward and into the reservoir. Coarse sediment (sand sized and larger particles) will quickly fall out and be deposited in the remaining reservoir basin. Coarse sediment that migrates downstream is actually beneficial for in-stream habitat in that it improves substrate conditions for native aquatic life within Coyote Creek. Fine sediment (silt and finer particles) is not likely to settle out in the reservoir, as it will likely be entrained in the reservoir water. High velocity outflows required to maintain the reservoir elevation at 488 feet, with little reservoir residence time, will carry fine sediment through the outlet works downstream into Coyote Creek. The total volume of fine sediment transported through the outlet works and the total suspended solids (TSS) in the water is a function of the size of the storm flows, the volume of sediment that can be eroded by those flows, the velocity and duration of outflows to maintain reservoir pool, and the amount of sediment residence time in the reservoir. Larger storm events will quickly raise the reservoir level, resulting in less erosion, but increase velocity of outflow.

Due to the flow rates and volumes involved, it is not practical to construct a large enough settling pond to capture all the fine sediment that would be entrained in the flows occurring during drawdown or during the winters when the reservoir is drawn down. Valley Water has determined that it would not be feasible to filter, capture, or otherwise retain the fine sediment on site. The potential measures are limited by the large volume of sediment and the large volume of potential high flow events that will pass through the reservoir. Treatment systems that can treat flows up to 2,500 cfs (1,000 cfs is equivalent to 5,600 standard 80-gallon bathtubs every minute) are unprecedented. Such a treatment system, if possible, would require a much greater area downstream of the dam than is available and would require a location to dispose of sediment removed from the water. Dredging the 1.5 million cubic yards of sediment exposed above elevation 488 feet would also require more space than is available downstream of the dam for settling ponds for the slurry (mixture of water and sediment) resulting from the dredging process, along with a location to dispose of the dredged sediment. Therefore, measures to minimize the effects of the drawdown on downstream suspended sediment concentration, especially during periods of high flow, are limited.

Following completion of the Anderson Dam tunnel, sediment moving along the reservoir thalweg (the line of lowest elevation within the reservoir) will be able to directly be transported out of the reservoir when it is necessary to make releases through the tunnel. Release of some sediment can be beneficial for aquatic habitats in Coyote Creek, but release of too much coarse sediment could be detrimental to habitat. Therefore, in the unlikely event that too much coarse sediment may be transported downstream of the dam during these periods, measures that will be implemented to minimize transport of coarse sediment downstream of the dam area, include a 2-foot-high edge on the trash rack that will trap coarse sediment, and settling pools (up to 3.75 feet deep) that will form upstream of the weirs in the northern and southern channels.

Completion of a sediment transport analysis is underway. Results of the study will be used to further evaluate potential erosion and sediment effects resulting from the FOCP and additional feasible AMMs.

5.8 Fish Protection Measures and Monitoring

Coyote Creek from the San Francisco Bay to Anderson Dam is designated critical habitat for the federally threatened *O. mykiss*. Reduction of Anderson Reservoir to elevation 488 feet would result in a loss of the reservoir's coldwater pool volume, with a consequent effect of decreased flows available for release into Coyote Creek, and increased water temperatures during the summer. Without avoidance and minimization measures in place, the reduction in available flows is anticipated to result in dryback conditions within Coyote Creek during each summer and fall for the duration of ordered drawdown. In order to augment flows during summer and fall, imported water will need to be released to the Creek, from the Coyote Discharge Line, and when the CVP extension is complete, further downstream into the creek near Ogier Ponds (see Section 5.4). When available, the higher temperature water released to the creek from the Coyote Discharge Line may be unsuitable for steelhead occupying the CWMZ, but beneficial for other native fish and maintenance of riparian and wetland habitat. Alteration of creek flows and the lack of a reliable reservoir coldwater pool from which to draw would impact steelhead and their habitat, particularly through the recognized Cold Water Management Zone (CWMZ) of Coyote Creek that extends about 5 miles from the base of the dam to Golf Course Drive. Operational flow guidance discussed in Section 4.1 will be employed to guide and direct how flows are discharged from the reservoir after drawdown. Fish protection measures and monitoring of the CWMZ included as part of the FOCP to address anticipated impacts, particularly to steelhead, are described in detail below.

5.8.1 Spring Pulse Flow

Valley Water released "pulse flows" in May 2020 to encourage the outmigration of steelhead rearing in Coyote Creek downstream of Anderson Dam in advance of the implementation of initial drawdown, maintenance of the reservoir at elevation 488 to the extent feasible, and Anderson Dam tunnel construction, before the creek could begin to dryback. Prior to releasing the pulse flows, Valley Water drained the Coyote Percolation Pond to displace predatory fish species living in the pond in order to make a clearer migratory path for outmigrating smolts. Pulse flows occurred over a five-day period beginning with an initial release of 120 cfs on the first day, ramping down to 90 cfs for 24 hours, and then down to 60 cfs for three to five days.

5.8.2 Coyote Creek Fish Rescue and Relocation

During initial reservoir drawdown, fish rescue and relocation efforts will be conducted in Coyote Creek CWMZ from Anderson Dam downstream to the Ogier Ponds. Due to the extensive area and complex fish habitat in this section of Coyote Creek, fish rescue efforts will use a multi- phased approach to maximize capture efficiency while minimizing handling and environmental stress that could result from dewatering activities. Fish that will be rescued from the CWMZ include the federally threatened steelhead, and Pacific lamprey and blackfish per California Department of Fish and Wildlife's (CDFW) recommendations. Each phase will occur during a different flow release rate.

All *O. mykiss* captured during the Coyote Creek rescue and relocation effort will be relocated to Upper Penitencia Creek. All other fish species captured will be released into the nearest critical pool habitat location.

To minimize potential impacts to fish during initial reservoir drawdown, efforts will be made to capture and relocate resident trout and per CDFW's recommendations other recreationally important gamefish species that occur in Anderson Reservoir.

5.8.3 Anderson Reservoir Fish Rescue and Relocation

To minimize potential impacts to fish during initial reservoir drawdown, efforts will be made to capture and relocate resident trout and other recreationally important gamefish species that occur in Anderson Reservoir.

Rapid dewatering of Anderson Reservoir may induce stranding of native fish and non-native game fish species important to local anglers. Based on bathymetry data, high potential stranding locations were identified and will be targeted during reservoir fish relocation efforts as the reservoir recedes. Capture methods include electrofishing and seine nets. All trout captured from the reservoir during reservoir drawdown will be released in suitable pool habitat within tributaries upstream of Anderson Reservoir (i.e., Coyote Creek or San Felipe Creek). All other fish species will be released in the remaining wetted portion of Anderson Reservoir.

5.8.4 Fyke Trap Installation and Operation

Following relocation of fish from the CWMZ but prior to drawing down Anderson Reservoir, a fish trap known as a fyke trap will be installed in Coyote Creek downstream of the Anderson Reservoir outlet to capture fish passing through the existing reservoir outlet and reduce the risk of native trout in the reservoir entering the Coyote Creek CWMZ during the Anderson Dam tunnel construction. All captured fish will be held in aerated containers or the trap prior to being identified, enumerated, and measured prior to release. Captured trout will be relocated to tributaries upstream of Anderson Reservoir (i.e., Coyote Creek or San Felipe Creek), and other species will be relocated to unimpacted portions of Anderson Reservoir or in Coyote Reservoir.

