CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

Revised Tentative Order

Amended Waste Discharge Requirements and Water Quality Certification for:

San Francisco Public Utilities Commission
Calaveras Dam Replacement Project, Alameda and Santa Clara Counties

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A. Findings

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter "Regional Water Board"), finds that:

1. The Regional Water Board issued Waste Discharge Requirements and Water Quality Certification (Order No. R2-2011-0013) for the Calaveras Dam Replacement Project (Project) to the San Francisco Public Utilities Commission (SFPUC or Discharger) on March 9, 2011.

2. This Order amends Order No. R2-2011-0013 to address Project design changes and the disposal of surplus rock and soil from a landslide deposit discovered at the Project. This Order includes an increase of 12.5 acres to the total impacts to open water (reservoir). Although these impacts result from the placement of fill in the reservoir, the Project will expand the surface area of the reservoir by about 443.3 acres when water levels are raised. This Order updates the Project description and includes revisions to Provisions 7 and 18, which now require the Discharger to submit updated Project information and comply with engineering plans, specifications, and technical reports submitted with the application for amended water quality certification and the completed report of waste discharge. This Order removes one-time submission requirements initially included in Order No. R2-2011-0013 that were satisfied for Provision 5 (February 2011), Provision 9 (July 2011), and Provision 10 (July 2011). This Order also updates Provision 9 to reflect the submission of draft conservation easements in August 2011 and to extend the required submission of final executed easements to resolve outstanding issues with the California Department of Fish and Wildlife (CDFW), formerly the California Department of Fish and Game (CDFG).

3. **Background:** Calaveras Reservoir is the largest of SFPUC's reservoirs in the San Francisco Bay Area and is located on the boundary of Alameda and Santa Clara counties, about 10 miles southeast of Fremont. Calaveras Dam is located at the northern end of the reservoir, about one mile upstream from the confluence of Calaveras and Alameda creeks (see Figures 1 and 2 in Attachment A). In 2001, the California Department of Water Resources, Division of Safety of Dams (DSOD) placed operational restrictions on Calaveras Reservoir because the dam is located near the Calaveras Fault Zone and was determined to be vulnerable to catastrophic failure during strong earthquakes. These restrictions have reduced the reservoir's operating capacity by about 60 percent.

4. **Project Description:** The Calaveras Dam Replacement Project will replace the existing dam at Calaveras Reservoir with a new dam that meets DSOD seismic safety requirements. Construction is proposed to begin in spring 2011 and is estimated to take ~~four~~ seven years to complete. The Project components are shown on Figure 3 in Attachment A and are described below.

   a. **Replacement Dam:** A seismically stable earthen dam will be constructed immediately downstream of the existing dam using fill and rock excavated on site and sand and gravel from off-site commercial sources. Although some materials will be salvaged from the existing dam, no part of the existing dam structure will be retained as part of the proposed replacement dam (see Figure 4 in Attachment A).

      In addition, a new spillway will be constructed at the western end of the replacement dam. The spillway will include a concrete approach, crest, chute, and stilling basin. Water

flowing through the spillway will discharge into a newly excavated bedrock channel that will connect to Calaveras Creek (see Figures 5 and 6 in Attachment A). Material excavated to create the bedrock channel will be used to construct the dam to the maximum extent practicable.

As part of the replacement dam, a new intake structure will be constructed in uplands adjacent to Calaveras Reservoir. The three existing adits and the existing drain will be retained and connected to the new intake structure by lateral tunnels excavated in rock. In addition, new fish screens will be installed on Adits 1 and 2 to comply with ~~CDFG~~ CDFW guidelines (see Figure 7 in Attachment A). These screens will prevent entrainment and impingement of fish during transmission of water from the reservoir to Calaveras Pipeline or Calaveras Creek. The existing screens on Adit 3 comply with ~~CDFG~~ CDFW guidelines and will not be replaced.

b. Borrow Areas and Disposal Sites: Construction materials will be obtained from two on-site borrow areas (Borrow Areas B and E) and from excavation of the new spillway. Borrow Area B is located on a hill north of the existing dam above Calaveras Creek. Borrow Area E will be located at the south end of Calaveras Reservoir in the area that will be inundated after restoring the reservoir's operating capacity. Unsuitable and excess material generated from excavation will be placed in designated disposal sites (Disposal Sites 2, 3, 5, and 7).

c. Haul Routes: Construction traffic will use existing public roads, SFPUC private roads, and temporary roads to import materials and to transport construction equipment. The SFPUC also proposes two options to haul material between Borrow Area E/Disposal Site 5 and the dam site at the opposite end of the reservoir. The first option is to construct a temporary haul road on the western shore of the reservoir (West Haul Road Alternative), and the second option is to transport of material across the reservoir by barge (Barge Alternative).

d. Staging and Stockpile Areas: Staging areas will be required for office trailers, an onsite soils testing laboratory, equipment and maintenance yards, and construction materials storage. In addition, areas will be needed for stockpiling imported filter, drain, and aggregate materials. The combined total extent of the staging and stockpile areas will be about 35.4 acres.

e. Alameda Creek Diversion Dam: The Alameda Creek Diversion Dam (ACDD) is an existing dam on Alameda Creek northeast of Calaveras Dam that diverts water to Calaveras Reservoir through a diversion tunnel (see Figure 3 in Attachment A). The ACDD will be modified to benefit fish as required by the National Marine Fisheries Service (NMFS) and the ~~CDFG~~ CDFW. The modifications include installing fish screens, drilling a bypass tunnel, and constructing a fish ladder (see Figure 8 in Attachment A). The fish screens will prevent fish from being entrained in the diversion tunnel and transported to Calaveras Reservoir. The tunnel will bypass flows to benefit fish downstream of the ACDD. The fish ladder will provide passage for existing resident trout and potential future steelhead populations, so they can access spawning and rearing habitat upstream of the ACDD.

f. Disposal of Surplus Soil and Rock: In 2012, during the excavation of the eastern slope of Observation Hill, a landslide deposit of unconsolidated soil and rock (highly fractured

Temblor Sandstone) was discovered. The instability of this deposit requires the cut slope of the left abutment to be revised to accommodate the loss in slope stability. The shallower angle of the new cut slope requires the excavation of approximately 3 million cubic yards (cy) of material. A portion of these materials (approximately 1.4 million cy) will be utilized in dam construction. Due to the discovery of the unstable deposit and expanded volume of the left abutment excavation, five new disposal sites will be added to those described above in Finding 4.b. Two of the disposal sites are located almost entirely within the future inundation area of the reservoir, and three of the disposal sites will be located in uplands (see Figures 10, 11, and 12 in Attachment A).

After construction is completed, the reservoir will be filled by natural runoff from the watershed drainage area above Calaveras Reservoir and from upper Alameda Creek diversions at the ACDD. Once refilled, Calaveras Reservoir will be operated to maintain the water elevation near the spillway crest at a nominal elevation of 756.2 feet*. Wetlands currently around the fringe of the reservoir will be inundated; however, an equivalent amount of similar wetland types are expected to reestablish at the restored higher operating level (see Appendix B).

Following completion of the Project, the SFPUC will also implement operational changes that will enhance 12 acres and 15,300 linear feet of Alameda Creek, and 0.58 acres and 2,922 linear feet of Calaveras Creek by increasing flows to these creeks and fish passage at the ACDD. These operational changes include flow releases from Calaveras Dam, bypass flows through the ACDD, maximum diversion rate reductions at the ACDD, and fish screen and fish ladder maintenance at the ACDD.

The SFPUC will release between 5 and 12 cubic feet per second (cfs) to the creek below Calaveras Dam in accordance with an instream flow schedule developed in consultation with NMFS and ~~CDFG~~ CDFW. Current base flow below Calaveras Dam is estimated at 0.5 cfs, so this would result in at least a ten fold increase in flows. At the ACDD, the new bypass tunnel will convey up to 30 cfs to downstream reaches of Alameda Creek whenever flow occurs in upper Alameda Creek. Currently, there is no mechanism for bypassing flows to Alameda Creek below the ACDD. In addition, installation of fish screens at the ACDD will reduce the maximum diversion rate from 650 cfs to 370 cfs, thereby increasing flow to Alameda Creek below the ACDD. Maintenance of fish screens will consist of (1) mechanical cleaning screens to remove impinged vegetation and debris, (2) sluicing sediment about once every 4 to 8 weeks, and (3) mechanical repositioning of sediment every 3 to 5 years. Currently, there are no fish screens, and sediment is sluiced about once per year. The fish ladder will require minimal maintenance once adjusted to ensure that the volume of water entering the ladder is sufficient for fish passage. Maintenance of the fish ladder will consist of removing debris and sediment before steelhead migration and periodically during the migration season. Currently, the ACDD does not have a fish ladder.

5. **Complete Application:** On November 13, 2009, the Discharger submitted an initial application for Water Quality Certification and Waste Discharge Requirements for the Project. On September 23, 2010, the Discharger submitted an addendum to the application that added structural modifications to the ACDD as a Project component. The structural

* All elevations in this Order are referenced to the National Geodetic Vertical Datum of 1929.

modifications will allow fish passage at the ACDD. The application, however, remained incomplete because the final mitigation package had not been received. The application was subsequently completed by additional submittals on November 10 and December 3, 2010. On November 12, 2012, the Discharger submitted an application to amend Order No. R2-2011-0013. The application to amend Order No. R2-2011-0013 was subsequently completed by additional submittals on November 29, December 6, and December 13, 2012.

6. **Waters of the United States and State:** There are approximately 1,050 acres and 45,549 linear feet of jurisdictional waters of the U.S. and State, including creeks and wetlands, on the Project site. The site's waters of the U.S. and State are comprised of:
   - **a.** 38 acres of freshwater marsh, seasonal, and seep wetlands;
   - **b.** 4.3 acres and 45,549 linear feet of creeks;
   - **c.** 5.3 acres of freshwater ponds; and
   - **d.** 1,003 acres of open water (reservoir).

7. **Rare and Endangered Species:** Waters on the Project site serve as habitat for the following rare, threatened, or endangered species:
   - **a.** California Tiger Salamander (*Ambystoma californiense*, hereinafter CTS): federally-listed threatened and State-listed threatened;
   - **b.** California Red-Legged Frog (*Rana aurora draytonii*, hereinafter CRLF): federally-listed threatened and State-listed species of special concern;
   - **c.** Steelhead[†] (*Oncorhynchus mykiss*) - Central California Coast Distinct Population Segment: federally-listed endangered;
   - **d.** Bald Eagle (*Haliaeetus leucocephalus*): State-listed endangered and fully protected;
   - **e.** White-tailed kite (*Elanus leucurus*): State fully protected species;
   - **f.** Foothill Yellow-Legged Frog (*Rana boylii*), and Western pond turtle (*Actinemys [=Clemmys] marmorata*): State-listed species of special concern.

8. **Impacts:** The Project will result in impacts to waters of the United States and State as a result of fill. These impacts are provided in Table 1 below.

[†] Steelhead are not currently found at the Project site. However, the species is expected to inhabit the Project site in the future, potentially before the Project is completed.

Table 1: Impacts from Calaveras Dam Replacement Project

Habitat Type	Permanent		Temporary	
	Acres	**Linear Feet**	**Acres**	**Linear Feet**
Wetlands				
Perennial Wetlands	1.0	NA	0.0	NA
Seasonal Wetlands	0.75	NA	0.59[1]	NA
Seep Wetlands	0.72	NA	0.0	NA
Wetlands Total	**2.5**	**NA**	**0.59[1]**	**NA**
Stream				
Stilling Basin	0.15	164	0.0	0.0
Discharge Channel[2]	0.31	185	0.0	0.0
Perennial Creek	0.05	936	0.05[3]	158[3]
Intermittent Creek	0.30	1,195	0.37	417
Ephemeral Creek	0.06	2,123	0.04[4]	897[4]
Stream Total	**0.87**	**4,603**	**0.46**	**1,472[3,4]**
Riparian				
Oak Riparian	0.74	0.0[5]	0.10	140[5]
Willow Riparian	2.4	0.0[5]	0.14	0.0[5]
Riparian Total	**3.2**	**0.0[5]**	**0.24**	**140[5]**
Open Water				
Pond	0.11	NA	0.0	NA
Reservoir	~~3.~~6 16.1[6]	NA	18[6,7]	NA
Open Water Subtotal	**~~3.7~~ 16.2[6]**	**NA**	**18[6,7]**	**NA**
Total Impacts	**~~10~~ 22.78**	**4,603**	**19**	**1,612**

Notes: NA = Not Applicable

1. If the West Haul Road Alternative is selected, temporary impacts to seasonal wetlands will be reduced by 0.19 acres.
2. Discharge channel is a straightened segment of Calaveras Creek with concrete walls serving as the banks.
3. If the Barge Alternative is selected, temporary impacts to perennial creeks will be reduced by 0.01 acres and 78 linear feet.
4. If the Barge Alternative is selected, temporary impacts to ephemeral creeks will be reduced by 0.03 acres and 665 linear feet.
5. Linear feet of riparian impacts only include impacts that are not included in the linear feet of creek impacts.
6. Although the Project will place fill in the reservoir, the Project will expand the surface area of the reservoir by about ~~44~~3.3 acres when water levels are restored.

7. If the West Haul Road Alternative is selected, temporary impacts to the reservoir will be reduced by 12.5 acres.

9. Mitigation: To mitigate for temporary impacts to wetlands and creeks, the Discharger will return the habitat to its original condition upon completion of the project as described in the Final Conceptual Restoration Plan, Calaveras Dam Replacement Project (Attachment C) (hereinafter Restoration Plan). To minimize permanent impacts at the disposal sites, the Restoration Plan also specifies grading a gradual slope at Disposal Site 3 to maximize wetland development once reservoir water levels are raised, grading contours at Disposal Site 5 to allow 0.02 acres of wetlands to be established once reservoir water levels are raised, and establishing a grassy swale measuring 0.08 acres and 1,824 linear feet at Disposal Site 7.

To compensate for permanent impacts to the existing stilling basin and discharge channel, the Discharger will construct a new stilling basin and bedrock channel. To compensate for the remaining permanent impacts and temporal losses in functions, the Discharger will restore, establish, enhance, and preserve wetlands, creeks, riparian communities, and ponds. The total amount of compensatory mitigation is shown in Table 2 below.

Table 2: Mitigation for the Calaveras Dam Replacement Project

Habitat Type	Restore/Establish		Enhance		Preserve	
	Acres	**Linear Feet**	**Acres**	**Linear Feet**	**Acres**	**Linear Feet**
Wetlands						
Perennial Wetlands[1]	0.46	NA				
Seasonal Wetlands[1]	2.7	NA	1.0	NA		
Wetlands Total	**3.1**	**NA**	**1.0**	**NA**		
Stream						
Stilling Basin	0.28	155				
Discharge Channel[2]	0.46	400				
Intermittent/Ephemeral Creek (Unvegetated)	8.0	17,026	3.1	25,783	0.03	227
Intermittent/Ephemeral Creek (Vegetated)[3]	1.8	4,011	2.3	4,595		
Stream Total	**11**	**21,592**	**5.4**	**30,378**	**0.03**	**227**

Table 2: Calaveras Dam Replacement Project Mitigation (continued)

Habitat Type	Restore/Establish		Enhance		Preserve	
	Acres	Linear Feet	Acres	Linear Feet	Acres	Linear Feet
Riparian						
Oak Riparian	2.3	0.0[4]	51	5,893[4]		
Sycamore Riparian	26	0.0[4]	1.7	0.0[4]		
Willow Riparian	1.0	201[4]	0.18	396[4]	0.27	346[4]
Mixed Riparian			4.4	763[4]	0.40	364[4]
Riparian Total	**29**	**201[4]**	**57**	**7,052[4]**	**0.67**	**710[3]**
Open Water						
Pond			3.7	NA	1.1	NA
Open Water Subtotal			**3.7**	**NA**	**1.1**	**NA**
Total Mitigation	**43**	**21,793**	**68**	**37,430**	**1.8**	**937**

Notes: NA = Not Applicable

1. Wetland mitigation projects will be implemented prior to impacts from the Project.
2. The new discharge channel will be excavated and will remain a bedrock-lined channel. Concrete will not be used to line the channel.
3. Vegetated intermittent and ephemeral streams were delineated as wetland tributaries by the U.S. Army Corps of Engineers.
4. Linear feet of riparian mitigation only includes mitigation that is not included in the linear feet of creek mitigation.

This mitigation will be implemented at the San Antonio Mitigation Area, South Calaveras Mitigation Area, and Sheep Camp Creek Mitigation Area (see Figure 9 in Attachment A). Descriptions of these mitigation areas are provided below.

a. San Antonio Creek Mitigation Area. Located about 6.4 miles from Calaveras Dam, San Antonio Creek is a tributary to the San Antonio Reservoir at the northeast end of the San Antonio Reservoir. The mitigation area extends east from the San Antonio Reservoir and includes about 270 acres along a 1.8 mile reach of San Antonio Creek and about 3,105 feet of Indian Creek. The San Antonio Creek Mitigation Area includes oak woodland, oak savannah, sycamore riparian, non-native grassland, and intermittent and ephemeral streams that will be restored, enhanced and preserved to support special-status species, such as CTS and CRLF.

b. South Calaveras Mitigation Area. Located about 3 miles from Calaveras Dam, the mitigation area is south of Calaveras Reservoir in the Calaveras Creek watershed. The South Calaveras Mitigation Area consists of two separate parts: a western part that surrounds Goldfish Pond and an eastern part that surrounds North and South ponds, east of Marsh Creek Road. In addition to these three ponds, the mitigation area includes seasonal wetlands, oak woodlands, and non-native annual grasslands that will be restored,

established, and enhanced to support special-status species, such as CTS and CRLF, and Callippe silverspot butterfly.

c. **Sheep Camp Creek Mitigation Area**. Located 7.5 miles northwest of Calaveras Dam, the 463-acre mitigation area is roughly bounded by Interstate 680 to the west and State Route 84 to the south. The northern border of the mitigation area is adjacent to private properties. Koopmann Ranch, the western-most property adjacent to the northern border, is preserved under an existing conservation easement. The mitigation area includes ponds, streams, wetlands, woodlands, grasslands, and riparian areas that will be restored, established, and enhanced to support CTS, CRLF, and Callippe silverspot butterfly.

The proposed compensatory mitigation shall be completed as described in the *Sunol Region Mitigation and Monitoring Plan, Calaveras Dam Replacement Project* (hereinafter MMP), dated September 2010, and prepared by URS Corporation, and the MMP's associated documents (Attachment D). The MMP is acceptable to the Regional Water Board, with the required submittals and revisions listed in the Provisions.

10. **Long-Term Management Plan.** In February 2011, the Discharger ~~has~~ submitted a Long-Term Management Plan for the Sunol Region (Attachment E). This Plan describes how the lands will be managed in-perpetuity under conservation easements. The Plan is acceptable to the Regional Water Board~~, with the revisions listed in the Provisions~~.

11. **Legal Authorities.** Pursuant to Section 13263 of the California Water Code (CWC) and Title 23, Section 3857 of the California Code of Regulations (CCR), the Regional Water Board is issuing Waste Discharge Requirements (WDRs) to regulate the proposed discharge of excavation, dredge and fill materials into waters of the State in addition to issuing Water Quality Certification pursuant to 23 CCR Section 3859. The Regional Water Board considers WDRs necessary to adequately address impacts and mitigation to beneficial uses of waters of the State from the Project, to meet the objectives of the California Wetlands Conservation Policy (Executive Order W-59-93), and to accommodate and require appropriate changes over the life of the Project and its construction.

12. **California Environmental Quality Act (CEQA):** CEQA requires all discretionary projects approved by public agencies to be in full compliance with CEQA, and requires a lead agency to prepare an appropriate environmental document for such projects. The City and County of San Francisco, as the lead agency, certified an Environmental Impact Report (EIR) for the Project on January 27, 2011 (and addendum to the EIR circulated on December 13, 2012). The EIR and addendum to the EIR found several significant impacts that are under the purview and jurisdiction of the Regional Water Board. These included significant impacts to (1) wetlands and other aquatic habitat, including habitat for special-status species; (2) fisheries; (3) water quality; and (4) hazardous materials. The EIR identified the following feasible mitigation measures to mitigate these impacts to less than significant levels:

    - Requiring buffers around wetlands that will be avoided;
    - Siting temporary stream crossings to avoid disturbing riparian vegetation, pools, side ponds and other sensitive habitat features to the maximum extent practicable;
    - Restoring temporarily impacted areas, including wetlands, streams, and riparian habitat;

- Compensating for permanent impacts to wetlands, streams, and special-status species habitat by restoring and establishing wetland, stream, and special-status species habitat at a ratio needed to achieve no net loss in habitat areas, functions, and services;
- Capturing native fish within the Project's dewatered areas and relocating the fish approximately 100 feet downstream;
- Implementing an adaptive management strategy for resident rainbow trout and future steelhead populations that includes bypass flows at the ACDD, flow releases from Calaveras Dam, and monitoring to verify the efficacy of management actions;
- Compliance with the General National Pollutant Discharge Elimination System (NPDES) Permit for Discharges of Storm Water Associated with Construction Activity (NPDES No. CAS000002; Order No. 2009-0009-DWQ), including implementation of a stormwater pollution prevention plan;
- Ensuring that drilling fluids consist only of inert materials and are fully contained;
- Requiring a contingency plan that specifies potential response actions, such as segregation and treatment of affected soil and groundwater, if contamination is encountered; and
- Removing and properly disposing of any hazardous materials encountered in structures that will be demolished.

The Regional Water Board, as a responsible agency under CEQA, has considered the EIR and the EIR addendum and finds that the significant environmental effects, which are within the Regional Water Board's purview and jurisdiction, have been identified and will be mitigated to less-than-significant levels. Specifically, significant impacts pertaining to wetland and aquatic habitat, fisheries, water quality, and hazardous materials will be mitigated to less than significant levels through implementation of the above mitigation measures and the mitigation identified in Finding 9 above, all of which are required to be implemented and reported on by this Order.

13. **Water Quality Control Plans.** The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) was duly adopted by the Regional Water Board and approved by the State Water Resources Control Board (State Water Board), US Environmental Protection Agency (USEPA), and the Office of Administrative Law where required. The Basin Plan is the Regional Water Board's master water quality control planning document. It designates beneficial uses of receiving waters, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed by the Plan. Section 2.2.1 of the Basin Plan indicates that the beneficial uses of any specifically identified water body generally apply to its tributary streams. Existing and potential beneficial uses of waters at the Project include the following:

    - **Alameda Creek:** Agricultural Supply (AGR), Groundwater Recharge (GWR), Cold Freshwater Habitat (COLD), Fish Migration (MIGR), Fish Spawning (SPWN), Warm Freshwater Habitat (WARM), Wildlife Habitat (WILD), Water Contact Recreation (REC-1), and Noncontact Water Recreation (REC-2)

- **Arroyo Hondo Creek:** Municipal and Domestic Supply (MUN), Freshwater Replenishment (FRSH), COLD, SPWN, WARM, WILD, REC-1, and REC-2
- **Calaveras Reservoir:** MUN, COLD, SPWN, WARM, WILD, REC-1 (Limited), and REC-2

In addition, Section 2.2.3 of the Basin Plan recognizes the multiple beneficial uses provided by wetlands, and Table 2-3 of the Basin Plan lists beneficial uses associated with wetland types. Existing and potential beneficial uses for wetlands at the Project site were established as indicated in Section 4.23 of the Basin Plan by (1) referencing information in the Application to identify wetland types at the Project site, (2) using Table 2-3 of the Basin Plan to identify examples of beneficial uses associated with these wetland types, and (3) referencing site-specific information provided in the EIR and Application to refine the list of example beneficial uses into a list of existing and potential beneficial uses for wetlands at the Project site. Wetland types at the Project site include riverine[‡], lacustrine[§], and palustrine[**]. The beneficial uses associated with wetlands at the Project site include FRSH, COLD, RARE, WARM, WILD, and REC-2.

Requirements of this Order implement the Basin Plan.

14. Basin Plan Wetland Fill Policy. The Basin Plan Wetland Fill Policy (Fill Policy) establishes that there is to be no net loss of wetland acreage and no net loss of wetland value when a project and any proposed mitigation are evaluated together, and that mitigation for wetland fill projects is to be located in the same area of the region, whenever possible, as the project. The Fill Policy further establishes that wetland disturbance should be avoided whenever possible, and if not possible, should be minimized, and only after avoidance and minimization of impacts should mitigation for lost wetlands be considered.

The Discharger submitted an Alternatives Analysis (Attachment E) to show that the Project first avoids whenever possible, and then minimizes disturbing wetlands and other waters of the U.S. and state, as required by the Basin Plan. Regional Water Board and federal agency staff held extensive discussions with the Discharger regarding this Alternatives Analysis. The Regional Water Board concurs with the conclusions of the Alternatives Analysis, as supplemented.

The Discharger submitted a supplemental Alternatives Analysis (Attachment G) to address Project design changes and the disposal options for surplus rock and soil (as described in Finding 4.f). The Regional Water Board concurs with the conclusions of the supplemental

[‡] A riverine wetland is a wetland within a system that (1) is contained within a channel; (2) is not dominated by trees, shrubs, persistent emergent vascular plants, emergent mosses or lichens; and (3) has less than 0.5 parts per thousand (ppt) of ocean derived salts (Cowardin and others 1979).

[§] A lacustrine wetland is a wetland within a system that (1) is situated in a topographic depression or a dammed river channel; (2) lacks trees, shrubs, persistent emergent vascular plants, emergent mosses or lichens with greater than 30 percent areal coverage; (3) exceeds 20 acres; and (4) has less than 0.5 ppt of ocean derived salts (Cowardin and others 1979).

[**] A palustrine wetland is a wetland within a system that (1) is dominated by trees, shrubs, persistent emergent vascular plants, emergent mosses or lichens and (2) has less than 0.5 ppt of ocean derived salts. It also includes wetlands lacking vegetation that (1) are less than 20 acres; (2) lack of an active wave-formed or bedrock shoreline; and (3) have water depths less than 2 meters in the deepest part of basin at low water (Cowardin and others 1979).

Alternatives Analysis that the combination of five disposal sites is the least environmentally damaging practicable alternative to minimize adverse impacts to wetlands, streams, special-status species, and sensitive habitats.

15. **California Wetlands Conservation Policy.** The goals of the California Wetlands Conservation Policy (Executive Order W-59-93, signed August 23, 1993) include ensuring "no overall loss" and achieving a "…long-term net gain in the quantity, quality, and permanence of wetland acreage and values…." The California Wetlands Conservation Policy also calls for a "development of means to provide flexibility in the regulatory process … for allowing public agencies, water districts, and landowners to establish wetlands on their property consistent with the primary purpose of the property."

    Senate Concurrent Resolution No. 28 states that "[i]t is the intent of the legislature to preserve, protect, restore, and enhance California's wetlands and the multiple resources which depend on them for benefit of the people of the State." Section 13142.5 of the CWC requires that the "[h]ighest priority shall be given to improving or eliminating discharges that adversely affect…wetlands, estuaries, and other biologically sensitive areas."

    Requirements of this Order implement the California Wetlands Conservation Policy.

16. **Water Rights.** The Water Rights Permitting Reform Act requires water impoundments used for livestock watering to be registered (sections 1228-1229.1 of the CWC). These livestock watering ponds cannot exceed direct diversion of 4500 gallons per day or storage of 10 acre-feet per year, and include impoundments for incidental aesthetic, recreational, or fish and wildlife purposes. Mitigation for the Project includes modifications to livestock watering ponds that are not currently registered with the State Water Board's Division of Water Rights. The Discharger, however, notified ~~CDFG~~ CDFW of its intent to register these livestock ponds on December 17, 2010, and expects to file for registration with the State Water Board by March 17, 2011. This Order includes a provision requiring the Discharger to register livestock ponds prior to implementing any mitigation activities within the confines of these ponds.

17. **Wetland Tracking System.** It has been determined through regional, state, and national studies that tracking of mitigation/restoration projects must be improved to better assess the performance of these projects, following monitoring periods that last several years. In addition, to effectively carry out the California's Wetlands Conservation Policy, the State needs to closely track both wetland losses and mitigation/restoration project success. Therefore, this Order requires that the Discharger use the California Wetlands Form to provide Project information related to impacts and mitigation/restoration measures (see Provision C.7 of this Order). An electronic copy of the form and instructions can be downloaded at: http://www.waterboards.ca.gov/sanfranciscobay/certs.shtml. Project information concerning impacts and mitigation/restoration will be made available at the web link: http://www.californiawetlands.net.

18. **Endangered Species Act.** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to

1544). The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

19. **United States Army Corps of Engineers (USACE).** On October 21, 2009, the USACE issued a Public Notice for a proposed Individual Permit for the Project (USACE File No. 29979S) pursuant to Section 404 of the Clean Water Act. The Individual Permit for the Project became effective on July 5, 2011. The USACE authorized modifications of the Project Individual Permit on December 28, 2012.

20. **Notification of Interested Parties.** The Regional Water Board has notified the USACE, U.S. Fish and Wildlife Service, ~~CDFG~~ CDFW , Alameda Creek Alliance, and other interested agencies and persons of its intent to ~~prescribe~~ amend WDRs and Water Quality Certification for this discharge.

21. **Consideration of Public Comment.** The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

22. **Records Management.** This Project file is maintained at the Regional Water Board under Site No. 02-01-C1060 and CIWQS Place No. 743933.

23. **Certification of Water Quality.** Pursuant to Section 401 and 23 CCR Section 3859(b), this Order certifies that the Project will comply with the applicable provisions of Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act, and with other applicable requirements of State law.

It is Hereby Ordered pursuant to the provisions of Division 7 of the CWC and regulations, and guidelines adopted thereunder, that the Discharger, its agents, successors, and assigns shall comply with the following pursuant to authority under CWC Sections 13263 and 13267:

B. Discharge Prohibitions

1. The discharge of wastes, including debris, rubbish, refuse, or other solid wastes into surface waters or at any place where they would contact or where they would be eventually transported to surface waters, including flood plains, is prohibited.

2. The discharge of floating oil or other floating materials from any activity in quantities sufficient to cause deleterious bottom deposits, turbidity, or discoloration in surface waters is prohibited.

3. The discharge of silt, sand, clay, or other earthen materials from any activity in quantities sufficient to cause deleterious bottom deposits, turbidity, or discoloration in surface waters is prohibited.

4. The wetland fill activities subject to these requirements shall not cause a nuisance as defined in CWC Section 13050(m).

5. The groundwater in the vicinity of the Project shall not be degraded as a result of the Project activities or placement of fill for the Project.

6. The discharge of materials, which are not otherwise regulated by a separate NPDES permit or allowed by this Order, to waters of the U.S. and State is prohibited.

C. Provisions

1. The Discharger shall comply with all Prohibitions and Provisions of this Order immediately upon adoption of this Order or as provided below.

2. Dredging/excavation and fill in Calaveras Reservoir shall not cause the turbidity in the receiving water (i.e., water in Calaveras Reservoir) to increase by more than 10 percent if the ambient turbidity of the receiving water is greater than 50 NTU, or by more than 5 NTU if the ambient turbidity of the receiving water is less than or equal to 50 NTU.

Mitigation Requirements

3. To mitigate for temporary impacts to wetlands and creeks, the Discharger shall restore wetland and creek contours, revegetate disturbed areas with native herbaceous and willow riparian plant species, and remove any invasive plant species using methods described in the Restoration Plan (Attachment C). Restoration and revegetation shall occur within one year of cessation of temporary impacts, and monitoring shall be performed for a minimum of five years, and until the sites have met the success/performance criteria specified in the Restoration Plan and the Executive Officer has accepted a notice of mitigation completion for temporarily impacted locations (see Provision C.14 below). In addition, plant monitoring shall be performed independently for each plant community (i.e., seasonal wetlands, perennial wetlands, oak riparian woodlands, and willow/mixed riparian woodlands). Sample size shall be determined using the method specified in the Restoration Plan. Any replacement of seeding or planting shall be monitored for five years from the date of reseeding/replanting. Supplemental watering shall be supplied for the first two years. If supplemental watering is required beyond the first two years, the monitoring period shall be reset to Year 1 starting from the year in which supplemental watering is no longer required. Any Restoration Plan revisions, including changes to the success/performance criteria or timelines, must be submitted to, and approved by, the Regional Water Board's Executive Officer before the changes are implemented.