5.8.5 Normal Operation of Coyote Reservoir

Valley Water will operate Coyote Reservoir normally throughout drawdown of Anderson Reservoir and construction and operation of the Anderson Dam tunnel. Through releases from Coyote Reservoir, a minimum streamflow of 5 cfs at Gage SF12 (downstream of Coyote Reservoir) would occur. Minimum streamflow would persist during the interim time period, as long as water is available for release. This will continue to benefit the native fish and wildlife, wetlands and riparian habitat within this inter-reservoir reach above Anderson Reservoir.

5.8.6 Augment Streamflow Downstream of Anderson Dam

As discussed in Section 5.4, when the reservoir is drawn down to, and operating at or near deadpool (including during Anderson Dam tunnel construction and operation), Valley Water will augment streamflow in Coyote Creek (downstream of Anderson Dam) for water supply, groundwater recharge, and subsidence minimization, which will incidentally benefit native fish and aquatic and riparian habitats. Prior to construction of the Cross Valley Pipeline Extension, this would be achieved by releasing 5-30 cfs of imported water to Coyote Creek, via the Coyote Discharge Line, when sufficient amounts of imported water are available for release to maintain dry-season connectivity. After construction of the Cross Valley Pipeline Extension, when imported water can be released for groundwater discharge downstream of Ogier ponds, if the releases of imported water through the Coyote Discharge Line are determined to be too warm for *O.mykiss*, chillers would be installed to cool up to 10 cfs of imported water prior to its release into Coyote Creek. Streamflow augmentation releases will be implemented throughout FOCP, based on availability of imported water supplies. This measure is intended to maintain suitable aquatic and riparian habitat for native species in Coyote Creek at all times during the FOCP, and to provide habitat sufficient for *O. mykiss* survival within the CWMZ as quickly as possible during the implementation of the FOCP.

As described above in Section 5.4, a Cross Valley Pipeline Extension would augment streamflow downstream of Ogier Ponds and recharge groundwater supplies. Imported water would be discharged

from the CVP extension below Ogier Ponds, downstream of the CWMZ to enable all the reaches of Coyote Creek to stay wet and ensure that a full groundwater recharge program can be implemented, with the release of 30 to 50 cfs. This measure provides necessary water to maintain riparian and wetland habitats and provides some refuge for native aquatic species in Coyote Creek downstream of Ogier Ponds. In addition, this measure minimizes groundwater recharge reductions and potential subsidence issues associated with implementation of the FOCP.

5.8.7 Re-open Historical Coyote Creek Channel

The re-opening of Coyote Creek's northern channel to supplement the south channel and accommodate outflows without creating the potential for erosion, as described in Section 5.3, would increase stream habitat available downstream of Anderson Dam and avoid potential hardening of the south channel.

5.8.8 CWMZ Monitoring

Flow Monitoring

Following initial drawdown, when storage above elevation 488 will no longer be maintained, flows within the CWMZ will be monitored for occurrence of potential migration flows beginning in the spring of 2021. Wet weather outflows from the reservoir during wet weather and inflows to the Creek from natural precipitation events are anticipated to result in potential migration flows within the CWMZ sufficient to support migration of *O. mykiss* downstream and out of the CWMZ. Following fish rescue and relocation efforts in Summer 2020 (see Section 5.8.2) monitoring will also be conducted to determine the potential for *O. mykiss* to re-enter the CWMZ and occur there in Summer 2021. These efforts will include fyke monitoring, review of County Parks angler reports, review of Vaki Riverwatcher data from the Coyote Percolation Pond fishway, and potentially electrofishing, spawning surveys, eDNA identification, and other methods to determine presence and relative abundance

Water Quality Monitoring

As described above, Valley Water would augment dry-season streamflow in Coyote Creek by releasing imported water to maintain flows for water supply, groundwater recharge, subsidence minimization, and benefit of native habitat and fish. Habitat conditions (e.g., water temperature, dissolved oxygen and flow) and species distribution within the CWMZ will be monitored through summer 2021 to determine if conditions are suitable for *O. mykiss*. If *O. mykiss* are documented to occur in the Coyote Creek during the summer of 2021 (Section 5.8.3), and if conditions within the CWMZ appear unsuitable, then additional fish rescue and relocation efforts may be conducted, in coordination with the agencies.

5.9 Environmental Management Plans

To guide implementation of the AMMs discussed above, and to minimize other environmental impacts associated with the FOCP, Valley Water will develop the following Project-specific plans with measures to avoid and minimize environmental effects of its construction activities.

- Dewatering and Sediment Management Plan
- Air Quality Monitoring and Dust Management Plan
- Slope Stability Plan
- Stormwater Pollution Prevention Plan
- Traffic Control Plan
- Reservoir Rim Landslide Mitigation and Monitoring Plan

- Frac-out Prevention Plan
- Groundwater Dewatering Management Plan
- Water Quality Sampling Plan for temporary diversions to accommodate in-stream work
- Light Pollution Plan
- Noise and Vibration Management Plan
- Security Fencing Plan
- County of Santa Clara Tree Removal Plan
- Creek and Reservoir Fish Relocation Plans

5.10 Best Management Practices

BMPs are standard operating procedures to prevent, avoid, or minimize effects associated with construction and other activities. Valley Water routinely incorporates a wide range of BMPs into project design and construction. During Project construction, Valley Water will incorporate BMPs to avoid or minimize adverse effects on the environment. BMPs for the FOCP are included in Appendix A and will include BMPs specified in the SWPPP for the Construction General NPDES permit.

5.11 Valley Habitat Plan Commitments

The Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan (VHP) is a joint habitat conservation plan and natural communities conservation plan developed to serve as the basis for the issuance of incidental take permits and authorizations pursuant to Section 10 of the federal Endangered Species Act and the California Natural Community Conservation Planning Act. Valley Water is committed to implementing VHP conditions listed in Appendix A to avoid, minimize, and mitigate impacts of the covered FOCP activities on the species and habitats protected by the VHP (e.g., compensatory mitigation for effects of the FOCP on VHP-covered, listed species will be provided via payment of VHP fees in accordance with VHP requirements).

6.0 Right of Way and Real Estate Requirements

The Project will require right of way and real estate agreements with public entities, such as County of Santa Clara, City of Morgan Hill, and the City of San Jose. A small portion of parkland (0.65 acre) will need to be acquired (in fee or permanent easement) in order to fully build the proposed northern channel. Private landowner agreements will also be required to access and construct some portions of the project, particularly for the Coyote Creek Flood Control Measures and Reservoir Rim Monitoring and Stability Improvements.

The parcels that will be impacted by the Project are provided in Appendix B. FOCP Parcels and Real Estate Needs, along with identified real estate or right or way requirements.

7.0 Permits, Approvals, and Consultations

Table 7 provides a list of regulatory agencies and applicable permits, approvals, and consultations that are anticipated for the proposed Project.