4. To compensate for permanent impacts to wetlands and other waters of the State and United States and temporal losses in functions associated with temporary impacts to wetlands and other waters of the State and United States, the Discharger shall provide the mitigation specified in Table 3 below.

Table 3: Calaveras Dam Replacement Project Mitigation

Habitat Type	Restore/Establish		Enhance		Preserve	
	Acres	Linear Feet	Acres	Linear Feet	Acres	Linear Feet
Wetlands						
Perennial Wetlands[1]	0.46	NA				
Seasonal Wetlands[1]	2.7	NA	1.0	NA		
Wetlands Total	**3.1**	**NA**	**1.0**	**NA**		
Stream						
Stilling Basin	0.28	155				
Discharge Channel[2]	0.46	400				
Intermittent/Ephemeral Creek (Unvegetated)	8.0	17,026	3.1	25,783	0.03	227
Intermittent/Ephemeral Creek (Vegetated)[3]	1.8	4,011	2.3	4,595		
Stream Total	**11**	**21,592**	**5.4**	**30,378**	**0.03**	**227**
Riparian						
Oak Riparian	2.3	0.0[4]	51	5,893[4]		
Sycamore Riparian	26	0.0[4]	1.7	0.0[4]		
Willow Riparian	1.0	201[4]	0.18	396[4]	0.27	346[4]
Mixed Riparian			4.4	763[4]	0.40	364[4]
Riparian Total	**29**	**201[4]**	**57**	**7,052[4]**	**0.67**	**710[4]**
Pond						
Pond			3.7	NA	1.1	NA
Open Water Subtotal			**3.7**	**NA**	**1.1**	**NA**
Total Mitigation	**43**	**21,793**	**68**	**37,430**	**1.8**	**1,164**

Notes: NA - Not Applicable

1. Wetland mitigation projects will be implemented prior to impacts from the Project.
2. The new discharge channel will be excavated and will remain a bedrock lined channel. Concrete will not be used to line the channel.
3. Vegetated intermittent and ephemeral streams were delineated as wetland tributaries by USACE.
4. Linear feet of riparian mitigation only includes mitigation that is not included in the linear feet of creek mitigation.

This mitigation shall be completed as described in the MMP (Attachment D), and shall be implemented at the San Antonio, South Calaveras, and Sheep Camp Creek Mitigation Areas (see Figure 9 in Attachment A). In addition, the following revisions to the

success/performance criteria, monitoring protocols, and timelines shall be incorporated into the MMP:

a. Native Wetland Vegetation. Interim and final success criteria for native vegetation in restored and established seasonal and perennial wetlands shall be based on the absolute cover criteria listed in Tables 5-1b and 5-2 of the MMP. The final success criteria for vegetation in enhanced wetlands shall also be as specified in Table 5-1b. Lastly, only the cover of the species listed below shall be counted towards achievement of success criteria for native vegetation in seasonal and perennial wetlands that are restored, established, or enhanced as mitigation for the Project.

i. Seasonal Wetlands: mugwort (*Artemisia douglasiana*); marsh baccharis (*Baccharis douglasii*); Santa Barbara sedge (*Carex barbarae*); bristly sedge (*Carex comosa*); eggbract sedge (*Carex ovalis*); small-bracted sedge (*Carex subbracteata*); bifid sedge (*Carex serratodens*); naked sedge (*Carex nudata*); tall flatsedge (*Cyperus eragrostis*); redroot flatsedge (*Cyperus erythrorhizos*); black flatsedge (*Cyperus niger*); tufted hairgrass (*Deschampsia cespitosa*); meadow barley (*Hordeum brachyantherum*); spikerush (*Eleocharis macrostachya*); willowherb (*Epilobium ciliatum*); horsetail (*Equisetum arvense*); red fescue (*Festuca rubra*); iris-leaved rush (*Juncus xiphioides*); Mexican rush (*Juncus mexicanus*); Baltic rush (*Juncus balticus*); toad rush (*Juncus bufonius*); Pacific rush (*Juncus effusus* var. *pacificus*); spreading rush (*Juncus patens*); brown-headed rush (*Juncus phaeocephalus*); creeping wildrye (*Leymus triticoides*); seep monkey flower (*Mimulus guttatus*); water parsley (*Oenanthe sarmentosa*); California sycamore (*Platanus racemosa*); sandbar willow (*Salix exigua*); red willow (*Salix laevigata*); arroyo willow (*Salix lasiolepis*); Mexican elderberry (*Sambucus mexicana*); blue-eyed grass (*Sisyrinchium bellum*); California beeplant (*Scrophularia califomica*); sour clover (*Trifolium fucatum*); or any other facultative (FAC) or facultative wetland (FACW) plant species that is native to either Alameda or Santa Clara County and approved by the Executive Officer.

ii. Perennial Wetlands: mannagrass (*Glyceria occidentalis*); coyotethistle (*Eryngium vaseyi*); hardstem bulrush (*Scirpus acutus*); American bulrush (*Scirpus americanus*); California bulrush (*Scirpus californicus*); river bulrush (*Scirpus fluviatilis*); panicled bulrush (*Scirpus microcarpus*); bur reed (*Sparganium eurycarpum* ssp. *eurycarpum*); narrowleaf cattail (*Typha angustifolia*); broadleaf cattail (*Typha latifolia*); southern cattail (*Typha domingensis*); American speedwell (*Veronica americana*); all species listed for seasonal wetlands above; and any obligate wetland plant that is native to either Alameda or Santa Clara County and approved by the Executive Officer.

b. Native Riparian Vegetation: In addition to the success criteria listed in Tables 5-1c and 5-3 of the MMP, the following success criteria for regeneration of woody riparian species in enhancement areas shall be included:

i. Year 3: The quantity of native woody riparian seedlings shall be at least 10 percent greater than the quantity of native woody riparian seedlings measured prior to implementation of enhancement activities (i.e., baseline).

ii. Year 5: The quantity of native woody riparian seedlings shall be at least 25 percent greater than the quantity of native woody riparian seedlings measured prior to implementation of enhancement activities.

c. Invasive Plant Species: The interim success criteria for non-native invasive plant species restored and established listed in Table 5-2 of the MMP shall be based on absolute cover instead of relative cover. Therefore, the revised criterion for non-native invasive plants in restored/established areas shall be less than 5 percent absolute cover of non-native invasive plants in all years. The final success criterion for non-native invasive plants in restored/established areas shall be based on the Year 5 absolute wetland cover criterion listed in Table 5-1b of the MMP.

In addition, the final success criterion for non-native invasive plants in enhanced areas shall be: the absolute cover of non-native invasive plants shall be reduced by 50 percent relative to the absolute cover of non-native invasive plants the year before mitigation activities are implemented.

d. Vegetated Intermittent and Ephemeral Creeks: The success criteria for vegetated intermittent and ephemeral creeks[††] shall include all the success criteria for seasonal wetlands. The success criteria for vegetated creeks shall also include the hydrogeomorphic success criteria for streams.

e. Sediment Accumulation: Success criteria for sediment accumulation in ponds shall include the maximum sedimentation rate specified in the MMP (no greater than 6 inches in any given year). Ponds shall also have a final success criterion for sediment accumulation specifying that the average sedimentation rate shall be no greater than 1 inch per year.

f. Wetland Hydrology: In addition to exhibiting inundation or soil saturation for at least 14 days as described in the MMP, restored and established seasonal wetlands shall be dry (i.e., not inundated or saturated) in August of all years with average or below average rainfall, and restored and established perennial wetlands shall exhibit inundation or soil saturation in August of all years with average or greater than average rainfall.

In addition, plant monitoring shall be performed independently at each mitigation site and for seasonal wetlands, perennial wetlands, sycamore riparian woodlands, oak riparian woodlands, and willow/mixed riparian woodlands (i.e., data from each mitigation site and plant community shall not be pooled with data from any other mitigation site or plant community). Plant monitoring shall also be performed separately for restoration and enhancement locations (i.e., data from restoration and establishment locations shall not be pooled with data from enhancement areas). Sample size shall be determined using the method specified in the MMP; however, the allowable margin of error shall be 15 percent of the value being measured (i.e., percent cover, percent survival).

Statistical methods for analyzing vegetation data shall also be as specified in the MMP, except for the following: (1) to evaluate whether percent cover and percent survival are equal to or greater than success criteria, measurements shall be directly compared with success criteria instead of via a t-test; (2) regression analysis to evaluate trends shall only be acceptable if the data meet Cochran's rule for confidence intervals[‡‡] and have a variance of 2

[††] Vegetated creeks are referred to as wetland tributaries in MMP because vegetated intermittent and ephemeral streams at the Project site were delineated as wetland tributaries by USACE.

[‡‡] Cochran's rule for confidence intervals is used to determine whether there is sufficient sample size to use the normal approximation (i.e. assume the data is normally distributed) when calculating a confidence interval. For

or less; (3) if regression analysis is unacceptable, changes (i.e., increases in native species cover and decreases in invasive species cover) between years shall be evaluated using the Wilcoxon signed-rank test, the Wilcoxon rank sum test, chi-square test, or an equivalent non-parametric test. The significance requirement for non-parametric tests shall be a 90 percent confidence level.

Any replacement of seeding or planting shall reset the monitoring period from the date of reseeding/replanting. Monitoring shall be performed for a minimum of five years for wetland sites and a minimum of ten years for creek and riparian sites, and until the sites have met the success/performance criteria specified in the MMP and the Executive Officer has accepted a notice of mitigation completion for the mitigation areas (see Provision C.13 below). Any replacement of seeding or planting at wetland sites shall be monitored for five years from the date of reseeding/replanting, and any replacement seeding or planting at creek and riparian sites shall be monitored for ten years from the date of reseeding/replanting. Supplemental watering shall be supplied for the first two years. If supplemental watering is required beyond the first two years, the monitoring period shall be reset to Year 1 starting from the year in which supplemental watering is no longer required. Any revisions to the MMP, including changes to the success/performance criteria, timelines or monitoring protocols, must be submitted to, and approved by, the Executive Officer before the changes are implemented.

5. The long-term management of the mitigation sites (i.e., after performance/success criteria have been achieved) shall be implemented as specified in the Long-Term Management Plan for the Sunol Region (LTMP; URS February 2011). Any revisions to the LTMP, including changes to the measurable objectives or monitoring and reporting procedures, must be submitted to the Executive Officer for review and approval before the changes are implemented. ~~The long-term management of the mitigation sites (i.e., after performance/success criteria have been achieved) shall be implemented as specified in the Long-Term Management Plan for the Sunol Region. However, the grazing management specified in the Long-Term Management Plan for the Sunol Region shall be revised as follows. Grazing shall only be performed to maintain pond, creek and riparian functions and benefit native flora and fauna. Fencing will be used to control livestock access to the ponds, creeks and riparian areas. To support California tiger salamander and California red-legged frog breeding and rearing habitat, livestock shall be allowed access to ponds for short periods of time to maintain appropriate emergent vegetation cover and egg attachment substrate and reduce visibility and predation pressure. Specific grazing management measures for Fields A and C of the San Antonio Management Unit, Fields A and E of the South Calaveras Management Unit, and Fields B and E of the Sheep Camp Creek Management Unit shall be included either in the revised Long-Term Management Plan or in a grazing plan that shall be added as an addendum to the Long-Term Management Plan. These grazing management measures shall include a detailed description of the purpose for grazing, measurable objectives for grazing, stocking rates, duration of grazing, and potential negative effects of grazing along with measures to reduce these negative effects. Whenever practicable, pulse grazing shall be used in riparian corridors. The Discharger shall submit the revised Long-~~

guidance on the use of Cochran's rule, see pages 253 and 254 of *Measuring & Monitoring Plant Populations* (Elzinga, Salzer, and Willoughby 1998, BLM Technical Reference 1730-1) available on-line at http://www.blm.gov/nstc/library/pdf/MeasAndMon.pdf.

~~Term Management Plan and/or grazing management plan, acceptable to the Executive Officer. After acceptance in writing by the Executive Officer, the Discharger may implement grazing within ponds, creeks, and riparian corridors addressed by the Long-Term Management Plan and/or grazing management plan.~~

~~In addition, the Long-Term Management Plan for the Sunol Region shall be revised to include measurable objectives for native and invasive plant cover in wetlands, invasive plant cover in riparian areas, regeneration of riparian species, and sedimentation in ponds as follows:~~

- ~~The measurable objective for native plant cover in wetlands shall be to maintain the absolute cover of native wetland plants at no less than 80 percent of the native plant cover measured at the end of the mitigation performance period (i.e., when mitigation has been accepted by the Executive Officer).~~
- ~~The measurable objective for invasive plant cover in wetlands and riparian habitat shall be to maintain or decrease the absolute cover of invasive wetland plants relative to the absolute cover of invasive plants measured at the end of the mitigation performance period.~~
- ~~The measurable objectives for regeneration of riparian species shall be to (1) maintain or increase the canopy cover of woody riparian species relative to the canopy cover measured at the end of the mitigation performance period; (2) maintain or increase the understory cover of woody riparian species relative to the understory cover of woody riparian species measured at the end of the mitigation performance period; and (3) maintain or increase the absolute cover of herbaceous plants relative to the absolute cover of herbaceous plants measured at the end of the mitigation performance period.~~
- ~~The measurable objective for sedimentation in ponds shall be an annual average sedimentation rate of 1 inch per year.~~

~~The final long-term management plan, acceptable to the Executive Officer, shall be submitted to the Regional Water Board within 180 days of adoption of this Order and shall be implemented.~~

5a. To mitigate the significant impacts identified in the EIR and the EIR addendum over which the Regional Water Board has authority, the Discharger shall implement those mitigation measures specified in the EIR which are listed in Finding 12 of this Order and shall report on their implementation by December 31 of each year following initiation of construction and shall continue to report until one year after completion of construction.

Reporting Requirements

6. All reports pursuant to these Provisions shall be prepared under the supervision of suitable professionals registered in the State of California.

7. Within 14 days of the date of this amendment, the Discharger ~~shall submit Project information~~ is required to use the standard Wetland Tracker form to correct any out of date Project information, including impacts and restoration measures, that has already been provided to the California Wetlands Portal ~~using a California Wetlands form within 14 days~~

~~from the date of adoption of this Order~~. An electronic copy of the form can be downloaded at: http://www.waterboards.ca.gov/sanfranciscobay/certs.htm. The completed California Wetlands form shall be submitted electronically to habitatdata@waterboards.ca.gov or shall be submitted as a hard copy ~~via mail~~ to both: (1) the Regional Water Board to the attention of California Wetlands Portal; and (2) to the San Francisco Estuary Institute, 4911 Central Avenue, Richmond, CA, 94804, to the attention of Wetlands Portal.

8. The Discharger shall submit a turbidity monitoring plan at least 60 days prior to the anticipated start of dredging/excavation or fill placement in Calaveras Reservoir. The turbidity monitoring plan shall specify all the monitoring methods and sampling locations necessary to monitor turbidity at the dredge/excavation and fill sites in the reservoir, including at least one sampling location for determining ambient turbidity. The turbidity measurements and daily estimates of the volume of materials dredged/excavated from and placed into the reservoir shall be recorded and submitted to the Regional Water Board within 7 days of the end of any month in which dredging/excavating or fill placement occurs in Calaveras Reservoir.

In addition, the Applicant shall report any turbidity levels that are not in compliance with Provision C.2 (heretofore, a non-compliance event) to the Regional Water Board within 24 hours via telephone and shall follow up with a written report within 14 days. The written report shall provide the following:

a. All turbidity measurements collected during the non-compliance event;

b. The location, duration and likely cause of the non-compliance event;

c. All actions taken to reduce turbidity immediately after identifying the non-compliance event; and

d. All actions taken to prevent a non-compliance event in the future.

~~9. Within 180 days of adoption of this Order, the Discharger shall submit, acceptable to the Executive Officer, proof of financial assurance adequate to ensure the success of the proposed creek and wetland mitigation projects. This may consist of a bond, certificate of deposit, or other instrument callable by the Regional Water Board in the event of creek and/or wetland mitigation failure. Along with the proof of financial assurance, the Discharger shall submit a report, acceptable to the Executive Officer, with supporting information necessary to demonstrate that the amount in the financial assurance includes all that is necessary to cover implementation and monitoring of the proposed mitigation.~~

~~10. Within 180 days of adoption of this Order, the Discharger shall submit, acceptable to the Executive Officer, proof of financial assurance adequate to ensure long-term management of the mitigation sites. This may consist of a bond, certificate of deposit, or other appropriate instrument. Along with the proof of financial assurance, the Discharger shall submit a Property Analysis Record or equivalent analysis, acceptable to the Executive Officer, that provides the information necessary to demonstrate that the amount in the financial assurance completely covers all activities needed to manage the mitigation sites in perpetuity.~~

9. ~~Within 180 days of adoption of this Order, the Discharger shall submit, acceptable to the Executive Officer, draft conservation easements for all mitigation sites.~~ The final executed

conservation easements, acceptable to the Executive Officer, shall be submitted to the Regional Water Board no later than July 31, 2014 ~~within 1 year of the date of adoption of this Order~~.

10. As per the Restoration Plan, monitoring reports for the temporary impact locations shall be submitted to the Regional Water Board by each November 30 for the first five monitoring years, and until the sites have met their success/performance criteria and the Executive Officer has accepted a notice of completion of restoration and revegetation for each temporary impact location (see Provision C.12 below). Monitoring reports shall be submitted by uploading them to the California Wetlands Portal website at http://www.californiawetlands.net/tracker/ba/list or via mail. Monitoring reports shall also be prepared as described in the Restoration Plan and shall document whether success/performance criteria are being achieved by including photographs from the photo-documentation points and all mitigation monitoring data collected between October 1 and September 31 the previous year. If success criteria are not being achieved, the monitoring reports shall also describe adaptive management measures to be undertaken to ensure that success/performance criteria will be achieved, including additional planting and/or extension of the monitoring period as warranted.

11. As per the MMP, monitoring reports for wetland mitigation sites shall be submitted to the Regional Water Board by each March 1 for the first five monitoring years, and until the sites have met their performance standards and final success criteria and the Executive Officer has accepted a notice of mitigation completion for each site. For creek and riparian mitigation sites, monitoring reports shall be submitted to the Regional Water Board by each March 1 for the first five monitoring years and Years 7, 9 and 10, and until the sites have met their performance standards and final success criteria and the Executive Officer has accepted a notice of mitigation completion for each site (see Provision C.13 below). Monitoring reports shall be prepared as described in the MMP, including photographs, special-status species monitoring, and all other information, as appropriate.

12. When the Discharger has determined that the success/performance criteria specified in the Restoration Plan have been achieved for a restored temporary impact location, it shall submit a notice of mitigation completion, acceptable to the Executive Officer. After acceptance of the notice of mitigation completion in writing by the Executive Officer, the Discharger's submittal of restoration monitoring reports for that location is no longer required.

13. When the Discharger has determined that a mitigation area (i.e., San Antonio, South Calaveras, or Sheep Camp Creek) has achieved the performance standards and final success criteria specified in the MMP, it shall submit a notice of mitigation completion, acceptable to the Executive Officer. This notice shall include a status report on the implementation of the long-term maintenance and management portion of the MMP and a description of the status of the mitigation component that has been determined to be successful. After acceptance of the notice of mitigation completion in writing by the Executive Officer, the Discharger's submittal of mitigation monitoring reports for that mitigation component is no longer required.

14. Within 8 weeks of completing Project construction activities, including restoration and replanting of the temporarily-impacted locations, the Discharger shall submit an as-built

report and plan to the Regional Water Board either by uploading it to the California Wetlands Portal website at http://www.californiawetlands.net/tracker/ba/list or via mail. The report shall provide a revised Project plan clearly identifying and illustrating the location of temporary impacts.

15. As-built plans for the mitigation sites shall be prepared as per the MMP, and submitted to the Regional Water Board within 8 weeks of the completion of mitigation site construction. The Discharger shall submit an as-built report and plan to the Regional Water Board either by uploading them to the California Wetlands Portal website at http://www.californiawetlands.net/tracker/ba/list or via mail.

16. The Discharger shall submit proof of livestock watering pond registration prior to implementation of any mitigation activities within the confines of livestock ponds located at any of the Mitigation Areas.

Other Requirements

17. The Discharger shall immediately notify the Regional Water Board by telephone whenever an adverse condition occurs as a result of this discharge. Such a condition includes, but is not limited to, a violation of the conditions of this Order, a significant spill of petroleum products or toxic chemicals, or damage to control facilities that would cause noncompliance. A written notification of the adverse condition shall be submitted to the Regional Water Board within two weeks of occurrence. The written notification shall identify the adverse condition, describe the actions necessary to remedy the condition, and specify a timetable, subject to the modifications of the Regional Water Board, for the remedial actions. The Discharger shall notify the Regional Water Board in writing at least 30 days prior to actual start dates for each Project component (i.e., prior to the start of grading or other construction activity for any Project component, including the creek and wetland mitigation components).

18. The Discharger shall at all times fully comply with the engineering plans, specifications, and technical reports submitted with its application for water quality certification and the completed report of waste discharge. The Discharger shall at all times fully comply with the engineering plans, specifications, and technical reports submitted with its application for amended water quality certification and the completed report of waste discharge.

19. The Discharger is considered to have full responsibility for correcting any and all problems that arise in the event of a failure that results in an unauthorized release of waste or wastewater. The discharge of any hazardous, designated or non-hazardous waste as defined in Title 23, Division 3, Chapter 15 of the California Administrative Code, shall be disposed of in accordance with applicable State and federal regulations.

20. The Discharger shall remove and relocate any wastes that are discharged at any sites in violation of this Order.

21. The Discharger shall maintain a copy of this Order at the Project site so as to be available at all times to site operating personnel and agencies.

22. The Discharger shall permit the Regional Water Board or its authorized representatives at all times, upon presentation of credentials:

a. Entry onto Project premises, including all areas on which wetland fill or wetland mitigation is located or in which records are kept.

b. Access to copy any records required to be kept under the terms and conditions of this Order.

c. Inspection of any treatment equipment, monitoring equipment, or monitoring method required by this Order.

d. Sampling of any discharge or surface water covered by this Order.

23. In accordance with CWC Section 13260(c), the Discharger shall file with the Regional Water Board a report of any material change or proposed change in the character, location, or volume of discharge authorized by this Order. This shall include, but not be limited to, all new soil disturbances, all proposed expansion of development, or any change in drainage characteristics at the Project site. For the purpose of this Order, this includes any proposed change in the boundaries of the area of wetlands/waters of the United States and State to be filled.

24. This Order does not authorize commission of any act causing injury to the property of another or of the public; does not convey any property rights; does not remove liability under federal, State, or local laws, regulations or rules of other programs and agencies, nor does this Order authorize the discharge of wastes without appropriate permits from other agencies or organizations.

25. This Order combines Waste Discharge Requirements and Clean Water Act Section 401 Water Quality Certification provisions. The annual fee shall reflect this, and consist of the following:

The fee amount for the Waste Discharge Requirements portion shall be in accordance with the current fee schedule, per California Code of Regulations, Division 3, Chapter 9, Article 1, section 2200(a)(1), based on the discharge's Threat to Water Quality and Complexity rating of the Discharge to Land or Surface Waters, plus applicable surcharge(s). The Threat and Complexity rating shall initially be rated as 1B. After mitigation construction has been completed, the Executive Officer may revise the Threat and Complexity rating. The fee payment shall indicate the Order number, WDID number, and the applicable season.

26. This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Section 13330 of the CWC and 23 CCR Section 3867.

27. This certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to 23 CCR Subsection 3855(b) and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

28. The Regional Water Board will consider rescission of this Order upon Project completion and the Executive Officer's acceptance of notices of completion of mitigation for all

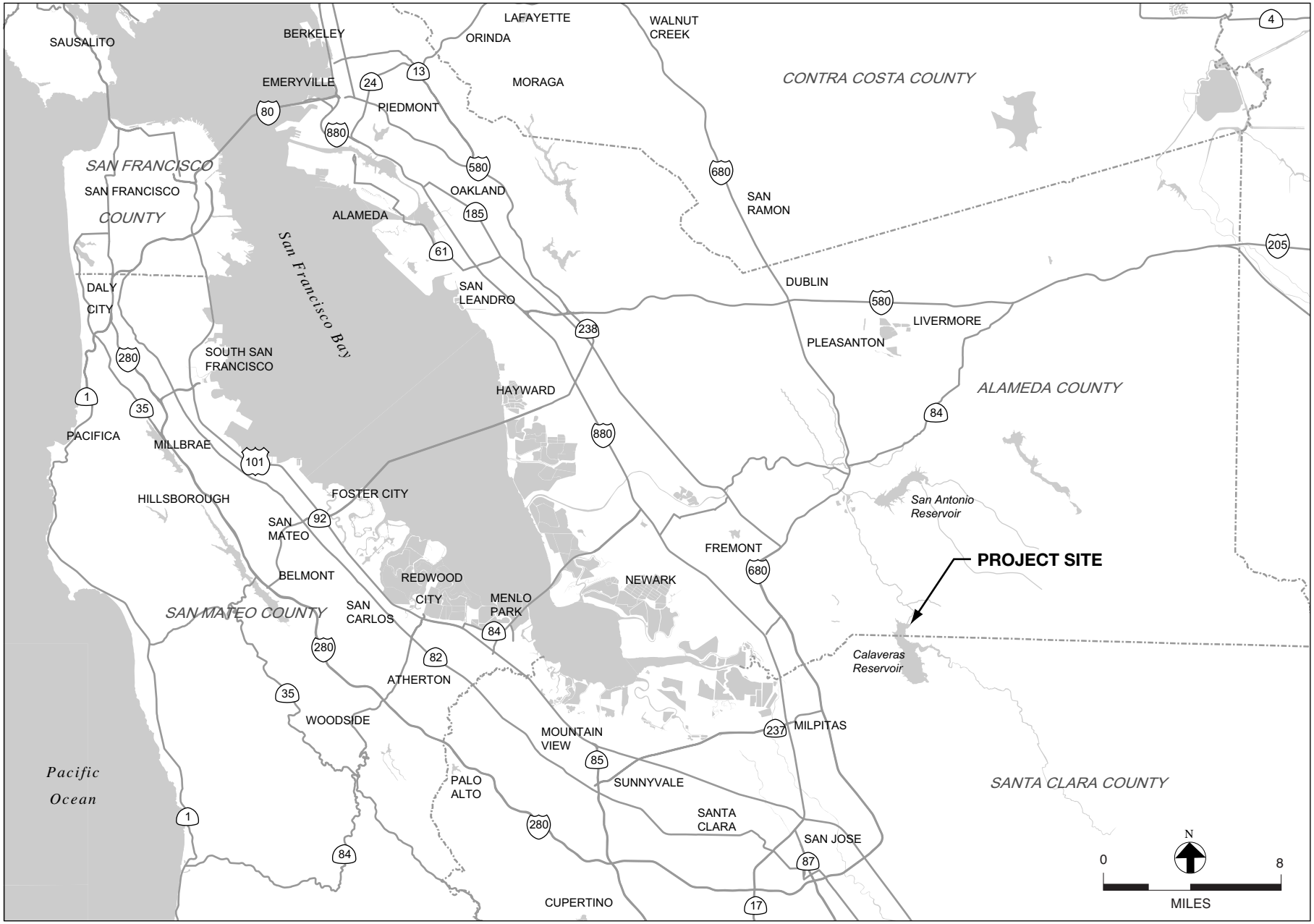
mitigation, creation, and enhancement projects required or otherwise permitted now or subsequently under this Order.

This Order applies to the Project as proposed in the application materials. Failure to implement the Project as proposed is a violation of this Order. Violation or threatened violation of the Provisions of this Order is subject to any remedies, penalties, process or sanctions as provided for under applicable State or federal law, including administrative civil liability pursuant to CWC Section 13350. Failure to meet any Provision of an Order may subject the Discharger to civil liability imposed by the Regional Water Board to a maximum of $5,000 per day of violation or $10 for each gallon of waste discharged in violation of the Order. Also, any requirement for a report made as a Provision to this Order (i.e., Provisions 5a, 7, 8, 10, 11, 14, 15, and 16) or technical or monitoring reports the Regional Water Board requests in response to a suspected violation of the Provisions of this Order, is a formal requirement pursuant to CWC Section 13267, and failure to submit, late or inadequate submittal, or falsification of such technical report(s) is also subject to civil liability pursuant to CWC Section 13268.

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on _____ .