Table 7 Regulatory Permits, Approvals, and Consultations for the FOCP

Agency	Permit / Approval / Consultation
Federal Agencies	
National Oceanic and Atmospheric Administration- – National Marine Fisheries Service	Federal Endangered Species Act – Section 7 emergency consultation procedures
	Magnuson-Stevens Act – Emergency Essential Fish Habitat Assessment
U.S. Army Corps of Engineers	Emergency Section 404 of the Clean Water Act – permit
U.S. Fish and Wildlife Service	Federal Endangered Species Act – authorization under incidental take provisions of the Santa Clara Valley Habitat Plan and Section 7 emergency consultation procedures
Advisory Council on Historic Preservation	Section 106 of the National Historic Preservation Act
State Agencies	
California Department of Fish and Wildlife	Section 1600 *et seq.* of the California Fish and Game Code – Lake or Streambed Alteration Agreement
	California Endangered Species Act – authorization under incidental take provisions of the VHP
California Department of Water Resources, Division of Safety of Dams	California Water Code, Division 3 – approval of repairs or alterations to a dam or reservoir California Code of Regulations, Title 23 – approval of dam safety and dam repairs or alterations
State Water Resources Control Board in coordination with San Francisco Bay Regional Water Quality Control Board (Region 2)	Sections 401 of the Clean Water Act – urgency water quality certification for Emergency USACE Section 404 Permit Construction stormwater Permit under Section 402 of the Clean Water Act – notification under Stormwater Construction General Permit Order No. 2009-0009-DWQ
State Office of Historic Preservation	Section 106 of the National Historic Preservation Act
Local Agencies	
City of San Jose	Municipal approvals
City of Morgan Hill	Encroachment permit, temporary right of entry
	Municipal approvals
Santa Clara County	Encroachment permit, tree removal permit

Appendix A. Best Management Practices and VHP Conditions incorporated into the Project

Appendix A. BMPs and VHP Conditions

Best Management Practices and Santa Clara Valley Habitat Plan (VHP) Conditions Incorporated into the Project.

Best Management Practices		
Number	**Title**	**Description**
BMP-AQ-1	Use Basic Dust Control Measures for all Construction Sites	Implement BAAQMD Basic Control Measures for construction emissions of PM10 at all construction sites. Current measures stipulated by BAAQMD CEQA Guidelines include the following: 1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. 2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered. 3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. 4. All vehicle speeds on unpaved roads shall be limited to 15 mph. 5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. 6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points. 7. All equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. 8. Post a publicly visible sign with the telephone number and person to contact at Valley Water regarding dust complains. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.
BMP-AQ-2	Use Enhanced Dust Control Measures for Sites Greater than Four Acres in Size	Implement Bay Area Air Quality Management District (BAAQMD) Enhanced Dust Control Measures. Current measures stipulated by the BAAQMD CEQA Guidelines include the following (BAAQMD 1999): 1. All BAAQMD "Basic" control measures. 2. Inactive areas (previously graded areas inactive for ten days or more) shall be sprayed with soil stabilizer or seeded. 3. Exposed stockpiles (dirt, sand, etc.) shall be watered twice daily, enclosed, covered, or sprayed with soil stabilizers.

Best Management Practices		
Number	**Title**	**Description**
		4. Traffic speeds on unpaved roads shall be limited to 15 mph. 5. Sandbags or other bank protections shall be installed to prevent silt runoff to roadways. 6. Vegetation in disturbed areas shall be replanted as soon as horticulturally appropriate. For example, plant material may not be ready as soon as the job is done (e.g. willow cuttings have to be collected during winter dormancy).
BMP-AQ-3	Incorporate Additional Dust Control Measures, as Appropriate	Implement appropriate BAAQMD Optional Control Measures for construction emissions of PM10 at all construction sites. BAAQMD Optional Control Measures are strongly encouraged at construction sites that are large in area, located near sensitive receptors, or which for any other reason may warrant additional emissions reductions. Current measures stipulated by the BAAQMD CEQA Guidelines include the following (BAAQMD 1999): 1. Install wheel washers for all exiting trucks or wash off the tires or tracks of all trucks and equipment leaving the site. 2. Install wind breaks or plant trees/vegetation wind breaks at windward side(s) of construction areas. 3. Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph. 4. Limit the area subject to excavation, grading, and other construction activity at any one time. 5. Tailgates of trucks shall be sealed. 6. Trucks shall be brushed down before leaving the site.
BMP-AQ-4	Avoid Stockpiling Potentially Odorous Materials	Some sites will have materials that are rich in organic matter decaying in an anaerobic condition, which generates assorted malodorous gases, such as reduced sulfur compounds. These materials will be handled in a manner that avoids impacting sensitive receptors. 1. Avoid stockpiling potentially odorous materials within 1,000 feet of residential areas or other odor sensitive land uses. 2. Where appropriate, odorous stockpiles will be disposed of at an appropriate landfill.
BMP-BI-2	Avoid and Minimize Impacts on Native Aquatic Vertebrates	1. Native aquatic vertebrates (fish, amphibians and reptiles) are important components of stream ecosystems. Native aquatic vertebrates may or may not be able to rapidly re-colonize a stream reach if the population is eliminated from that stream reach. If native aquatic vertebrates are present when cofferdams, water bypass structures, and silt barriers are to be installed, an evaluation of the stream and the native aquatic vertebrates will be conducted by a qualified biologist. The qualified biologist will consider: a. Which native aquatic species are present; b. The ability of the species to naturally re-colonize the stream reach; c. The life stages of the native aquatic vertebrates present; d. The flow, depth, topography, substrate, chemistry and temperature of the stream reach; e. The feasibility of relocating the aquatic species present; and f. The likelihood the stream reach will naturally dry up during the work season.

Best Management Practices		
Number	**Title**	**Description**
		2. Based on consideration of these factors the qualified biologist may make a decision to relocate native aquatic vertebrates. The qualified biologist will document in writing the reasons to relocate native aquatic species, or not to relocate native aquatic species, prior to installation of cofferdams, water bypass structures or silt barriers. 3. If the decision is made to relocate the native aquatic species, then the operation will be based on Valley Water's Fish Relocation Guidelines.
BMP-BI-4	Minimize Waterway Access Impacts	1. Existing access ramps and roads to waterways will be used where possible. If temporary access points are necessary, they will be constructed in a manner that minimizes effects: a. Temporary Project-access points will be created as close to the work area as possible to minimize running equipment in waterways and will be constructed so as to minimize adverse effects. b. Any temporary fill used for access will be removed upon completion of the Project. Site topography and geometry will be restored to pre-Project conditions to the extent possible. c. Off-road vehicular access routes will be surveyed and flagged by a qualified biologist prior to use to avoid sensitive plants, animal burrows, wetlands and vernal pools, or other sensitive habitat. Whenever possible, routes should be not more than 15 feet wide. Personnel and vehicles are required to stay within marked access areas.
BMP-BI-5	Remove Temporary Fills as Appropriate	Temporary fills, such as for diversion structures or cofferdams, will be removed upon finishing the work. The creek channels and banks will be re-contoured to match pre-construction conditions to the extent possible.
BMP-BI-8	Avoid Impacts to Nesting Migratory Birds	1. Nesting birds are protected by state and federal laws. Valley Water shall protect nesting birds and their nests from abandonment, loss, damage, or destruction. Nesting bird surveys shall be performed by a qualified individual prior to any activity that could result in the abandonment, loss, damage, or destruction of birds, bird nests, or nesting migratory birds. Inactive bird nests may be removed, with the exception of raptor nests. 2. For activities initiated during the avian breeding season (1 February through 31 August in the Project vicinity), pre-construction surveys for nesting birds will be conducted by a qualified biologist no more than one week prior to the initiation of construction activities in any given area. Because construction may be phased, surveys will be conducted prior to the commencement of each phase of construction. The survey will cover the portions of the Project site where construction activities will occur as well as a 1-mile buffer (or 2 miles from blasting) for nesting eagles (if eagles may nest in the vicinity), a 250-foot buffer for other raptors, and a 50-foot buffer for non-raptors. During each survey, the biologist will inspect all trees and other potential nesting habitats (e.g., shrubs, grasslands, wetlands, and buildings) in and immediately adjacent to the effect areas for nests. If a lapse in Project- related work of one week or longer occurs, another focused survey will be conducted before Project work can be reinitiated during the breeding season.

Best Management Practices		
Number	**Title**	**Description**
		3. If an active nest is found, a qualified biologist will determine the extent of a disturbance-free buffer zone to be established around the nest to ensure that it is not disturbed during Project implementation. The buffer distance is measured as the straight-line distance between an active nest and the activity, taking both horizontal and vertical distance into account. No new Project-related activities (i.e., activities that were not ongoing when the nest was established) will be performed within the buffer until the young have fledged or the nest has been determined to be inactive by a qualified ornithologist. Standard buffers are typically 50 feet for non-raptors and 250 feet for raptors other than eagles (for which the buffer may be up to 1 mile, or 2 miles for blasting). A qualified biologist may determine that a reduced buffer is acceptable, taking into account dense vegetation, topography, or structures that will block Project activities from view; the life history and behavior of the bird species in question; and the nature of the proposed activity. If a reduced buffer is implemented, the biologist will monitor bird behavior in relation to work activities. At a minimum, the biologist will monitor the baseline behavior of the birds for at least 30 minutes prior to the commencement of the activity (to determine the birds' behavior in the absence of the activity) and for at least one hour immediately following the initiation of the activity, when response by the nesting birds to the novel activity is expected to be greatest. If the birds exhibit abnormal nesting behavior which may cause reproductive failure (e.g., nest abandonment and loss of eggs and/or young), such as agitated/defensive flights and vocalizations directed towards Project personnel, birds standing up from a brooding position, birds flushing from the active nest, or cessation of provisioning of young with food, the disturbance-free buffer will immediately be adjusted out to the standard buffer distance until the birds have resumed their normal behavior (e.g., incubation or feeding of young). After 2 hours with all work confined to the area outside the standard buffer, work will again be attempted in the area within the reduced buffer, and the process will be repeated to determine if the birds have habituated to the activity. If the process is repeated three times without the birds indicating that they are habituating to the activity, then the standard buffer will be maintained until the next day, when the process above will again be attempted. If the birds do not indicate that they are habituated to Project activities during the initial 2 days of attempting work within a reduced buffer, the standard buffer will be implemented. Project activities within the reduced buffers will not resume until Valley Water has consulted with CDFW and both the qualified biologist and CDFW confirm that the birds' behavior has normalized, or until the nest is no longer active.
BMP-BI-9	Use Exclusion Devices to Prevent Migratory Bird Nesting	Nesting exclusion devices may be installed to prevent potential establishment or occurrence of nests in areas where construction activities will occur. All nesting exclusion devices will be maintained throughout the nesting season or until completion of work in an area makes the devices unnecessary. All exclusion devices will be removed and disposed of when work in the area is complete.
BMP-BI-10	Minimize Impacts to Vegetation Whenever Clearing (or Trimming) Is Necessary	1. Vegetation to be trimmed or cleared will be evaluated by a qualified vegetation specialist or qualified biologist prior to effects and the qualified vegetation specialist or qualified biologist recommendations will be followed.

Best Management Practices		
Number	**Title**	**Description**
		2. Survey cross-sections will be moved, within acceptable tolerances, to avoid cutting dense riparian vegetation and minimize cutting of woody vegetation, taking advantage of natural breaks in foliage. If the cross-section cannot be moved within the established acceptable tolerances to avoid effects to dense riparian or woody vegetation, the cross-section will be abandoned. 3. Cutting vegetation will be limited to the minimum length, width, and height necessary for safely accessing survey locations, and completing the cross-section surveys. Tree pruning will conform to International Society of Arboriculture (ISA) pruning standards. No trees with a 6-inch or greater diameter at breast height will be removed; and, no branches greater than 4" diameter will be removed. 4. Woody vegetation (i.e. native trees and shrubs) which require pruning for equipment access, construction operations, etc., shall be pruned such that the health status of the vegetation is maintained, and no post-construction s accrue. Woody vegetation will be pruned consistent with all three of the following reference documents or their updates: a. 'Best Management Practices, Tree Pruning' 2008, International Society of Arboriculture; and b. ANSI A300 (Part 1) – 2008 PRUNING; and c. ANSI Z133.1, 2008, SAFEEY REQUIREMENTS. 5. Woody material (including live leaning trees, dead trees, tree trunks, large limbs, and stumps) will be retained onsite, unless it is threatening a structure or impedes access, in which case it must be moved to a less threatening position.
BMP-BI-11	Minimize Root Impacts to Woody Vegetation	1. Construction activities, including cut and fill, will be minimized to the extent practicable within the root zones of existing woody vegetation to remain post Project. In general, root extent can be estimated as 2-3 times canopy radius but vary depending on slope and soil conditions. To the extent practicable, construction setbacks will be calculated using all of the following: a. Tree DBH (diameter at breast height); and b. Age class and sensitivity to disturbance (species dependent) per Guidelines and Standards, Design Guide 1: Protection of Existing Riparian Vegetation (ISO document WQ71001) and Trees and Development, a Technical Guide to Preservation of Trees During Land Development, by Nelda Matheny and James Clark published by International Society of Arboriculture [ISA] 1998. 2. Additionally, mulching the root zone will be employed to provide root protection from unavoidable equipment traffic during construction, specifically: a. Use 6 inches minimum depth of wood chips; or, b. 4 inches minimum depth of ¾-inch (or greater) gravel, per Trees and Development, a Technical Guide to Preservation of Trees During Land Development, by Nelda Matheny and James Clark published by International Society of Arboriculture [ISA] 1998, p. 108.

Best Management Practices		
Number	**Title**	**Description**
		3. Both root protection methods may remain in place after work if approved by a qualified biologist or vegetation specialist.
BMP-BI-12	Avoid Special Status Plant Species and Special Status Natural Communities	1. Project areas will be pre-surveyed for special status plant species and sensitive natural communities, which have the potential to occur on Valley Water facilities. In order to avoid and/or minimize potential effects to special status plants and natural communities, the following actions will be taken: a. Surveys of the Project area for special status plant species and sensitive natural communities will be conducted by a qualified biologist prior to commencement of work; and, b. The qualified biologist will ensure avoidance of effects to special status plant species and special status natural communities by implementing one, or more, of the following, as appropriate, per the biologist's recommendation: - Flag the population or natural community areas to be protected; - Allow adequate buffers; and/or, - Time construction or other activities during dormant and/or non-critical life cycle periods.
BMP-BI-13	Plant Local Ecotypes of Native Plants and Choose Appropriate Erosion Control Seed Mixes	1. Whenever native species are prescribed for installation on Valley Water fee properties or easements, the following steps will be taken by a qualified biologist or vegetation specialist: a. Evaluate whether the plant species currently grows wild in Santa Clara County; and, b. If so, the qualified biologist or vegetation specialist will determine if any need to be local natives, i.e. grown from propagules collected in the same or adjacent watershed, and as close to the Project site as feasible. 2. Also, consult a qualified biologist or vegetation specialist to determine which seeding option is ecologically appropriate and effective, specifically: a. For areas that are disturbed, an erosion control seed mix may be used consistent with the SCVWD Guidelines and Standards for Land Use Near Streams, Design Guide 5, 'Temporary Erosion Control Options.' b. In areas with remnant native plants, the qualified biologist or vegetation specialist may choose an abiotic application instead, such as an erosion control blanket or seedless hydro-mulch and tackifier to facilitate passive revegetation of native species. c. Temporary earthen access roads may be seeded when site and horticultural conditions are suitable. d. If a gravel or wood mulch has been used to prevent soil compaction per BI-11, this material may be left in place [if ecologically appropriate] instead of seeding. 3. Seed selection shall be ecologically appropriate as determined by a qualified biologist, per Guidelines and Standards for Land Use Near Streams, Design Guide 2: Use of Local Native Species; and Supplemental Landscaping\Revegetation Guidelines (ISO document WQ71001).