_____
BRUCE H. WOLFE
Executive Officer

Attachment A
Figures

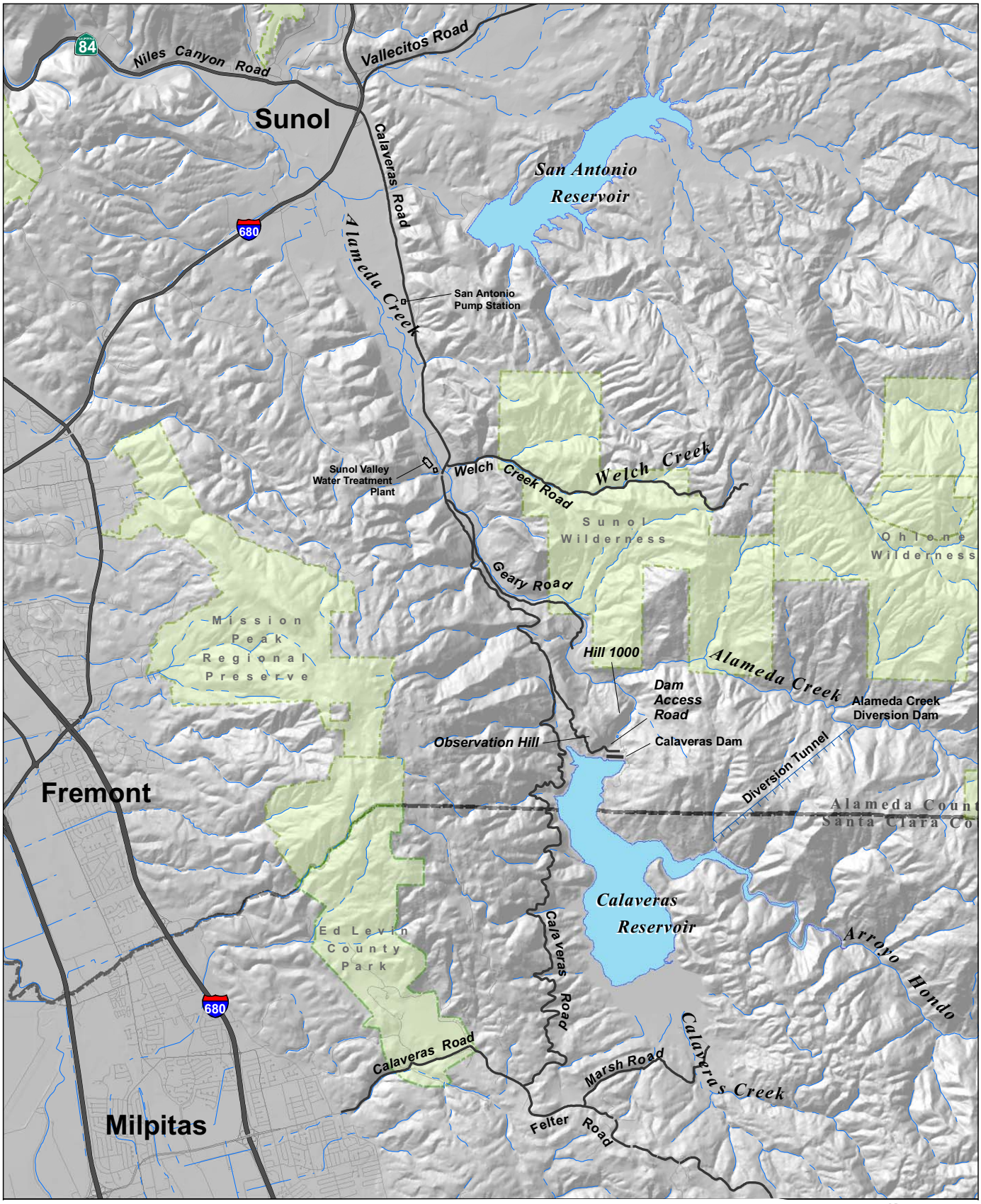


SOURCE: EDAW & Turnstone JV

CALAVERAS DAM REPLACEMENT PROJECT

2005.0161E

FIGURE 1: PROJECT LOCATION



SOURCE: EDAW & Turnstone JV

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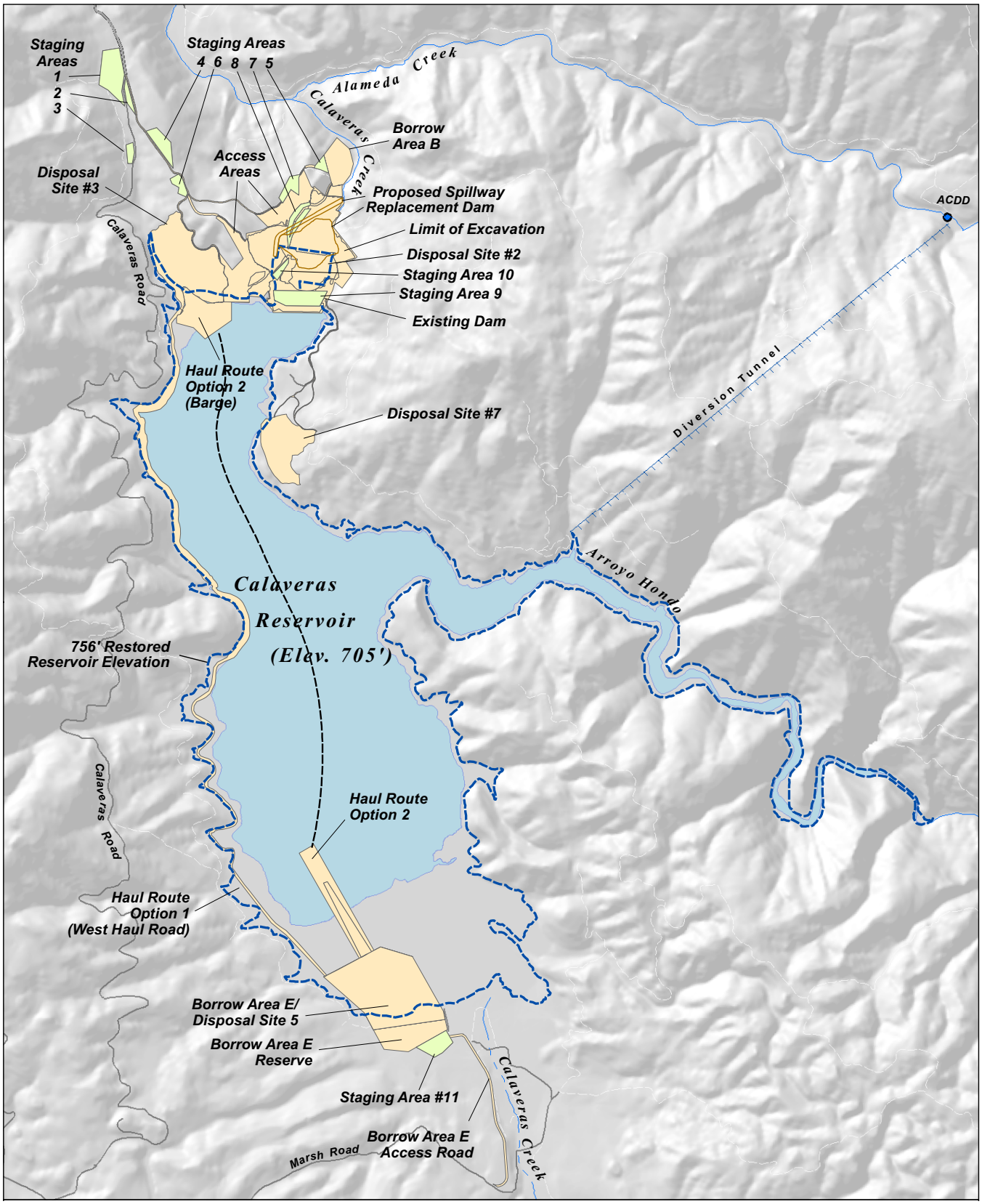
CALAVERAS DAM REPLACEMENT PROJECT

2005.0161E

FIGURE 2: CALAVERAS DAM VICINITY



SOURCE: EDAW & Turnstone JV

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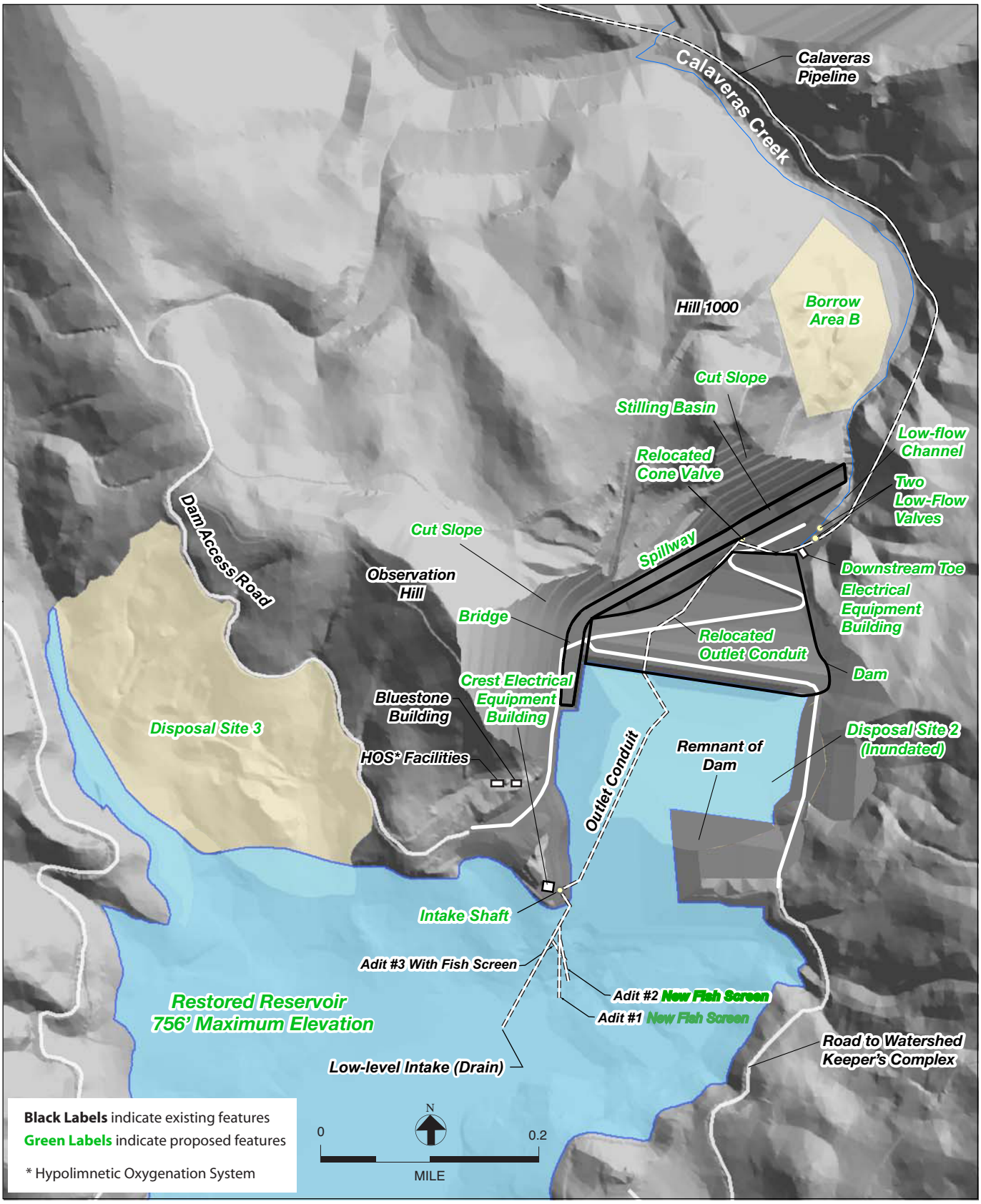
CALAVERAS DAM REPLACEMENT PROJECT

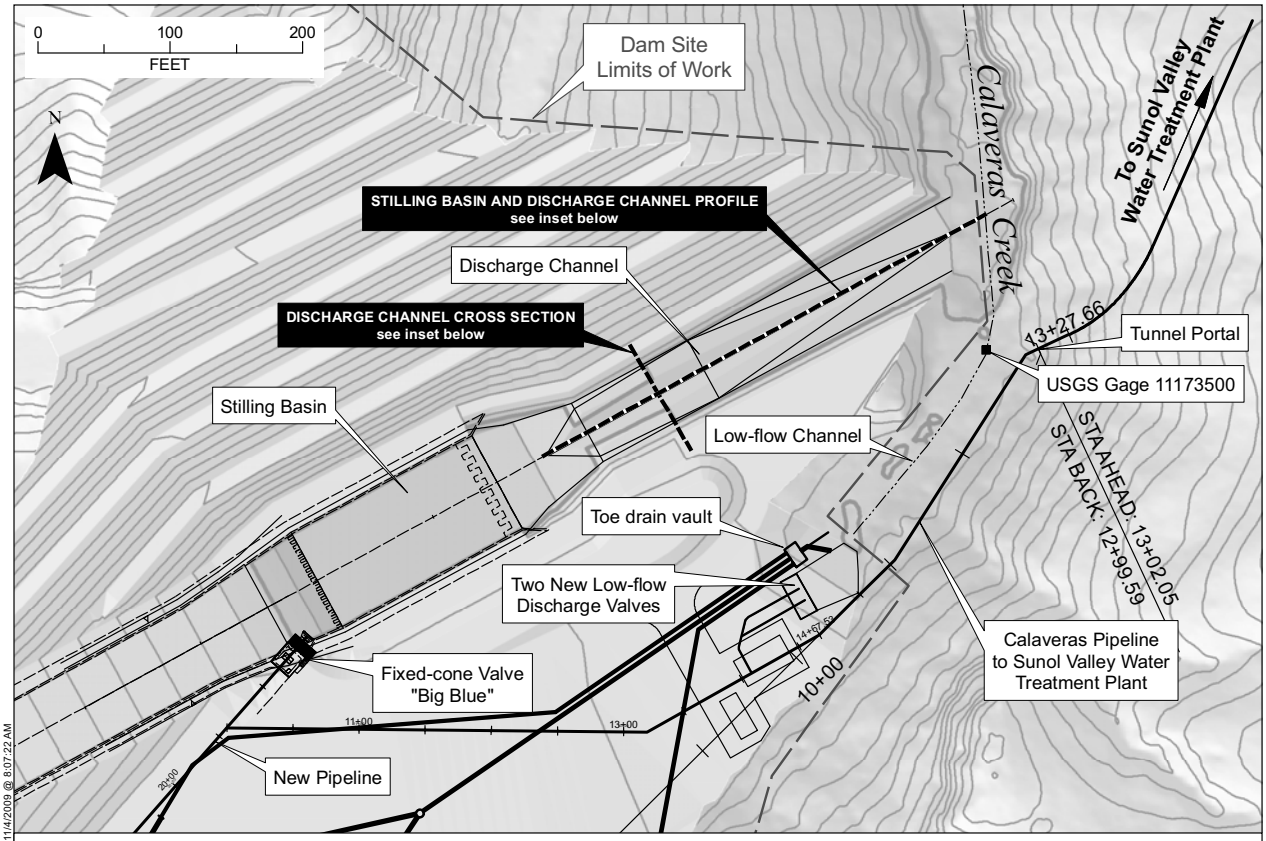
FIGURE 3: WORK LIMIT AREA ASSOCIATED WITH NEW DAM CONSTRUCTION

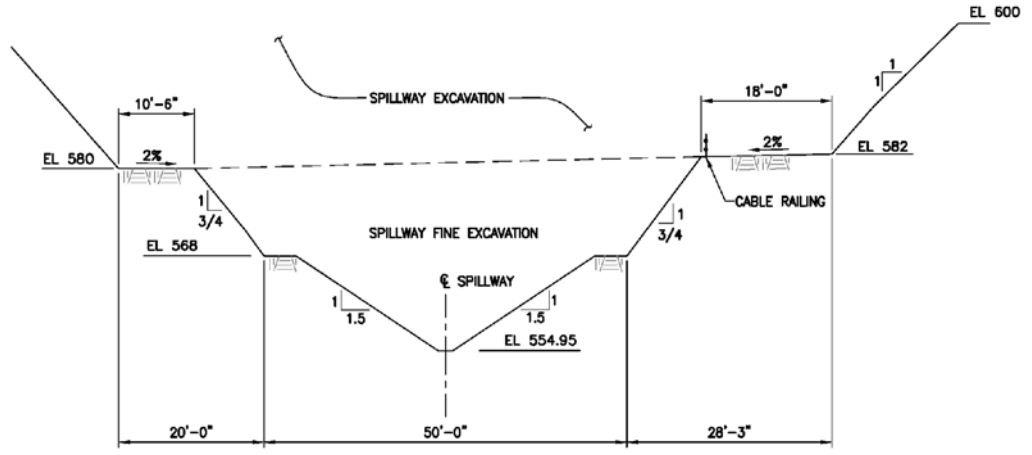


SOURCE: EDAW & Turnstone JV

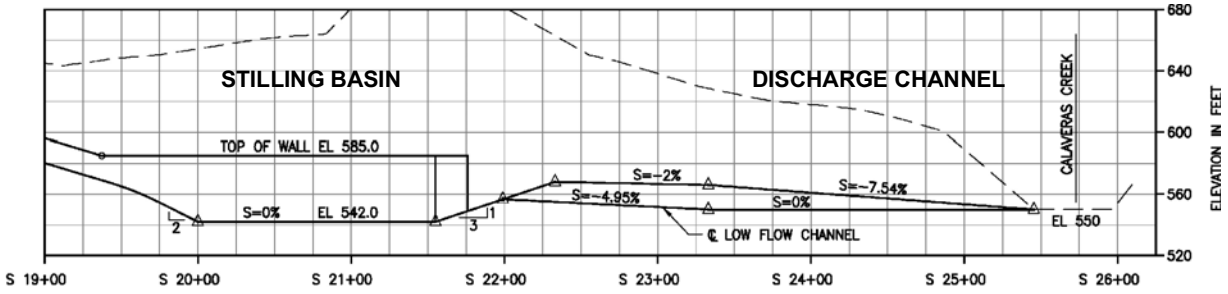
CALAVERAS DAM REPLACEMENT PROJECT

FIGURE 4: PROPOSED PLAN OF DAM AREA





DISCHARGE CHANNEL CROSS SECTION



STILLING BASIN AND DISCHARGE CHANNEL PROFILE

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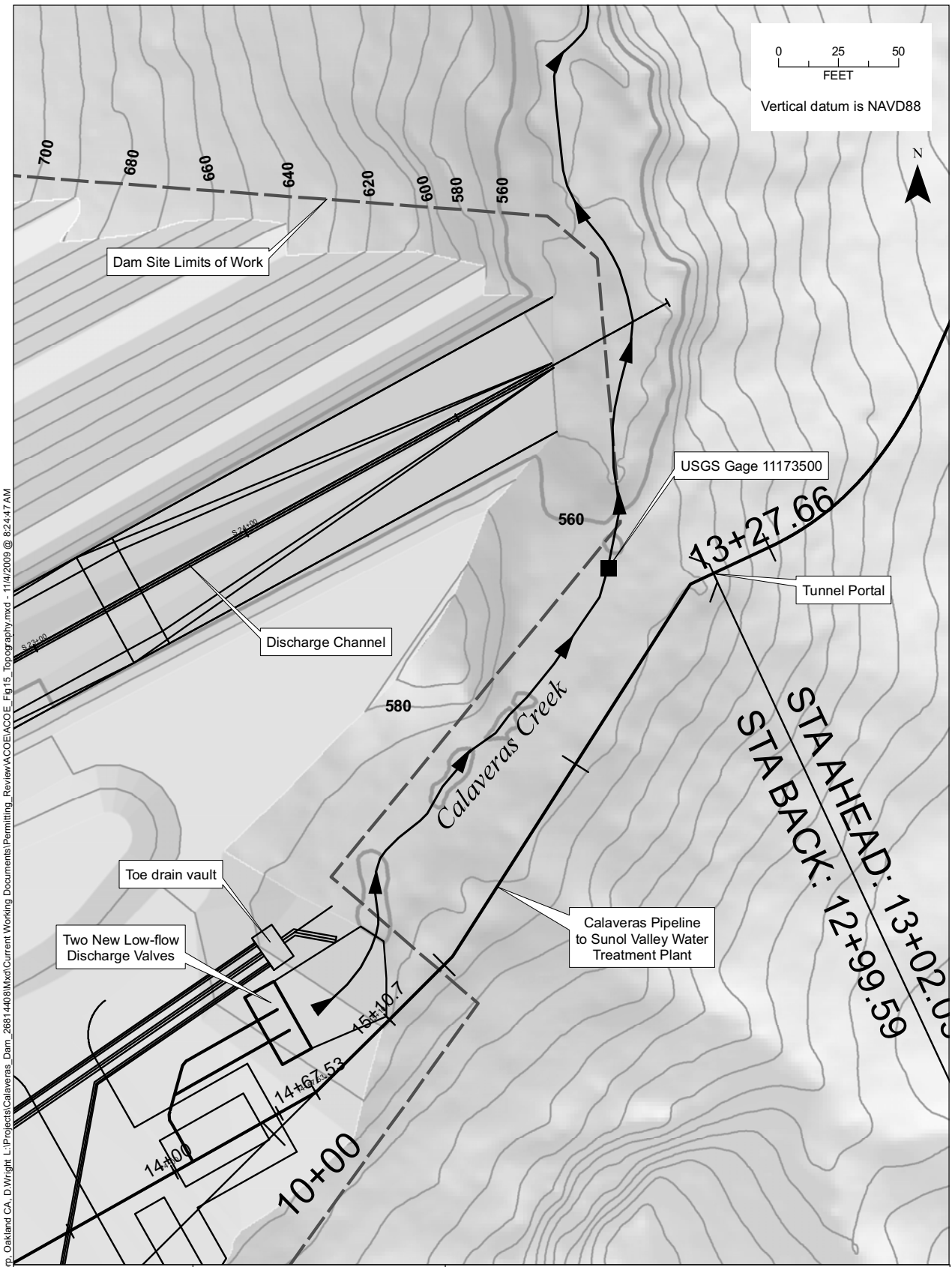
CALAVERAS DAM REPLACEMENT PROJECT

Figure 5
Detail of Downstream Base of Proposed Replacement Dam



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CALAVERAS DAM REPLACEMENT PROJECT

Figure 6
Topography at Confluence of Proposed Discharge Channel and Calaveras Creek

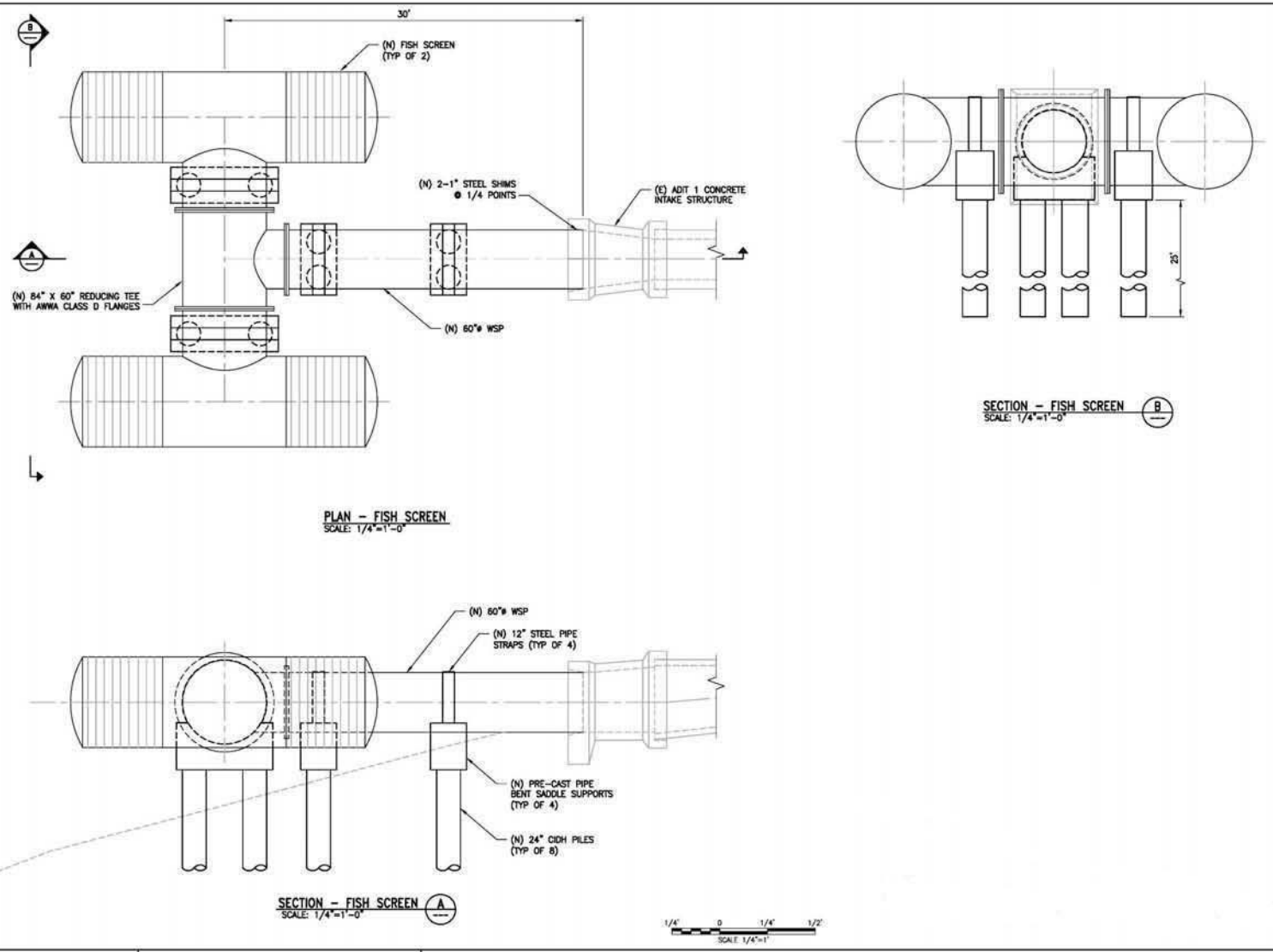

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Figure 7
Calaveras Reservoir Adit Replacement Fish Screens

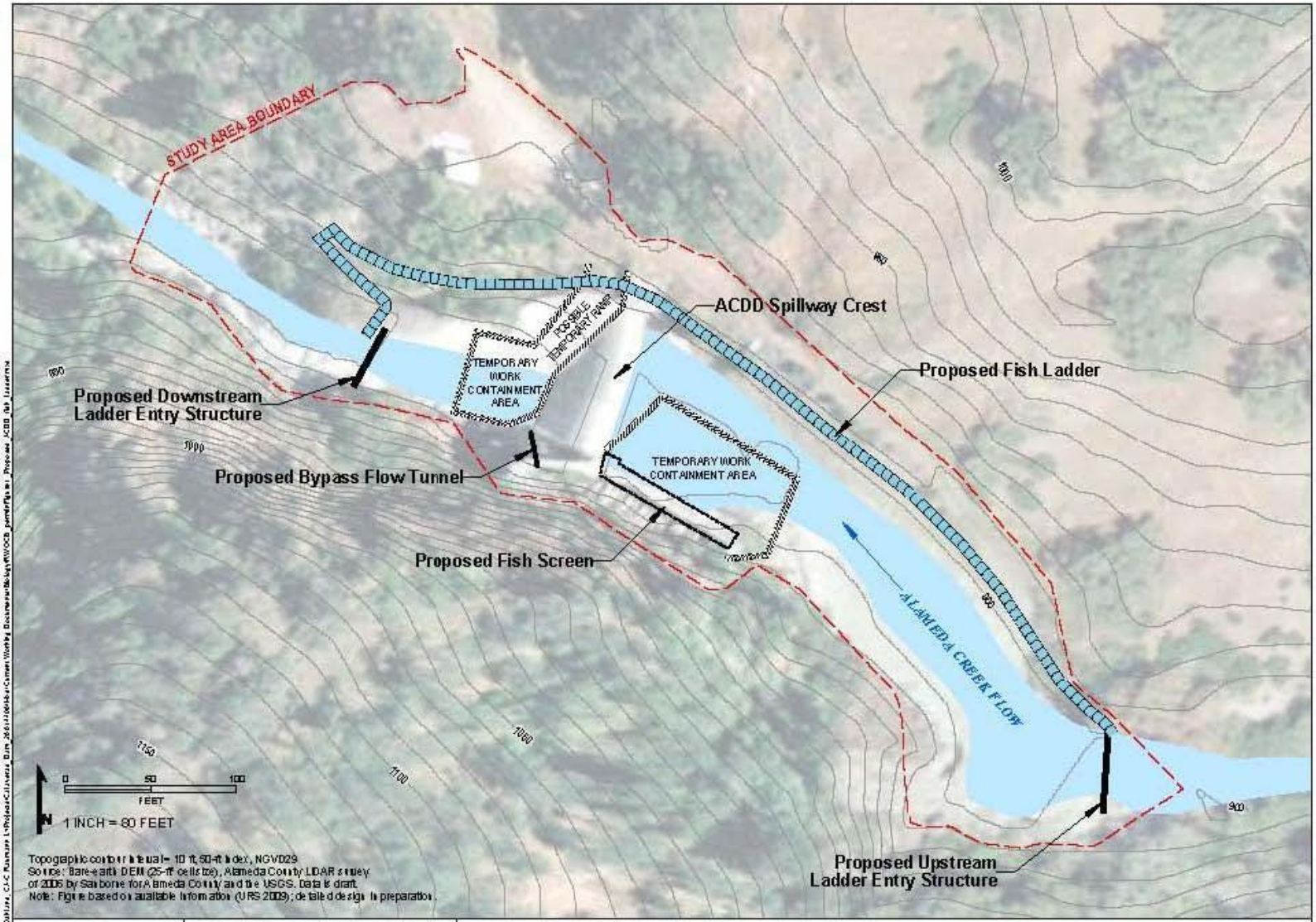

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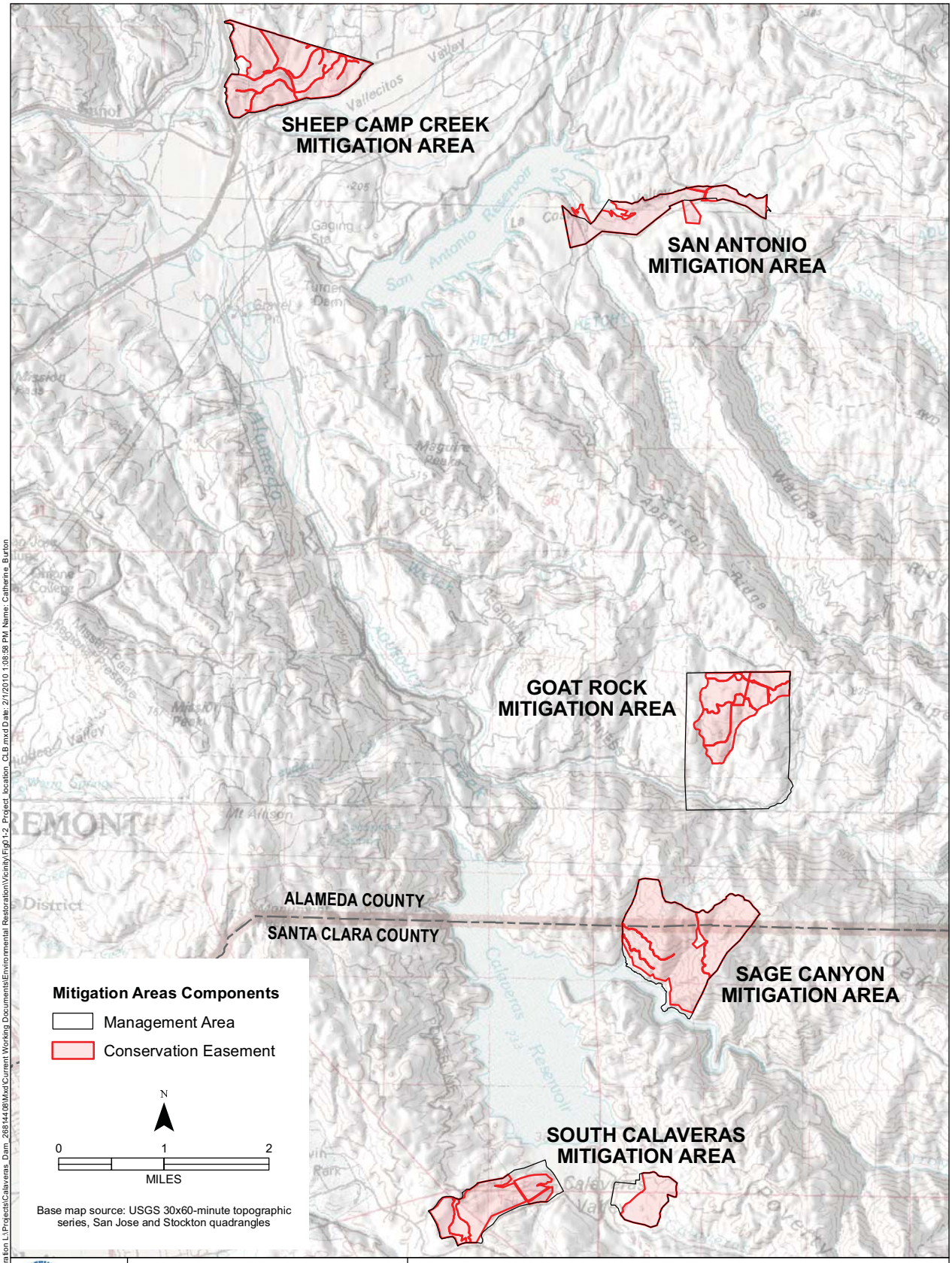
Figure 8
Proposed Structures and Work Areas at Alameda Creek Diversion Dam



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Habitat Reserve Program

Figure 9
Conservation easements and management areas

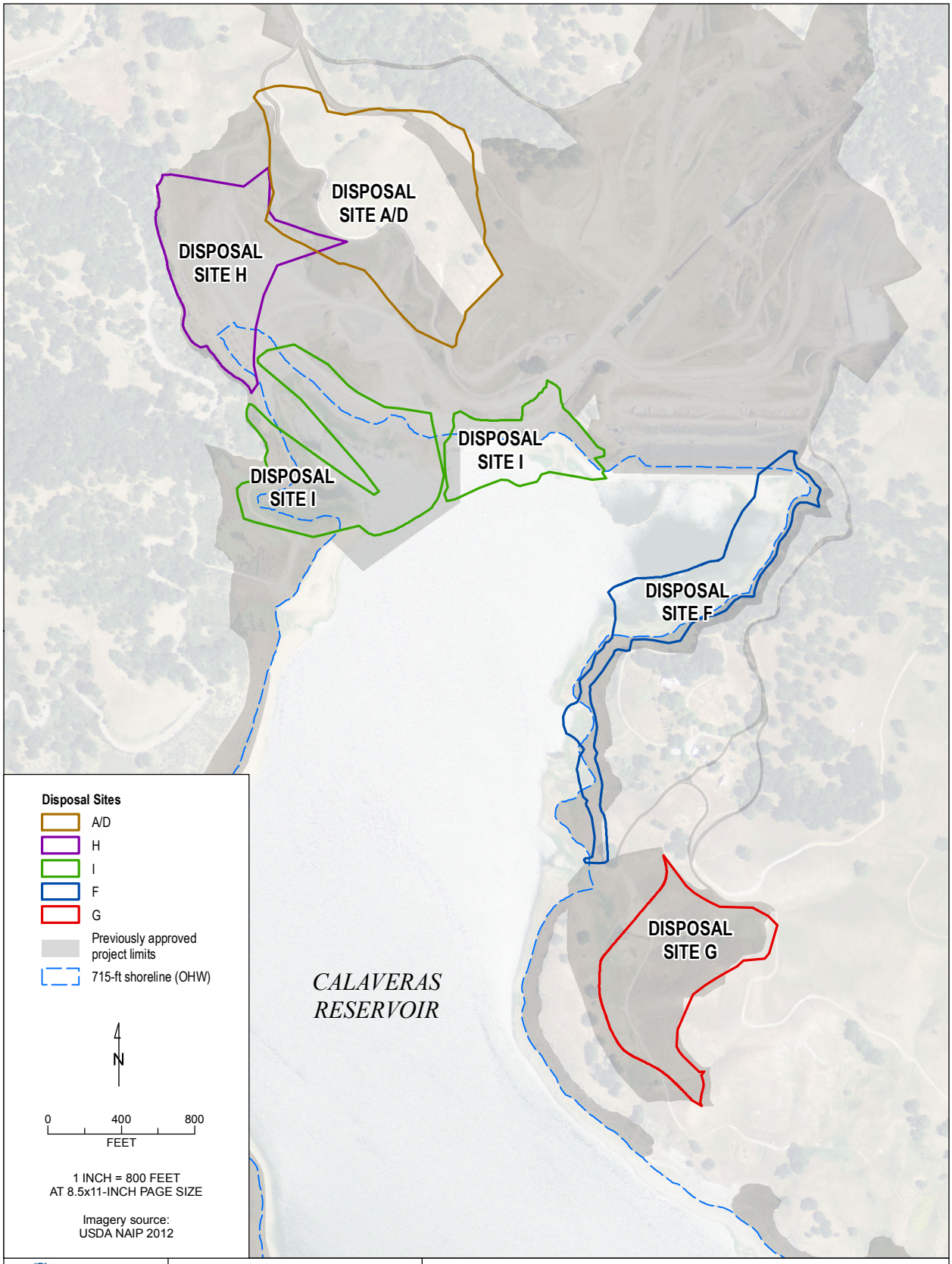

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Figure 10
Map of Proposed Disposal Sites and Project Limits