Best Management Practices		
Number	**Title**	**Description**
BMP-BI-15	Restore Riffle/Pool Configuration of Channel Bottom	1. Valley Water shall re-grade the channel bottom at the end of the Project to as close to original conditions as possible. 2. In salmonid streams, restore pool and riffle configurations to emulate pre-Project instream conditions, taking into account channel morphological features (i.e. slope), which affects riffle/pool sequence.
BMP-BI-16	Avoid Animal Entry and Entrapment	1. All pipes, hoses, or similar structures less than 12 inches diameter will be closed or covered to prevent animal entry. All construction pipes, culverts, or similar structures, greater than 2-inches diameter, stored at a construction site overnight, will be inspected thoroughly for wildlife by a qualified biologist or properly trained construction personnel before the pipe is buried, capped, used, or moved. 2. If inspection indicates presence of sensitive or state- or federally-listed species inside stored materials or equipment, work on those materials will cease until a qualified biologist determines the appropriate course of action. 3. To prevent entrapment of animals, all excavations, steep-walled holes or trenches more than 6-inches deep will be secured against animal entry at the close of each day. Any of the following measures may be employed, depending on the size of the hole and method feasibility: a. Hole to be securely covered (no gaps) with plywood, or similar materials, at the close of each working day, or any time the opening will be left unattended for more than one hour; or b. In the absence of covers, the excavation will be provided with escape ramps constructed of earth or untreated wood, sloped no steeper than 2:1, and located no farther than 15 feet apart; or c. In situations where escape ramps are infeasible, the hole or trench will be surrounded by filter fabric fencing or a similar barrier with the bottom edge buried to prevent entry.
BMP-BI-17	Minimize Predator-Attraction Effects on Wildlife	Remove trash daily from the worksite to avoid attracting potential predators to the site.
BMP-HM-9	Clean Vehicles and Equipment	Vehicles will be washed only at the approved area in the corporation yard. No washing of vehicles will occur at job sites.
BMP-HM-10	Assure Proper Vehicle and Equipment Fueling	1. No fueling will be done in a waterway or immediate flood plain, unless equipment stationed in these locations is not readily relocated (i.e., pumps, generators). 2. For stationary equipment that must be fueled onsite, containment will be provided in such a manner that any accidental spill of fuel will not be able to enter the water or contaminate sediments that may come in contact with water. 3. Any equipment that is readily moved out of the waterway will not be fueled in the waterway or immediate flood plain.

Best Management Practices		
Number	**Title**	**Description**
		4. All fueling done at the job site will provide containment to the degree that any spill will be unable to enter any waterway or damage riparian vegetation.
BMP-HM-11	Assure Proper Vehicle and Equipment Maintenance	No equipment servicing will be done in a stream channel or immediate flood plain, unless equipment stationed in these locations cannot be readily relocated (i.e., pumps, generators). 1. Any equipment that can be readily moved out of the channel will not be serviced in the channel or immediate flood plain. 2. All servicing of equipment done at the job site will provide containment to the degree that any spill will be unable to enter any channel or damage stream vegetation. 3. If emergency repairs are required in the field, only those repairs necessary to move equipment to a more secure location will be done in a channel or flood plain. If emergency repairs are required, containment will be provided equivalent to that done for fueling or servicing.
BMP-HM-12	Assure Proper Hazardous Materials Management	Measures will be implemented to ensure that hazardous materials are properly handled, and the quality of water resources is protected by all reasonable means. 1. Prior to entering the work site, all field personnel will know how to respond when toxic materials are discovered. 2. The discharge of any hazardous or non-hazardous waste as defined in Division 2, Subdivision 1, Chapter 2 of the California Code of Regulations will be conducted in accordance with applicable State and federal regulations. 3. In the event of any hazardous material emergencies or spills, personnel will call the Chemical Emergencies/Spills Hotline at 1-800-510-5151.
BMP-HM-13	Prevent Spills	Valley Water will prevent the accidental release of chemicals, fuels, lubricants, and non-storm drainage water into channels following these measures: 1. Valley Water field personnel will be appropriately trained in spill prevention, hazardous material control, and cleanup of accidental spills. 2. Equipment and materials for cleanup of spills will be available onsite and spills and leaks will be cleaned up immediately and disposed of according to applicable regulatory requirements. 3. Field personnel will ensure that hazardous materials are properly handled, and natural resources are protected by all reasonable means. 4. Spill prevention kits will always be in close proximity when using hazardous materials (e.g., at crew trucks and other logical locations). All field personnel will be advised of these locations. 5. Valley Water staff will routinely inspect the work site to verify that spill prevention and response measures are properly implemented and maintained. 6. Spill Response Measures: a. For small spills on impervious surfaces, absorbent materials will be used to remove the

Best Management Practices		
Number	**Title**	**Description**
		spill, rather than hosing it down with water. For small spills on pervious surfaces such as soil, the spill will be excavated and properly disposed rather than burying it. Absorbent materials will be collected and disposed of properly and promptly. b. If a hazardous materials spill occurs that cannot be contained or cleaned up with the onsite materials, the onsite Valley Water field personnel will be responsible for immediately initiating an emergency response sequence by notifying the proper authorities (i.e., Valley Water Emergency Response (ER) Team and public fire and hazmat agencies) of the release; taking appropriate defensive steps from a safe distance to secure the site to minimize damage to people, environment, and property (PEP); and deferring all other response activities to public emergency response agencies and/or the Valley Water Emergency Response (ER) Team or Valley Water ER Contractor. Depending on the nature of the release, the Valley Water ER Team's actions will include: urgent (responding within 2 hours of notification) field response site reconnaissance, emergency sequence initiation, defensive containment, release control, incident command; or priority (non 2-hour) field response site reconnaissance and clean-up operations. c. If a "reportable" spill of petroleum products occurs, Valley Water's Stream Maintenance Implementation Program Manager will be notified, and action taken to contact the appropriate safety and cleanup crews. A reportable spill is defined as when: - a film or sheen on, or discoloration of, the water surface or adjoining bank/shoreline is observed; or - a sludge or emulsion is deposited beneath the surface of the water or adjoining banks/shorelines (40 Code of Federal Regulations 110); or when - another violation of water quality standards is observed. d. A written description of the reportable release must be submitted to the appropriate Regional Water Quality Control Board and the California Department of Toxic Substances Control (DTSC). This submittal must contain a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. e. If an appreciable spill has occurred, and results determine that Project activities have adversely affected surface water or groundwater quality, a detailed analysis will be performed to the specifications of DTSC to identify the likely cause of contamination. This analysis will include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, Valley Water or contractors will select and implement measures to control contamination, with a performance standard that surface and groundwater quality will be returned to baseline conditions. These measures will be subject to approval by Valley Water, DTSC, and the Regional Water Quality Control Board.