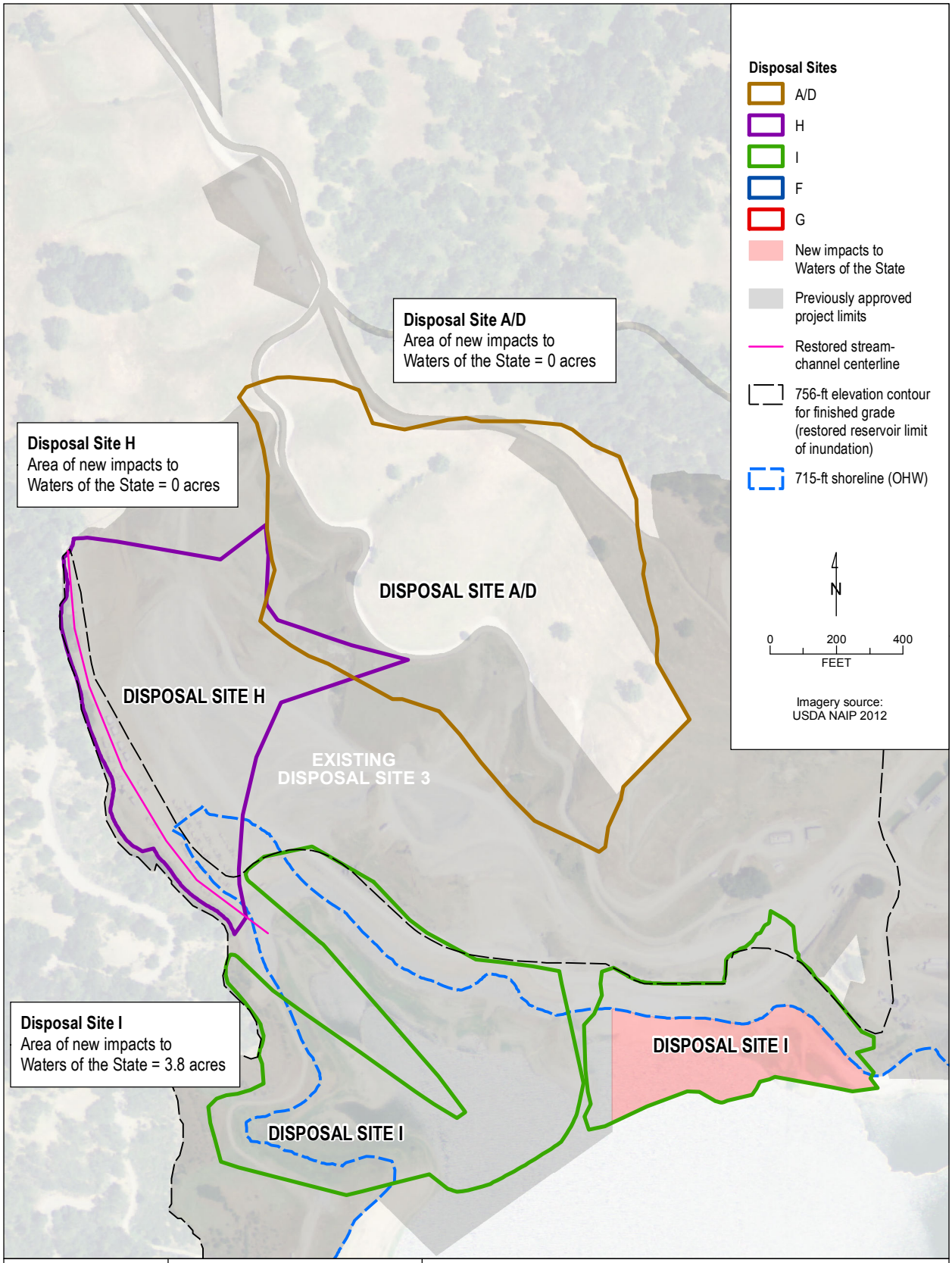

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Figure 11
Map of Disposal Sites A/D, H, and I

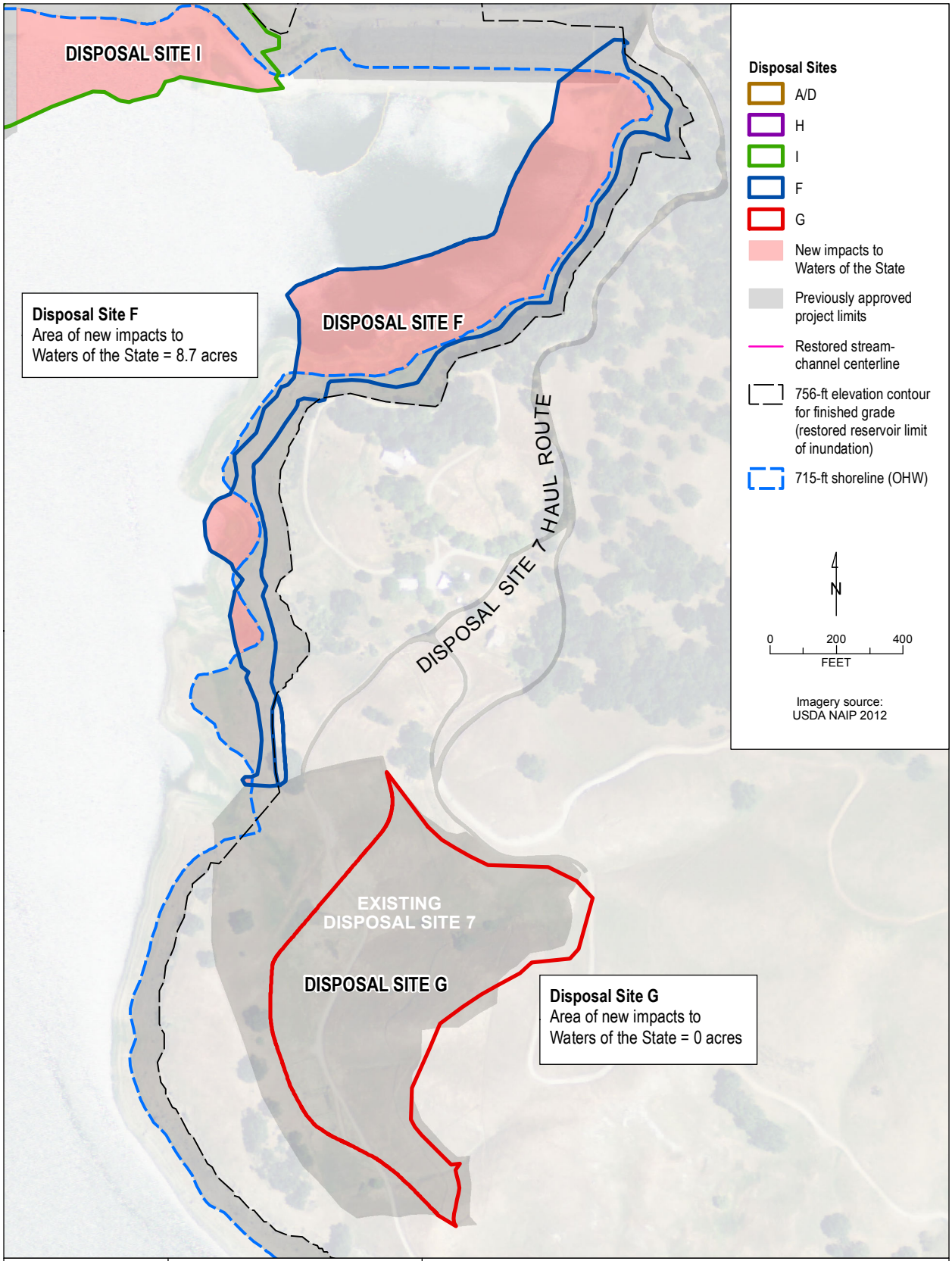

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Figure 12
Map of Disposal Sites F and G

Attachments B – F

Attachments B – F are part of the original Order No. R2-2011-0013 but are not part of this proposed amendment action and therefore, they are not attached.

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Memorandum

Attachment G
404 (B)(1) Alternatives Analysis of Additional Disposal Site Options for Surplus Soil and Rock

Date: November 13, 2012

To: Kerry O'Neil and Deborah Craven-Green

From: Steve Leach and Rosemary Laird

Subject: ***CUW 37401 - Calaveras Dam Replacement Project***
Alternatives Analysis of Additional Disposal Site Options for Surplus Soil and Rock

Proposed changes to the Calaveras Dam Replacement Project (CDRP) will require additional disposal sites for surplus soil and rock. This memorandum describes the alternatives analysis of disposal site options conducted by the San Francisco Public Utilities Commission (SFPUC) consistent with the Section 404(b)(1) Guidelines. These guidelines were established by the Environmental Protection Agency under the authority of the federal Clean Water Act. The analysis in this memorandum is based on a similar process that was used to evaluate and select the existing disposal sites as described in the December 2009 Section 404 (b)(1) Alternatives Analysis for the CDRP.

1.0 INTRODUCTION

Project Background

During excavation of the eastern slope of Observation Hill, a landslide deposit of unconsolidated soil and rock (highly fractured Temblor Sandstone) was discovered. The instability of this deposit requires the cut slope of the left abutment to be modified to accommodate the loss in slope stability. The shallow angle of the new cut slope requires the excavation of approximately 3 million cubic yards (cy) of material. A portion of these materials (approximately 1.4 million cy) will be utilized in dam construction, but it will require temporary disposal before it can be used. Although this portion of the materials would be retrieved from a disposal site in the future, these materials would need to be stored for more than one year.

As summarized in Table 1, most of the previously approved disposal sites (DS) do not have any capacity to accommodate the 3 million cubic yards (Mcy) of additional materials. The only disposal site with potential capacity, DS-5, is also the borrow area for the dam's clay core and will not be available until construction of the dam's clay core is completed.

Table 1. Existing CDRP Project Disposal Sites

Disposal Site	Acres	Capacity (Mcy)	Available Capacity (Mcy)
DS-2	17	1.1	0
DS-3	38	2.48	0
DS-5	67	0.84	0.84
DS-7	21	1.7	0

To accommodate approximately 3 Mcyof additional material, the SFPUC identified new disposal sites outside the current project limits, as well as alternative uses of existing disposal sites to accommodate relocation and storage of the additional materials (Figure 1). The nine sites identified as additional disposal areas are described in more detail below and are presented in Table 2.

2.0 ANALYSIS OF DISPOSAL OPTIONS

Disposal sites are identified that would individually accommodate a portion and collectively accommodate all of the surplus materials. The evaluation presented in this memorandum builds upon the disposal sites analysis performed in 2008 (URS 2008), the subsequent 404(b)(1) Alternative Analysis (SFPUC 2009) and comments received by the project team at Inter Agency Task Force (IATF) meetings with the San Francisco Bay Regional Water Quality Control Board (RWQCB), the U.S. Army Corps of Engineers (USACE), the California Department of Fish and Game (CDFG), and the U.S. Fish and Wildlife Service on October 2, and October 25, 2012.

The disposal site analysis conducted in 2008 (URS 2008) used a 3-tiered approach based on the 404(b)(1) Guidelines:

- Tier 1 – practicability based on costs or logistics
- Tier 2 – engineering and environmental constraints
- Tier 3 – capacity and project objectives

The additional disposal sites analyzed in this memorandum are all on-site disposal options because off-site disposal options, such as the Sunol Valley gravel quarries and other locations, were previously evaluated in the 2008 analysis and eliminated as not practicable. Off-site options were eliminated based on substantially higher costs and would increase the project duration, which adversely affects logistics and environmental impacts.

The analysis in this memorandum evaluates the on-site disposal options using a similar three-tiered process that considers logistics, engineering, and environmental impacts. The modified three-tiered process is illustrated in Figure 3 and described below.

2.1 TIER 1

The first tier is a screening-level evaluation to eliminate options that are not practicable based on engineering and environmental considerations. The Tier 1 evaluation screens the options for unacceptable impacts, such as serious geological risks, engineering constraints, or severe environmental impacts that would require substantial and potentially infeasible mitigation. Examples include sites that are located on slopes with horizontal to vertical ratios greater than 3:1, require substantial removal of oak trees, or have substantial impacts to streams.

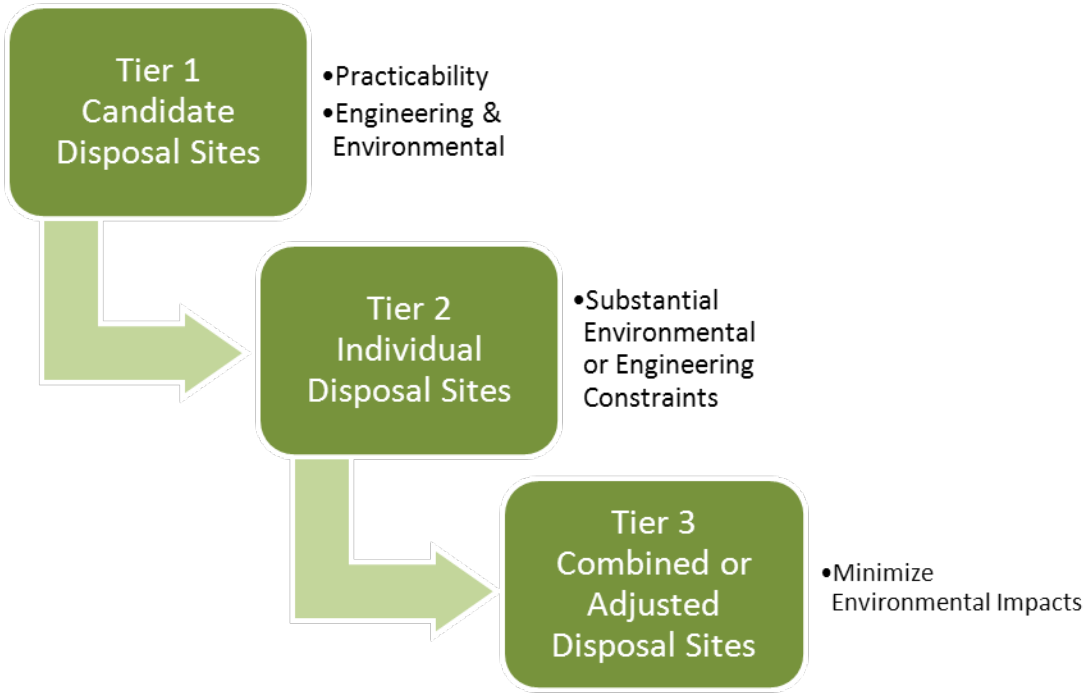
2.2 TIER 2

Sites that are not eliminated in the Tier 1 evaluation are reviewed in more detail regarding environmental impacts and engineering constraints. Environmental impacts analysis include quantifying potential loss of habitat for special status species, including rare plant populations and uplands utilized for refugia and dispersal by special status wildlife species.