Best Management Practices		
Number	**Title**	**Description**
BMP-HM-14	Know the Spill Kit Location	1. Spill prevention kits appropriate to the hazard will always be in close proximity when using hazardous materials (e.g., crew trucks and other logical locations). 2. Prior to entering the work site, all field personnel will know the location of spill kits on crew trucks and at other locations within the Project area. 3. All field personnel will be advised of these locations and trained in their appropriate use.
BMP-WQ-6	Stabilize Construction Entrances and Exits	Measures will be implemented to minimize soil from being tracked onto streets near work sites: 1. Methods used to prevent mud from being tracked out of work sites onto roadways include installing a layer of geotextile mat, followed by a 4-inch thick layer of 1 to 3-inch diameter gravel on unsurfaced access roads. 2. Access will be provided as close to the work area as possible, using existing ramps where available and planning work site access so as to minimize disturbance to the water body bed and banks, and the surrounding land uses.
BMP-WQ-21	Control Sediment/ Turbidity for Discharges Less than 50 NTU	To control sediment and turbidity in discharges from Project activities where the source is treated water, recycled water, raw water, or groundwater with a turbidity of less than 50 NTU: 1. Characterize the discharge appropriately (follow the Planned Discharge Activities Checklist to ensure the correct BMPs are used): a. Identify the source of water. b. Determine the volume of the water to be discharged. c. Determine if operations may cause the turbidity to be greater than 50 NTU, refer to the BMP Sediment/ Turbidity Control for Discharges Greater than 50 NTU (BMP-HYD-6). 2. Choose the option for discharging the water (in order of preference): a. Reuse water, either for dust suppression, irrigation, or construction compaction. b. Discharge to sanitary sewer system (requires approval from local sanitary district). c. Discharge to storm drain system or water body. 3. Use appropriate control measures when discharging water: a. Use sanitary sewer BMPs if discharging to the sanitary sewer. b. Visually monitor the turbidity if it is suspected to be above 50 NTU. c. Terminate the discharge or implement appropriate control measures if the turbidity exceeds 50 NTU (refer to BMP-HYD-6: Sediment/ Turbidity Control for Discharges Greater than 50 NTU). d. There are no additional control measures required if the source water is hydrant flushing, fire flow testing, a main line break or blow off, and the discharge volume is not greater than 50,000 gallons. 4. Inspection and Maintenance: a. Before discharging any water, inspect the discharge flow path for debris and erosion, and

Best Management Practices		
Number	**Title**	**Description**
		cleanup the flow path as needed. b. Monitor the discharge to make sure it is not interfering with the normal operation of the sanitary sewer, or flooding the storm drain system. c. When the discharge is complete, inspect the flow path and receiving water (if discharging directly to a water body, if practicable) for evidence of erosion or deposited sediment. d. Sweep up sediment deposited in the flow path and dispose of appropriately. e. Complete the Planned Discharge Activities Checklist and submit it to Valley Water staff responsible for Water Utility Discharge Pollution Prevention Plan reporting.
BMP-WQ-22	Control Sediment/ Turbidity for Discharges Greater than 50 NTU	To control sediment and turbidity in discharges from Project activities where the source is treated water, recycled water, raw water, or groundwater with a turbidity of greater than 50 NTU: 1. Characterize the discharge appropriately (follow the Planned Discharge Activities Checklist to ensure the correct BMPs are used): a. Identify the source of water. b. Determine the volume of water to be discharged. c. Determine the turbidity of the discharge. 2. Choose the option for discharging the water (in order of preference): a. Reuse water, either for dust suppression, irrigation, or construction compaction. b. Discharge to sanitary sewer system (requires approval from local sanitary district). c. Discharge to storm drain system or water body (requires use of sediment/ turbidity control measures). 3. Select control measures appropriately. a. Consider the following criteria when selecting the appropriate control measure: - Suitability of area for discharge (vegetated surface, chlorine neutralization requirements). - Proximity to storm drains or receiving waters. - Length of time BMP is to be in place. - Ease of installation, operation and removal. b. Choose from the following control measures and refer to the individual fact sheets for guidance on implementation: - Discharges to Sanitary Sewer Systems (CM-A). - Flow Path – Vegetation Filtration (CM-B). - Flow Path – Check Filters (CM-C). - On-Line Filter System (CM-D). - Storm Drain Inlet Protection (CM-E). - Silt Fence Culvert Entrance Protection (CM-F).

Best Management Practices		
Number	**Title**	**Description**
		- Surface Protection – Armoring (CM-G). - Surface Protection – Flow Diversion (CM-H). 4. Inspection and Maintenance: a. Before discharging any water, inspect the discharge flow path for debris and erosion, and cleanup the flow path as needed. b. Monitor the discharge to make sure it is not interfering with the normal operation of the sanitary sewer, or flooding the storm drain system. c. Monitor the discharge turbidity to evaluate the effectiveness of the control measure. d. When the discharge is complete, inspect the flow path and receiving water (if discharging directly to a water body, if practicable) for evidence of erosion or deposited sediment. e. Sweep up sediment deposited in the flow path and dispose of appropriately. f. Complete the Planned Discharge Activities Checklist and submit it to Valley Water staff responsible for Water Utility Discharge Pollution Prevention Plan reporting.
BMP-WQ-23	Evaluate Use of Discharge Flow Path – Vegetation Filtration	To remove sediments and prevent sediments from entering local creeks and the bay: 1. Confirm applicability: a. Use this control measure where an existing vegetated area can be used to filter the sediments from the discharged water. b. Make sure the vegetated area is of sufficient density to filter the sediments and of such strength that it will not be uprooted by the discharged water. 2. Design Considerations: a. Ensure that the area to receive the discharge has tight, dense, well- established vegetation similar to a grassy area. b. Control the energy of the discharge or dissipate to prevent erosion of the soil within the vegetated area, and to prevent the destruction and uprooting of the vegetation. c. Adjust the discharge to avoid flooding and excessive runoff. d. Remove debris from the flow path. 3. Construction Specifications: a. Ensure that at least 50 feet of grassy ground is available between the point of discharge and the location where the water drains into the receiving storm drain system or the creek. 4. Inspection and Maintenance: a. Ensure that there is no breakthrough of sediments. b. Ensure that there is no erosion of grassy areas.
BMP-WQ-27	Evaluate Use of Discharge Surface Protection – Armoring	To protect exposed soil and vegetated surfaces from erosion during discharges by placing protective armor (e.g., plastic sheeting, cloth fabric, gravel bedding) over the erodible surface:

Best Management Practices		
Number	**Title**	**Description**
		1. Select and install armoring materials properly: a. Choose a material whose strength is proportionate to the velocities and materials in the discharged water (e.g. sediment). b. Clear the area to be protected of rocks and debris which may puncture the armor. c. Anchor the armor using sandbags, gravel, or stakes along the perimeter. d. Anchor the armor so it can withstand movement of the discharge. Account for potential changes in the flow direction of the discharge when laying the armor. e. If there is to be a direct stream of high velocity flow, an energy dissipating device may be necessary to prevent failure of the armor. 2. Inspection and Maintenance: a. During the discharge, monitor the armor for failure (tearing) and erosion at the edges of the armor. b. If erosion does occur, implement sediment/turbidity control measures. c. Remove armor when the discharge is complete. d. Sweep up any sediment deposited in the flow path and dispose of appropriately. e. Complete the Planned Discharge Activities Checklist and submit it to Valley Water staff responsible for Water Utility Discharge Pollution Prevention Plan reporting.
BMP-WQ-28	Evaluate Use of Discharge Surface Protection – Flow Diversion	To protect bare soil and vegetated surfaces from erosion by diverting, channeling, or temporarily piping flows over erodible areas to protected areas not subject to erosion: 1. When considering the use of flow diversion, take into account the following: a. There must be a storm drain or paved surface nearby to which the discharge can be diverted. b. The flow channel must be aligned to avoid disruption of traffic, or traffic control measures must be used. c. The flow channel must have sufficient slope to allow the discharge to flow to the storm drain or paved surface. d. The flow channel must be designed to handle the anticipated flow rate. e. Protective armor or temporary piping can be used for high velocity discharges or large flow volume discharges over bare soils or vegetated surfaces. The armor material selected must be able to withstand the flow velocity and movement of the discharge. 2. Divert flows correctly: a. Divert water to a channel using fixed or flexible piping, or another system to capture this flow (e.g. sandbags). b. If armor is used to create a flow channel over the erodible surface clear the area to be protected of rocks and debris which may puncture the armor. Anchor the armor using sandbags, gravel, or stakes along the perimeter.

Best Management Practices		
Number	**Title**	**Description**
		c. If there is to be a direct stream of high velocity flow, an energy dissipating device may be necessary to prevent failure of the armor. 3. Inspection and Maintenance: a. Inspect the area for flooding resulting from failure of the channel diversion structure or the flow rate exceeding the diversion channel capacity. b. Inspect the channel for erosion along the edges due to overtopping of the channel. c. Monitor the armor for failure (tearing) and erosion at the edges of the armor. d. If erosion does occur along the edges of the channel or armor, implement sediment/turbidity control measures. e. Remove armor when the discharge is complete. f. Sweep up any sediment deposited in the flow path and dispose of appropriately. g. Complete the Planned Discharge Activities Checklist and submit it to Valley Water staff responsible for Water Utility Discharge Pollution Prevention Plan reporting.
BMP-WQ-40	Prevent Water Pollution	Oily, greasy, or sediment laden substances or other material that originate from Project operations and may degrade the quality of surface water or adversely affect aquatic life, fish, or wildlife will not be allowed to enter, or be placed where they may later enter, any waterway. The Project will not increase the turbidity of any watercourse flowing past the construction site by taking all necessary precautions to limit the increase in turbidity as follows: 1. where natural turbidity is between 0 and 50 Nephelometric Turbidity Units (NTU), increases will not exceed 5 percent; 2. where natural turbidity is greater than 50 NTU, increases will not exceed 10 percent; 3. where the receiving water body is a dry creek bed or storm drain, waters in excess of 50 NTU will not be discharged from the Project. 4. Water turbidity changes will be monitored. The discharge water measurements will be made 100 feet downstream of the discharge point. Natural watercourse turbidity measurements will be made in the receiving water 100 feet downstream of the discharge site. Natural watercourse turbidity measurements will be made prior to initiation of Project discharges, preferably at least 2 days prior to commencement of operations.
BMP-WQ-41	Prevent Stormwater Pollution	Suitable erosion control, sediment control, source control, treatment control, material management, and non-stormwater management BMPs will be implemented consistent with the latest edition of the California Stormwater Quality Association “Stormwater Best Management Practices Handbook,” which is available at www.cabmphandbooks.com.
BMP-TR-1	Use Suitable Public Safety Measures	Fences, barriers, lights, flagging, guards, and signs will be installed as determined appropriate by the public agency having jurisdiction, to give adequate warning to the public of the construction and of any dangerous condition to be encountered as a result thereof.

Santa Clara Valley Habitat Plan Conditions		
Number	**Title**	**Description**
VHP Condition 1	Avoid Direct Impacts on Legally Protected Plant and Wildlife Species.	This condition applies to all projects covered under the Habitat Plan and helps to protect species for which environmental permits cannot be granted: Contra Costa goldfields, bald eagle, American peregrine falcon, southern bald eagle, white-tailed kite, California condor, and Ring-tailed cat (= ringtail); also requires compliance with the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act. For detailed information, see Habitat Plan pages 6-7 to 6-8.
VHP Condition 3	Maintain Hydrologic Conditions and Protect Water Quality.	This condition applies to all projects covered by the Habitat Plan and helps protect watershed health, primarily through reducing stormwater discharge and pollutant runoff from project sites. Work with the Habitat Plan lead to determine if NPDES compliance is sufficient for the project or if additional measures are required. For detailed information, see Habitat Plan pages 6-12 to 6-13 and Table 6-2.
Condition 4.	Avoidance and Minimization for In-Stream Projects.	This condition applies to projects that involve in-stream work (e.g., flood protection, bridge rehabilitation, dam repair) and helps to minimize sediment/pollutant discharge into waterways, disturbance of earth and riparian vegetation, and alteration of the hydrologic and hydraulic characteristics of water bodies. For detailed information, see Habitat Plan pages 6-14 to 6-18.
Condition 5.	Avoidance and Minimization Measures for In Stream Operations and Maintenance.	This condition applies to projects that involve operations and maintenance work within and immediately adjacent to the stream channel (e.g., sediment removal, bank stabilization, vegetation management) and helps minimize sediment/pollutant discharge into waterways and disturbance of riparian vegetation. For detailed information, see Habitat Plan pages 6-18 to 6-20.
Condition 11.	Stream and Riparian Setbacks	This condition applies to projects that overlap a stream or stream setback—requirements differ based on project's location in relation to the urban service area. This condition helps minimize impacts on streams by specifying setbacks and buffer zones. For detailed information, see Habitat Plan pages 6-44 to 6-55.
Condition 12.	Wetland and Pond Avoidance and Minimization	This condition applies to projects that are covered under the Habitat Plan and helps to minimize impacts on wetlands and ponds and avoid impacts on high quality wetlands and ponds by prescribing vegetated stormwater filtration features, proper disposal of cleaning materials, and other requirements. For detailed information, see Habitat Plan pages 6-56 to 6-58.
Condition 13	Serpentine and Associated Covered Species Avoidance and Minimization	This condition applies to projects that are located on sites with serpentine soils and helps to minimize or avoid impacts on serpentine soils by prescribing surveys, plant salvage, and other requirements. For detailed information, see Habitat Plan pages 6-58 to 6-59.

Santa Clara Valley Habitat Plan Conditions		
Number	**Title**	**Description**
Condition 17.	Tricolored Blackbird	This condition applies to projects that are located within 250 feet of any riparian, coastal and valley freshwater marsh and helps to protect tricolored blackbirds by prescribing preconstruction surveys, construction buffer zones, biological monitoring, and other requirements. For detailed information, see Habitat Plan pages 6-69 to 6-71.
Condition 19.	Plant Salvage when Impacts are Unavoidable	This condition applies to projects that cannot avoid impacts on covered plants and helps protects covered plants by prescribing salvage whenever avoidance of impacts is not feasible. For detailed information, see Habitat Plan pages 6-74 to 6-76.
Condition 20	Avoid and Minimize Impacts to Covered Plant Occurrences	This condition applies to projects that are located in areas where covered plant species are likely to occur and within a covered plant survey area; this condition helps protect certain plant species by requiring plant surveys, specific avoidance and minimization practices (e.g., using seclusion fencing), and monitoring. For detailed information, see Habitat Plan pages 6-76 to 6-80.

Appendix B. Project Parcels and Real Estate Needs

Appendix B. FERC Order Compliance Project Parcels and Real Estate Needs

Parcel #	Ownership	Jurisdiction	Sphere of Influence	Project Use	Real Estate Needs
Anderson Dam Tunnel Construction and Coyote Creek Channel Modifications					
728-34-010	Private	County of Santa Clara	City of Morgan Hill	Staging Area 2	Temporary Construction Easement
728-34-011	Private	County of Santa Clara	City of Morgan Hill	Staging Area 2 (Coyle Property), Access/haul road	Property Acquisition
728-34-017	Valley Water	County of Santa Clara	City of Morgan Hill	Staging Area 3, Disposal Area, Coyote Road widening and turnouts, Existing Intake, Existing Outlet Conduit	None, owned by Valley Water
728-34-018	Valley Water	County of Santa Clara	City of Morgan Hill	Existing outlet, Staging Area 1	None, owned by Valley Water
728-34-019	Valley Water	City of Morgan Hill	City of Morgan Hill	Temporary dike, Flow control weirs, Southern channel, diversion discharge channel	None, owned by Valley Water
728-34-020	Santa Clara County	City of Morgan Hill	City of Morgan Hill	Reopen north channel, north weir	Property Acquisition (0.65 acres) by fee or Permanent Easement