2.3 TIER 3

The Tier 3 evaluation considers combinations of individual disposal sites to identify a combination of sites that collectively have the capacity to accommodate the total volume of surplus rock and soil that require disposal.

Figure 3. Analysis Tiers



Each of the specific disposal options is evaluated to assess the degree to which it meets the following engineering and environmental objectives:

- Minimize stream impacts (environmental objective)
- Minimize impacts to sensitive habitats (environmental objective)
- Minimize potential for water quality impacts (environmental objective)
- Maximize stability of disposal site (engineering objective)

3.0 RESULTS OF TIERED ALTERNATIVES ANALYSIS

Table 2 summarizes the disposal sites evaluated in this alternatives analysis, including the total area, capacity (in cubic yards) and the potential environmental impacts. Results of analysis by tiers are discussed below.

3.1 TIER 1 EVALUATION RESULTS

Based on an analysis of practicability, including engineering and environmental constraints, disposal sites C and E were eliminated from further analysis. Site C was eliminated due to substantial environmental impacts, including removal of more than 500 oak trees and potential impacts to federally designated critical habitat for the Alameda whipsnake. Site E was eliminated due to engineering constraints because the existing slope was steeper than 3:1 (horizontal to vertical ratio) and would have insufficient disposal capacity to be viable. The remaining disposal site options were retained for evaluation in the Tier 2 process.

Table 2. Potential Additional CDRP Disposal Sites

Disposal Site Option	Acreage outside of project limits (ac)	Capacity (cy)	Resource Impacts											
			Open Water	Streams			Wetlands		Special status species upland habitats			CNPS Rare plants	Modify Restoration	Oak Removal
			Reservoir	Perennial	Intermittent	Ephemeral	Seasonal	Seep	CTS	AWS	CRLF			
A	5.9	360,000							X	X	X			X
B	14	390,000			X	X	X	X	X	X	X			X
C	18	820,000							X	X[1]	X			X[2]
D	10	815,000							X	X	X			X
E	9	Not Viable (engineering constraints)		X	X				X	X	X		X	X
F	8.8	450,000	X						X	X	X			X
G	0.5	400,000							X	X	X	-- [3]		
H	0	200,000											X	
I	3.8	1,010,000	X											

Notes:
1. DS C would be located within designated Critical Habitat for the Alameda whipsnake.
2. DS C would require removal of approximately 500 oak trees
3. Rare plant populations avoided by modifying the boundary of DS G and reducing the capacity.

3.2 TIER 2 EVALUATION RESULTS

Based on an analysis of environmental impacts, Disposal Site B was eliminated from further analysis due to substantial impacts to intermittent and ephemeral stream channels, seasonal and seep wetlands, and riparian habitats. The remaining disposal site options are retained for evaluation in Tier 3.

3.3 TIER 3 EVALUATION RESULTS

The Tier 3 evaluation examined the remaining sites to identify a combination of sites that would provide the needed additional storage capacity while minimizing potential environmental impacts. Based on agency feedback at the October 2, 2012 IATF meeting, the SFPUC retained and expanded two disposal sites that would place fill below the future normal maximum water surface elevation (756 feet) and would require only minimal (at DS F) or no (DS I) impacts to habitats utilized by special status species. These "in-Reservoir" disposal sites would not reduce the final surface area of the Reservoir, which will be approximately 444 acres larger after the project is completed.

Six disposal sites were evaluated in the Tier 3 analysis: A, D, F, G, H, and I. Each of these sites are discussed below. Table 3 summarizes the area and estimated capacity of these disposal sites.

Table 3: Estimated area and maximum capacity of the Tier 3 disposal sites.

Disposal Site	Area outside of project limits (ac)	Estimated Capacity (cy)
A/D	15.9	1,175,000
F	8.8	450,000*
G	0.49	400,000
H	0	200,000
I	0	1,010,000*
Totals:	**25.19**	**3,235,000**

Geotechnical investigations are pending to confirm design estimated capacity of these sites.

Disposal Site A/D

Disposal Site D has been combined with Disposal Site A to create a larger, permanent disposal site identified here as DS A/D. The larger DS A/D would be located on the top of the ridge west of Observation Hill (Figure 2). The portion of DS A/D that is located outside of the previously analyzed project limits is 15.9 acres of non-native grasslands; there would be no impacts to wetlands or other waters.

The non-native grasslands are potential upland/dispersal habitat for California tiger salamander (CTS), upland/dispersal habitat for California red-legged frog (CRLF), and potential foraging and movement areas for Alameda whipsnake (AWS).

Disposal Site F

DS F primarily consists of disturbed areas of shoreline along the eastern margin of Calaveras Reservoir between the existing Calaveras Dam and DS 7 (Figure 2). Portions of the shoreline between the existing water level and the normal maximum water surface elevation (756 feet) will be inundated by the proposed project and were included in the project limits that were previously addressed by project permits. DS F also includes areas currently inundated by the Calaveras Reservoir (below the 715-foot ordinary high water elevation). This disposal site would expand the present limits of work into approximately 0.13 acre of non-native annual grassland and 8.7 acres of open water not previously included in the CDRP limits of work.

The non-native grassland habitat outside of the project limits is potentially suitable for CTS and CRLF upland dispersal and aestivation, and may provide potential foraging and movement areas for AWS. Minimal oak tree removal (1 to 2 trees) is anticipated at the intersection of DS F and DS 7.

This disposal site would also provide access for transportation of materials to and from the dam construction site and DS 7 (Figure 2). Creation of an access route along the edge of the reservoir would allow for avoidance of upland habitat impacts resulting from improvements that had been previously proposed for transportation of materials using the Disposal Site 7 Haul Route. Although this disposal site would require placement of up to 0.45 million cubic yards of material in Calaveras Reservoir, the area of open water in the Reservoir would not be reduced because the fill would be inundated after the project is completed.

Disposal Site G

DS G is proposed to expand the capacity of the previously authorized DS 7 (Figure 2). A larger version of DS G was proposed during the Tier 1 review process as described at the October 2, 2012 IATF meeting. Subsequently, this disposal site was modified to reduce the area outside the existing project limits. The minimized configuration of this disposal site would overlap the existing DS 7 and require disturbance of approximately 0.49 acre of serpentine bunchgrass grassland habitat outside of the present CDRP work limits, located along the west side of DS 7. This disposal site does not extend into sensitive habitat areas for the most-beautiful jewel flower (Streptanthus albidus ssp. peramoenus).

DS G would permanently remove habitats that are potential upland dispersal and aestivation habitat for CTS and CRLF, and potential foraging and movement areas for AWS.

Disposal Sites H and I

DS H would be located entirely within the existing DS 3 (Figure 2) and therefore all impacts to federally listed species have been previously addressed. To accommodate the additional materials, the stream channel at the western margin of DS 3 would be relocated further west. However, the stream channel relocation would not change the length or area of the approved channel reconfiguration. This disposal site would not require any additional impacts to wetlands or other waters, or upland habitats utilized by special status species.

DS I would include the southern portion of DS 3, the adjacent Barge Access Area, and other access areas along the northern shoreline of the reservoir (Figure 2). Portions of the shoreline between the existing water level and the normal maximum water surface elevation (756 feet) will be inundated by the proposed project and are

included in the existing project limits. DS I also includes areas currently inundated by the Calaveras Reservoir (below the 715-foot ordinary high water elevation). Although this disposal site would require placement of up to 1.01 million cubic yards of material in Calaveras Reservoir, the area of open water in the Reservoir would not be reduced because the fill would be inundated after the project is completed.

4.0 CONCLUSION

The following combination of disposal sites would accommodate the additional disposal needs for the proposed modifications of the Calaveras Dam Replacement Project: A/D, F, G, H, and I. Based on the alternatives analyses described in this memorandum, the combination of these five sites is the least environmentally damaging, practicable alternative to minimize adverse impacts to wetlands, streams, special status species and sensitive upland habitats.

REFERENCES

URS (URS Corporation). 2008. CUW 37401 - Calaveras Dam Replacement Project Alternatives Analysis of Disposal Options for Surplus Soil and Rock. March 5.

SFPUC (San Francisco Public Utilities Commission). 2009. Section 404 (b)(1) Alternatives Analysis in Compliance with the Clean Water Act: Calaveras Dam Replacement Project. December.

TABLES AND FIGURES

List of Tables

List of Figures

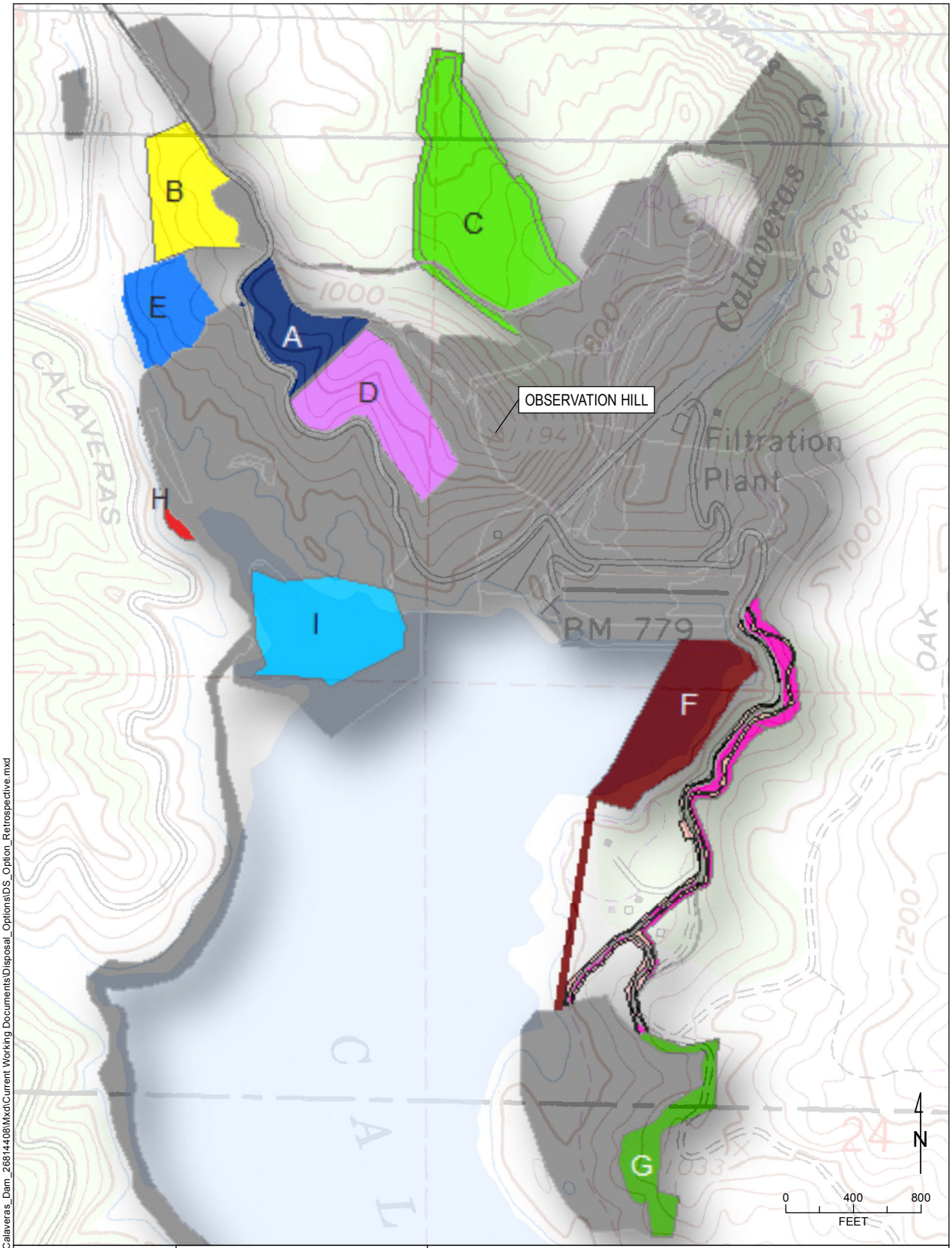


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Figure 1
Disposal Site Options Analysis

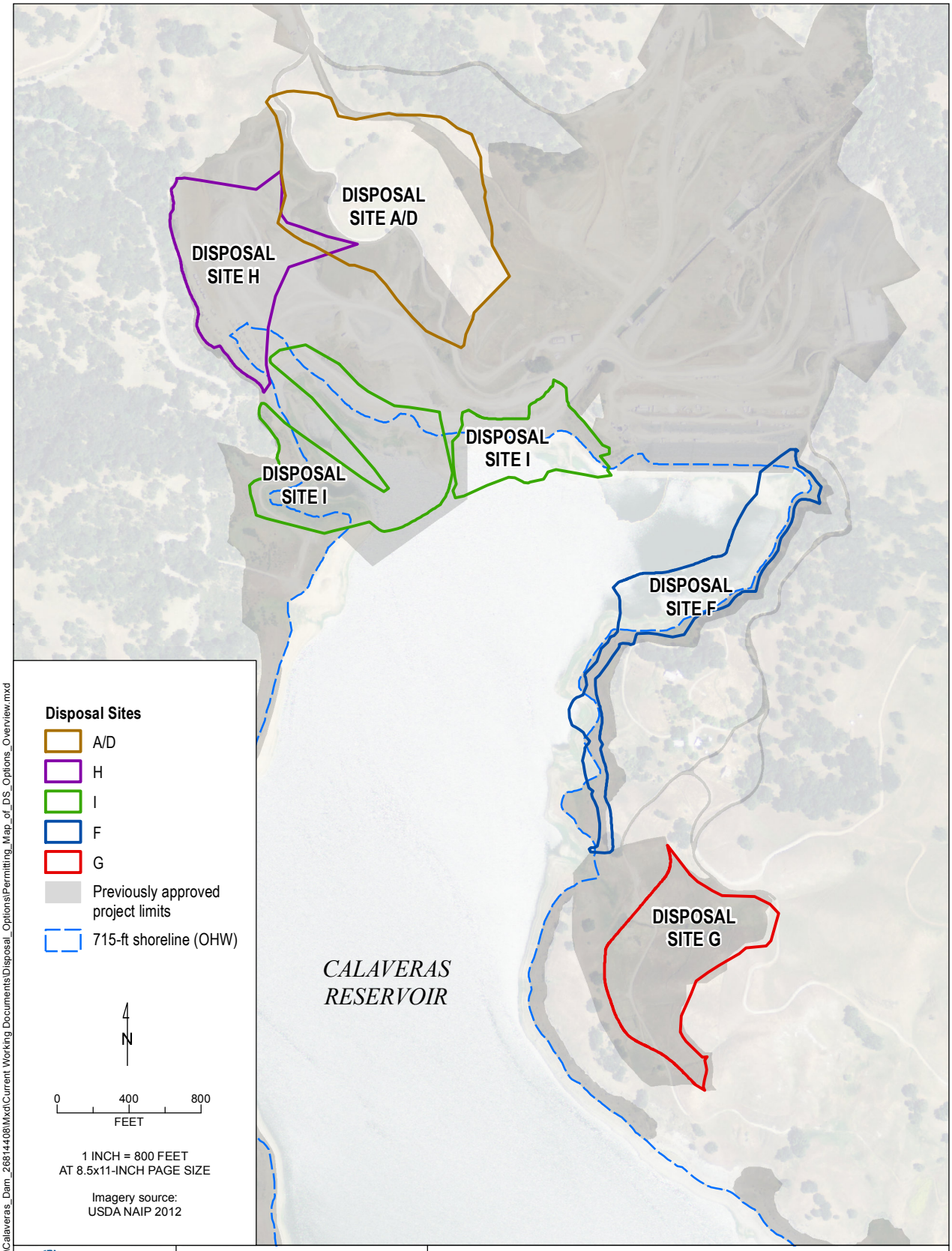

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Figure 2
Map of Proposed Disposal Sites and Project Limits