Parcel #	Ownership	Jurisdiction	Sphere of Influence	Project Use	Real Estate Needs
729-46-010	Valley Water	County of Santa Clara	City of Morgan Hill	Disposal Area, Existing intake remediation, 8-foot MTBM, disposal area, temporary access road to reservoir	None, owned by Valley Water
729-48-001	Valley Water	City of San Jose	City of San Jose	8-foot MTBM, Staging Area 1, 19-foot tunnel, Diversion outlet structure, re-opened northern channel, flow control weirs, Anderson Force Main Relocation	None, owned by Valley Water
729-48-002	Valley Water	City of San Jose	City of San Jose	Diversion Tunnel (Upstream Portal for Lake Tap), Trash rack	None, owned by Valley Water
Rim Stability Monitoring and Improvements					
729-37-022	Private Residence	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Permission to Enter and potentially an Easement (Permanent or Temporary TBD)
729-37-021	Private Residence	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Permission to Enter and potentially an Easement (Permanent or Temporary TBD)

Parcel #	Ownership	Jurisdiction	Sphere of Influence	Project Use	Real Estate Needs
729-37-020	Private Residence	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Permission to Enter and potentially an Easement (Permanent or Temporary TBD)
729-37-019	Private Residence	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Permission to Enter and potentially an Easement (Permanent or Temporary TBD)
729-37-018	Private Residence	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Permission to Enter and potentially an Easement (Permanent or Temporary TBD)
720-37-017	Private Residence	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Permission to Enter and potentially an Easement (Permanent or Temporary TBD)
729-37-016	Private Residence	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Permission to Enter and potentially an Easement (Permanent or Temporary TBD)
729-37-030	Private Residence	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Permission to Enter and potentially an Easement (Permanent or Temporary TBD)
729-37-029	Private Residence	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Permission to Enter and potentially an Easement (Permanent or Temporary TBD)

Parcel #	Ownership	Jurisdiction	Sphere of Influence	Project Use	Real Estate Needs
729-37-013	Private Residence	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Permission to Enter and potentially an Easement (Permanent or Temporary TBD)
729-37-012	Private Residence	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Permission to Enter and potentially an Easement (Permanent or Temporary TBD)
729-37-011	Private Residence	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Permission to Enter and potentially Temporary Construction Easement
729-37-010	Private Residence	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Permission to Enter and potentially an Easement (Permanent or Temporary TBD)
729-36-001	Santa Clara County	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Master License Agreement-Exhibit B and/or MOU
729-32-015	Private Residence	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Permission to Enter and potentially an Easement (Permanent or Temporary TBD)
729-32-014	Private Residence	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Permission to Enter and potentially an Easement (Permanent or Temporary TBD)

Parcel #	Ownership	Jurisdiction	Sphere of Influence	Project Use	Real Estate Needs
729-32-013	Private Residence	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Permission to Enter and potentially an Easement (Permanent or Temporary TBD)
729-46-010	Valley Water	County of Santa Clara	City of Morgan Hill	Potential landslide remediation and access road	None, owned by Valley Water
729-46-013	Private Residence	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Permission to Enter and potentially an Easement (Permanent or Temporary TBD)
729-46-003	Santa Clara County	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Master License Agreement-Exhibit B and/or MOU
729-46-010	Valley Water	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	None, owned by Valley Water
729-46-004	Private Residence	County of Santa Clara	City of Morgan Hill	Landslide monitoring	None, owned by Valley Water
729-46-013	Private Residence	County of Santa Clara	City of Morgan Hill	Landslide monitoring	Permission to Enter

Parcel #	Ownership	Jurisdiction	Sphere of Influence	Project Use	Real Estate Needs
729-46-014	Santa Clara County	County of Santa Clara	City of Morgan Hill	Landslide monitoring and potentially remediations	Master License Agreement-Exhibit B and/or MOU
729-46-010	Valley Water	County of Santa Clara	City of Morgan Hill	Potential landslide remediation and access road	None, owned by Valley Water
Coyote Creek Flood Management Measures					
241-05-014	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 5B.2	Permanent Easement
241-05-015	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 5B.2	Permanent easement
241-05-001	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 5B.2	Permanent easement
241-04-024	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 5B.2	Permanent easement
254-17-052	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 5C	Permanent easement
254-13-101	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 5C	Permanent easement

Parcel #	Ownership	Jurisdiction	Sphere of Influence	Project Use	Real Estate Needs
254-13-090	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 5C	Permanent easement
254-17-043	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 5C	Permanent easement
254-17-073	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 5C	Permanent easement
254-01-024	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 6A	Permanent easement
251-01-004	City of San Jose	County of Santa Clara	City of San Jose	Floodwall in Reach 6A	Permanent easement
254-01-017	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 6A	Permanent easement
254-01-019	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 6A	Permanent and temporary easements
467-29-038	Private	County of Santa Clara	City of San Jose	Acquire or Elevate Structure in Reach 7A.1	Permanent easement or Property Acquisition

Parcel #	Ownership	Jurisdiction	Sphere of Influence	Project Use	Real Estate Needs
467-29-039	Private	County of Santa Clara	City of San Jose	Acquire or Elevate Structure in Reach 7A.1	Permanent easement or Property Acquisition
467-29-027	Private	County of Santa Clara	City of San Jose	Acquire or Elevate Structure in Reach 7B	Permanent easement or Property Acquisition
467-29-026	Private	County of Santa Clara	City of San Jose	Acquire or Elevate Structure in Reach 7B	Permanent easement or Property Acquisition
467-29-036	Private	County of Santa Clara	City of San Jose	Acquire or Elevate Structure in Reach 7B	Permanent easement or Property Acquisition
467-29-035	Private	County of Santa Clara	City of San Jose	Acquire or Elevate Structure in Reach 7B	Permanent easement or Property Acquisition
467-39-103	Private	County of Santa Clara	City of San Jose	Acquire or Elevate Structure in Reach 7C	Permanent easement or Property Acquisition
467-39-102	Private	County of Santa Clara	City of San Jose	Acquire or Elevate Structure in Reach 7C	Permanent easement or Property Acquisition
467-50-065	Private	County of Santa Clara	City of San Jose	Acquire or Elevate Structure in Reach 7D.2	Permanent easement or Property Acquisition

Parcel #	Ownership	Jurisdiction	Sphere of Influence	Project Use	Real Estate Needs
467-29-029	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 7A.2	Permanent easement
467-29-028	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 7A.2	Permanent easement
467-39-101	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 7D.1	Permanent easement
467-39-100	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 7D.1	Permanent easement
467-50-077	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 7D.1	Permanent easement
467-50-076	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 7D.1	Permanent easement
467-50-075	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 7D.1	Permanent easement
467-50-074	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 7D.1	Permanent easement
467-50-073	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 7D.1	Permanent easement

Parcel #	Ownership	Jurisdiction	Sphere of Influence	Project Use	Real Estate Needs
467-50-069	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 7D.1	Permanent easement
467-50-068	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 7D.1	Permanent easement
472-31-042	City of San Jose	County of Santa Clara	City of San Jose	Floodwall in Reach 7D.3	Permanent easement
472-31-041	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 7D.3	Permanent easement
472-31-040	Private	County of Santa Clara	City of San Jose	Floodwall in Reach 7D.3	Permanent easement
Cross Valley Pipeline Extension					
725-06-008	County of Santa Clara	County of Santa Clara	City of San Jose	Pipeline alignment	Permanent easement